

LAND DEVELOPMENT | ENGINEERING DESIGN | CONSTRUCTION SERVICES

Geotechnical Report Meriden TOD Signal Upgrades Meriden, Connecticut

December 18, 2019

Freeman Project No.: 2018-0108

Prepared for: CDM Smith, Inc. 77 Hartland Street Suite 201 East Hartford, Connecticut 06109

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1.0 INTRODUCTION

1.1 Summary

This report presents our evaluation of subsurface conditions for the Meriden TOD Signal Upgrades located in Meriden, Connecticut. The improvements include installation of new traffic signals at several intersections as detailed below.

Subsurface conditions generally consisted of variable density Fill overlying Organic Deposits, Glaciofluvial Deposits, Glaciolacustrine Deposits and Glacial Till. Weathered Bedrock was encountered in boring B-1 only. Currently, plans include replacing the existing signals with new signals and poles. It is anticipated that foundations will be drilled caisson type foundations.

1.2 Scope of Work

Freeman Companies, LLC performed the following tasks:

- Engaged a subsurface exploration contractor to conduct test borings at the site.
- Provided technical monitoring of the explorations.
- Arranged for a testing laboratory to conduct laboratory soil tests.
- Prepared this geotechnical report.

1.3 Authorization

The work was completed in accordance with the amendment to our agreement dated October 20, 2019.

2.0 SITE AND PROJECT DESCRIPTION

2.1 Site Description

The signal upgrades are located at various intersections throughout Meriden, Connecticut, as indicated on Figure 1, Location Map. The intersections include:

- West Main Street and Cook Avenue
- Hanover Street and Cook Avenue
- West Main Street and Butler Street
- West Main Street and South Grove Street
- West Main Street and Colony Street
- East Main Street and Pratt Street
- Crown Street and Perkins Street
- Church Street and Colony Street
- Colony Street and Hanover Street
- Hanover Street and South Grove Street
- Hanover Street and Butler Street

The existing signals in these areas are situated in the sidewalks, islands, or other areas off the roadways.



2.2 Project Description

The project will include replacement of the existing signals with new mast arm signals.

3.0 SUBSURFACE EXPLORATIONS

3.1 Recent Field Explorations

Eleven test borings (B-1 through B-11) were completed by New England Boring Contractors Inc., of Glastonbury, Connecticut from November 19 to 25, 2019 with a truck mounted drill rig using 3.25 inch diameter hollow-stem augers to depths ranging from 20 feet to 25 feet below existing ground surface. Borings were generally terminated at predetermined depths. Standard Penetration Tests (SPTs) were taken semi-continuously to 10 feet and then at maximum 5 foot intervals thereafter.

Exploration locations were determined by taping from existing site features and are considered approximate. A Freeman Companies geotechnical engineer observed the drilling and prepared the field boring logs with soil descriptions based on the visual observation of the samples. Test boring logs are included in Appendix A and locations are shown on Figures 2A through 2F, Subsurface Exploration Location Plan.

3.2 Laboratory Testing

Laboratory tests were performed to aid in classification and determination of engineering properties. Ten grain size distribution analyses and three Atterberg Limit tests were performed on soil samples recovered from the borings by Geotesting Express of Acton, Massachusetts. Laboratory testing results are included in Appendix B.

4.0 SUBSURFACE CONDITIONS

4.1 Subsurface Profile

The site subsurface conditions encountered in the explorations generally consist of Fill overlying Organic Deposits, Glaciofluvial Deposits, Glaciolacustrine Deposits, Glacial Till and Weathered Bedrock. Subsurface conditions are known only at the boring locations and may differ significantly between borings. The generalized subsurface conditions follow. See Table 1, attached, for boring specific data.



Thickness (feet)	Generalized Description
0.3 to 0.7	PAVEMENT/CONCRETE – At surface
2.7 to 11	FILL – Loose to medium dense, gray to brown to dark brown, coarse to fine SAND, some to trace coarse to fine to medium to fine gravel, some to trace silt
1.5 to 2	ORGANIC DEPOSIT – Loose dark gray to dark brown-black SILT, some fine sand, organic fibers
1.5 to Greater than 16.5	GLACIOFLUVIAL DEPOSITS – Medium dense to dense, brown, coarse to fine SAND, some to trace coarse to fine gravel, little to trace silt
16 to Greater than 19	GLACIOLACUSTRINE DEPOSITS – Loose to medium dense, brown SILT, varying to brown CLAY, trace fine sand, to Varved CLAY and SILT
Greater than 11.8 to 16	GLACIAL TILL - Medium dense to very dense, red-brown, fine SAND, some silt, little to trace medium to fine gravel
	WEATHERED BEDROCK

4.2 Groundwater

Groundwater was encountered in the borings at approximately 4 feet to 14 feet below existing ground surface, corresponding to Elevation 112 feet to Elevation 126 feet. Groundwater level measurements were made during or immediately following drilling and may not represent static conditions. Groundwater levels will fluctuate with season, precipitation, nearby construction activities, and other conditions.

5.0 GEOTECHNICAL ENGINEERING RECOMMENDATIONS

5.1 Signal Pole Foundation Parameters

New mast arm signal poles will be installed at the intersections noted previously. At the time of this report, loading information was not available. For design purposes, signal pole foundations consisting of drilled three-foot-diameter shafts extending to a depth of 14 feet appear feasible. We will evaluate the response of the selected foundation system to vertical, horizontal, and moment loading, once that information is available. This is to confirm that calculated deflections are within tolerable limits.

5.2 Engineering Parameters

The following parameters are provided for each intersection to aid in mast arm foundation design:



• West Main Street and Cook Avenue

PARMETER	VALUE
Boring No.	B-1
Soil Type	Fill (c-f SAND, some m-f gravel, little silt), Glacial Till (c-f SAND, some silt, trace f gravel), Weathered Bedrock
Soil Density	125 pounds per cu. ft. (pcf)
Friction Angle	32 degrees - Fill 34 degrees – Glacial Till
Cohesion	0 pounds per sq. ft. (psf)
Groundwater	Not encountered

• Hanover Street and Cook Avenue

PARMETER	VALUE
Boring No.	B-2
Soil Type	Fill (c-f SAND, some m-f gravel, little to some silt), Organic Silt, Glaciofluvial Deposits (c-f SAND, little gravel, little silt), Glaciolacustrine Deposits (SILT, little fine sand)
Soil Density	120 pcf – Granular Deposits 115 pcf – Fine Deposit
Friction Angle	30 degrees – Fill 32 degrees – Glaciofluvial Deposit 32 degrees – Glaciolacustrine Deposit
Cohesion	0 psf
Groundwater	7 ft.

It is recommended that the 2 feet of organic soil be ignored and the depth of the pier be extended an additional two feet beyond typical design depth due to the poor engineering properties of the deposit.



• West Main Street and Butler Street

PARMETER	VALUE
Boring No.	B-3
Soil Type	Fill (c-f SAND, little m-f gravel, little silt), Glaciofluvial Deposits (c-f SAND, little m-f gravel, little silt), Glaciolacustrine Deposits (SILT, trace fine sand)
Soil Density	120 pcf – Granular Deposits 115 pcf – Fine Deposit
Friction Angle	32 degrees – Fill 32 degrees – Glaciolacustrine Deposit
Cohesion	0 psf
Groundwater	8 ft.

• West Main Street and South Grove Street

PARMETER	VALUE
Boring No.	B-4
Soil Type	Fill (c-f SAND, little to some m-f gravel, little silt), Glaciolacustrine Deposits (SILT, trace fine sand)
Soil Density	120 pcf – Granular Deposits 115 pcf – Fine Deposit
Friction Angle	30 degrees – Fill 30 degrees - Glaciolacustrine
Cohesion	0 psf
Groundwater	7 ft.



• West Main Street and Colony Street

PARMETER	VALUE
Boring No.	B-5
Soil Type	Fill (c-f SAND, little to some m-f gravel, little silt), Glaciolacustrine Deposits (SILT, little fine sand to fine SAND, some silt)
Soil Density	120 pcf – Granular Deposits 115 pcf – Fine Deposit
Friction Angle	32 degrees – Fill 32 degrees – Glaciolacustrine Deposits
Cohesion	0 psf
Groundwater	6 ft.

• East Main Street and Pratt Street

PARMETER	VALUE
Boring No.	B-6
Soil Type	Fill (c-f SAND, some c-f gravel, little to some silt), Organic Silt, Glaciofluvial Deposits (c-f SAND, little to some gravel, trace to little silt),
Soil Density	125 pcf – Granular Deposits
Friction Angle	32 degrees – Fill 34 degrees - Glaciofluvial Deposits
Cohesion	0 psf
Groundwater	12 ft.

It is recommended that the 2 feet of organic soil be ignored and the depth of the pier be extended an additional 2 feet beyond typical design depth due to the poor engineering properties of the deposit.



• Crown Street and Perkins Street

PARMETER	VALUE
Boring No.	B-7
Soil Type	Fill (c-f SAND, some c-f gravel, little to some silt), Glaciofluvial Deposits (c-f SAND, little to some gravel, little to trace silt), Glacial Till (c-f SAND, some silt, little gravel)
Soil Density	125 pcf – Granular Deposits
Friction Angle	32 degrees – Fill 32 degrees – Glaciofluvial Deposits 34 degrees – Glacial Till
Cohesion	0 psf
Groundwater	14 ft.

• Church Street and Colony Street

PARMETER	VALUE
Boring No.	B-8
Soil Type	Fill (c-f SAND, little c-f gravel, little silt), Glaciofluvial Deposits (c-f SAND, little silt), Glaciolacustrine Deposits (CLAY, trace fine sand)
Soil Density	120 pcf – Granular Deposits 105 pcf – Fine Deposit
Friction Angle	32 degrees – Fill 32 degrees – Glaciofluvial Deposits 0 degrees – Glaciolacustrine Deposits
Cohesion	1,500 psf - For Glaciolacustrine Deposit Only
Groundwater	9 ft.



Colony Street and Hanover Street

PARMETER	VALUE
Boring No.	B-9
Soil Type	Fill (c-f SAND, some to little c-f gravel, some to little silt), Glaciofluvial Deposits (c-f SAND, some c-f gravel, little silt), Glaciolacustrine Deposits (CLAY, trace fine sand)
Soil Density	120 pcf – Granular Deposits 105 pcf – Fine Deposit
Friction Angle	32 degrees – Fill 32 degrees – Glaciofluvial Deposits 0 degrees – Glaciolacustrine Deposit
Cohesion	1,500 psf – For Glaciolacustrine Deposit Only
Groundwater	10 ft.

• Hanover Street and South Grove Street

PARMETER	VALUE
Boring No.	B-10
Soil Type	Fill (c-f SAND, little c-f gravel, little silt), Glaciofluvial Deposits (c-f SAND, some c-f gravel, little silt), Glaciolacustrine Deposits (Varved CLAY and SILT)
Soil Density	120 pcf – Granular Deposits 105 pcf – Fine Deposit
Friction Angle	32 degrees – Fill 32 degrees – Glaciofluvial Deposit 0 degrees – Glaciolacustrine Deposit
Cohesion	1,500 psf for Glaciolacustrine Deposit only
Groundwater	7 ft.



• Hanover Street and Butler Street

PARMETER	VALUE
Boring No.	B-11
Soil Type	Fill (c-f SAND, little c-f gravel, little silt), Glaciofluvial Deposits (c-f SAND, little m-f gravel, little silt), Glaciolacustrine Deposits (SILT, trace f sand)
Soil Density	120 pcf – Granular Deposits 115 pcf – Fine Deposit
Friction Angle	32 degrees – Fill 32 degrees – Glaciofluvial Deposit 32 degrees – Glaciolacustrine Deposit
Cohesion	0 psf
Groundwater	4 ft.

6.0 CONSTRUCTION CONSIDERATIONS

6.1 Excavation

Conventional heavy construction equipment should be suitable for excavation in existing soil materials. We anticipate that a drilling rig will be required for the signal foundation. Casing will likely be required for the drilling to maintain the hole. Difficult drilling through Glacial Till is anticipated in some locations. The drill rig should be capable of drilling through boulders and be able to maintain alignment. Excavations should conform to OSHA excavation regulations contained in 29 CFR Part 1926, latest edition, but should be confirmed at the time of excavation.

6.2 Dewatering

We anticipate that excavation dewatering can be accomplished by pumping from properly filtered sumps and be discharged according to federal, state, and local regulations. Surface water entering the construction area should be diverted away from excavations.

Drilled foundations will encounter groundwater. If methods are not water tight, then it should be assumed that concrete should be placed by tremie method from the bottom of the drill hole to displace groundwater.

7.0 FUTURE SERVICES AND LIMITATIONS

We recommend that Freeman Companies be engaged during construction to observe:

- Verify that soil conditions exposed in excavations are in general conformance with design assumptions
- Verify that the geotechnical aspects of construction are consistent with the project specifications



This report was prepared for the exclusive use of CDM Smith and the project design team. The recommendations provided herein are based on the project information provided at the time of this report and may require modification if there are any changes in the nature, design, or location or alignment of the roadway or structures.

The recommendations in this report are based in part on the data obtained from the subsurface explorations. The nature and extent of variations between explorations may not become evident until construction. If variations from the anticipated conditions are encountered, it may be necessary to revise the recommendations in this report.

Our professional services for this project have been performed in accordance with generally accepted engineering practices; no warranty, expressed or implied, is made.

2018-0110 Willard Diloreto Parking Garage CCSU New Britain, Connecticut

Table 1 Subsurface Data

	Creation of Courts and				Thick	mess (ft.)			Ground	lwater	Bed	rock
Boring No.	El.	Depth (ft.)	Pavement/Conrete	Fill	Organic Deposit	Glaciofluvial Deposit	Glaciolacustrine Deposite	Glacial Till	Depth (ft.)	Elevation	Depth (ft.)	Elevation
B-1	149	20.2	0.3	2.7				14.0			17	132
B-2	119.5	25	0.33	5.7	2.0	7.0	>10		7	112.5		
B-3	136.75	25	0.3	6.2		1.5	>17		8	128.75		
B-4	133.5	25	0.3	5.8			>18.5		7	126.5		
B-5	130	25	0.3	5.7			>19		6	124		
B-6	128.25	25	0.7	6.3	1.5	>16.5			12	116.25		
B-7	130.5	20.3		3.5		5.0		>11.8	14	116.5		
B-8	134.5	25	0.3	5.7		3.0	16.0		9	125.5		
B-9	124.5	25	Brick Paver	11.0		5.5	>8.5		10	114.5		
B-10	119	25		6.0		5.5	>13.5		7	112		
B-11	119	25	0.3	4.2		5.5	>15		4	115		

Notes:

1. Ground surface elevations are approximate and based upon grading plans provided by CDM Smith

2. Groundwater levels in borings were taken during drilling activities and may not represent stabilized conditions.

3. Bedrock elevations include weathered bedrock.

3. ">" - Greater Than "--" - Not Encountered

Geotechnical Report Meriden TOD Signal Upgrades Meriden, Connecticut December 18, 2019



FIGURES















Geotechnical Report Meriden TOD Signal Upgrades Meriden, Connecticut December 18, 2019



APPENDIX A

TEST BORING LOGS

Driller:	A	. Mckerna	C	onne	cticu	it DOT Borin	ng Report	Hole No.: B-1		
Inspect	or: T	. Ta	Town:		Merid	len		Stat./Offset:		
Engine	er: A	llison McCauliffe	Project	No.:	2018	-0108		Northing:		
Start Da	ate: 1	1-19-19	Route N	lo.:				Easting:		
Finish [Date: 1	1-19-19	Bridge I	No.:				Surface Elevation: 1	149.0	
Project	Descript	ion: Town of Merid	en TOD	Signa	al Upg	jrades				
Casing	Size/Typ	e: 3.25" HSA	Sample	r Type	/Size:	1-3/8 inch ID		Core Barrel Type:		
Hamme	er Wt.:	Fall: in.	Hamme	r Wt.:	140	Fall: 30in.				
Ground	water Ob	servations: Not En	countere	ed						
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_						Glacial Till	Gray c-f SAND, s	some m-f gravel, little	silt	_
_	S-2	13 47 44 10	8 24	20			Red brown c-f SA	AND, some silt	-	-145
5—	S-3	100/4''	4	4			Red brown f SAN	JD some silt_trace for	pravel	_
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10-		100/5"	F	5						_
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10	<u>S-5</u>	100/2**	2	2			Red brown f SAN	ND, some silt, trace f g	gravel	
							Dramatically slov	ver drilling rate, pieces	s of gravel	
						Weathered Rock	observed in cutti	ngs		_
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Earth: No.of	1/IL									
Soil Sa	mples: 6	Core Runs:							SM-001-M RE	V. 1/02

Driller:	А	. Mcke	erna			C	onne	cticu	it DOT Borin	ng Report	Hole No.: B-2		
Inspect	or: T	. Ta				Town:		Meric	len		Stat./Offset:		
Engine	er: A	llison	McCa	auliffe	e	Project	No.:	2018	-0108		Northing:		
Start D	ate: 1	1-19-1	9			Route N	lo.:				Easting:		
Finish I	Date: 1	1-19-1	9			Bridge I	No.:				Surface Elevation: 2	19.5	
Project	Descript	ion: T	own	of M	eride	n TOD	Signa	al Upg	grades				
Casing	Size/Typ	e: 3.2	25" H	SA		Sample	r Type	/Size:	1-3/8 inch ID		Core Barrel Type:		
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_										Crow to brown of	f CAND come silt litt	lo m f	-
_	S-2	2	1	1	2	24	4			gravel	I SAND, Some Sill, III		-
5-										Grav brown c-f S	AND little silt_trace r	n-f gravel	-115
-	S-3	2	4	3	2	24	18		Organic Silt	Dark grav SILT	some f sand with org	anic fibers	
-									5		little f cond with error		
-	S-4	8	8	11	10	24	16		Glaciofluvial	Dark gray SILI,	AND, little m f grovel	little cilt	
-										intermixed with g	ray c-f sand	nute siit,	
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-	S-5	8	10	15	17	24	22			Brown c-f SAND	, little silt		
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25-													-95
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		Samp	le Ty	pe:	S = \$	Split Sp	boon	C = 0	Core UP = Ur	disturbed Piston	V = Vane Shear T	Fest	
	F	Propo	rtions	s Use	d: 1	race =	1 - 1()% ,	Little = 10 - 20	%, Some = 20 -	- 35%, And = 35 - 3	50%	
Total P	enetratio	n in				NO	TES:					Shee	et
Earth:	25ft	Rock	: ft									1 of	1
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Inspector: T. Ta Tow: Meriden Statu 2016:e1: Stat	Driller:	А	. Mcke	erna			C	onne	cticu	it DOT Borir	ng Report	Hole No.: B-3						
Engine: Alison McCaliffie Project No.: 2018-0108 Northing: Start Date: 11-22-19 Rode No.: Easting: Final Date: 11-22-19 Bridge No.: Sartige: Final Date: 11-22-19 Bridge No.: Sartige: Sartige: Final Date: 11-22-19 Bridge No.: Sartige: Sartige: Final Date: 11-22-19 Bridge No.: Sartige: Sartige: Sartige: Sartige: Final Date: 11-22-19 Bridge No.: Sartige: Sarti: Sarti: Sartige: </td <td>Inspect</td> <td>or: T</td> <td>Та</td> <td></td> <td></td> <td></td> <td>Town:</td> <td></td> <td>Meric</td> <td>len</td> <td></td> <td>Stat./Offset:</td> <td></td> <td>-</td>	Inspect	or: T	Та				Town:		Meric	len		Stat./Offset:		-				
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Finish Date: 11-22-19 Bridge No: Surface Elevation: 136 75 Project Description: Town of Meridden TOD Signal Upgrades Core Barrel Type: Imammer Wt: Fail: One Core Barrel Type: Imammer Wt: Fail: One Core Barrel Type: Imammer Wt: Fail: One Imammer Wt: Fail: Imammer Wt: <td< td=""><td>Start D</td><td>ate: 1[·]</td><td>1-22-1</td><td>19</td><td></td><td></td><td>Route N</td><td>lo.:</td><td></td><td></td><td></td><td>Easting:</td><td></td><td></td></td<>	Start D	ate: 1 [·]	1-22-1	19			Route N	lo.:				Easting:						
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Casing Size(Type: 3.25" HSA Sampler Type/Size: 1-3/8 inch ID Core Barrel Type: Hammer Wt: Falt in. Hammer Wt: 140 Falt: 30in. Groundwater Observations: Gg Stammer Wt: SAMPLES Sampler Type: Groundwater Observations: Gg Stampler Sampler Type: Sampler Type: Sampler Type: Groundwater Observations: Gg Stampler Sampler Type: Sampler Type: Sampler Type: Gase Sampler Type: Sampler Type: Sampler Type: Gase Concrete IA S-1 11 21 19 4 24 12 Gase	Project	Descript	on: T	own	of M	eride	en TOD	Signa	al Upg	grades								
Hammer WIL: Fall: IO. Hammer WIL: Fall: SOIN. Hammer WIL:	Casing	Size/Typ	e: 3.2	25" H	SA		Sample	r Type	/Size:	1-3/8 inch ID		Core Barrel Type:						
Groundwater Observations: @8.0 A TD SAMPLES Seampler gen 6 Sampler gen 6 Seampler gen 7 Concrete gen 7 Concrete (4") Grav of SAND, little of gravel, trace sit, Grav of SAND, little of gravel, trace sit, Grav of SAND, little of gravel, little sit, with brick Tist Brown of SAND, little of gravel, little sit, with brick Tist Brown of SAND, little of gravel, little sit, with brick Tist Brown of SAND, little of gravel, little sit, with brick Tist Brown of SAND, little of gravel, little sit, Brown SILT, trace f-sand Tist Brown SILT, trace f-sand 10 -	Hamme	er Wt.:		Fall:	in.		Hamme	er Wt.:	140	Fall: 30in.								
SAMPLES SAMPLES Material Description and Notes Material Description and Notes Material Description and Notes Image: Construct of the construction of the const	Ground	water Ob	servat	tions:	@8	.0 A	ATD .											
Exampler best best best best best best best best				Ś	SAMF	PLES	S						l (f)	Ì				
End E	(ft)	a Ö		Blow	vs on			- -		alize	Ма	terial Description) uo	;				
B b per 6 inches B B Concrete Conc Conc	oth	nple e/N		San	npler			i.		ata scrij	-	and Notes	vati					
0 Concrete Co	Dep	Sar Typ	р	er 6	inche	es	Per	Rec	R A	Ger Stra Des			Ele	i				
S-1 11 21 19 4 24 12 Base Carve C1 SAND, little c1 gravel, little silt, with brown c1 SAND, little c1 gravel, little silt, with brown c1 SAND, little c1 gravel, little silt 135 S-2 16 21 22 39 24 10 Base Grave C1 SAND, little c1 gravel, little silt, with concrete and bricks 136 S-3 9 6 8 11 24 18 Brown c1 SAND, little c1 gravel, little silt 130 S-4 14 16 15 16 24 18 Glaciofluvial Brown c1 SAND, little c1 gravel, little silt 130 10 S-5 10 12 9 13 24 16 Brown SILT, trace f-sand 120 20 S-7 6 9 10 11 24 22 Brown SILT, trace f-sand 120 20 S-7 6 9 10 11 24 22 Brown SILT, trace f-sand 120 20 S-7 6 9 10 11 24 22 Brown SILT, trace f-sand 115 25 S-8	0-									Concroto								
S-1 11 21 19 4 24 12 Fill Gravel Base (8') Fill Gravel Base (8') Brown Cf SAND, little c-f gravel, little silt, with brick.	_									Base	Gray c-f SAND, s	some c-f gravel, trace	silt,					
S-2 16 21 22 39 24 10 brick Brown c-f SAND, little c-f gravel, little sit, with concrete and bricks S-3 9 6 8 11 24 18 Glaciofluvial Brown c-f SAND, little c-f gravel, little sit, with concrete and bricks S-4 14 16 15 16 24 18 Glaciofluvial Brown c-f SAND, little c-f gravel, little sit 130 S-5 10 12 9 13 24 16 Brown c-f SAND, little m-f gravel, little sit 130 S-5 10 12 9 13 24 16 Brown SILT, trace f-sand 125 S-6 4 4 5 9 24 20 Brown SILT, trace f-sand 120 S-7 6 9 10 11 24 22 Brown SILT, trace f-sand 115 S-8 6 8 9 13 24 22 Brown SILT, trace f-sand 115 S-5 5-8 6 8 9 13 24 22 Brown SILT, trace f-sand 115	_	S-1	11	21	19	4	24	12		Fill	Gravel Base (8") Brown c-f SAND	little c-f gravel, little	silt, with	5				
S-2 16 21 22 39 24 10 concrete and bricks Brown c-f SAND, little c-f gravel, little silt S-3 9 6 8 11 24 18 Glaciofluvial Brown c-f SAND, little c-f gravel, little silt 130 S-4 14 16 15 16 24 18 Glaciofluvial Brown c-f SAND, little c-f gravel, little silt 130 S-5 10 12 9 13 24 16 Brown SILT, trace f-sand 125 S-6 4 4 5 9 24 20 Brown SILT, trace f-sand 120 20 S-7 6 9 10 11 24 22 Brown SILT, trace f-sand 115 S-7 6 9 10 11 24 22 Brown SILT, trace f-sand 115 S-7 6 9 13 24 22 Brown SILT, trace f-sand 115 S-8 6 8 9 13 24 22 Brown SILT, trace f-sand 115 S-7 6 9	_										brick							
5	_	S-2	16	21	22	39	24	10			concrete and brid	, indie c-i gravei, indie cks						
S-3 9 6 8 11 24 18 S-4 14 16 15 16 24 18 Io S-5 10 12 9 13 24 16 Io S-5 10 12 9 13 24 16 Io S-6 4 4 5 9 24 20 S-6 4 4 5 9 24 20 S-7 6 9 10 11 24 22 22 Brown SILT, trace f-sand 115 S-7 6 9 10 11 24 22 22 Brown SILT, trace f-sand 115 S-8 6 8 9 13 24 22 END OF BORING 25ft 110 Sample Type: S = Split Spoon C = Core UP = Undisturbed Piston V = Vane Shear Test 110 Sample Type: S = Split Spoon C = Core UP = Undisturbed Piston V = Vane Shear Test 110 Soli Samples 8 Core Runs;	5 Brown c-f SAND, little c-f gravel, little silt																	
S-4 14 16 15 16 24 18 Image: Second Secon	_	S-3	9	6	8	11	24	18			Brown c-f SAND	, little c-f gravel, little	silt _					
S-4 14 16 15 16 24 18 Brown c-f SAND, little m-f gravel, little silt 10 S-5 10 12 9 13 24 16 Brown SILT, trace f-sand -125 15 S-6 4 4 5 9 24 20 Brown SILT, trace f-sand -125 20 S-7 6 9 10 11 24 22 Brown SILT, trace f-sand -120 20 S-7 6 9 10 11 24 22 Brown SILT, trace f-sand -115 20 S-7 6 9 10 11 24 22 Brown SILT, trace f-sand -115 25 S-8 6 8 9 13 24 22 Brown SILT, trace f-sand -115 25 Sample Type: S = Split Spoon C = Core UP = Undisturbed Piston V = Vane Shear Test Proportions Used: Trace f - 1 of 0, Some = 20 - 35%, And = 35 - 50% -110 Stange: No of Sulf Sample: No of Sulf Sample: Sheet 1 of 1 -10 f 1 Sulf Sample: 8 Core Runs: <td>_</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>Glaciofluvial</td> <td>Brown c-f SAND</td> <td>, little m-f gravel, little</td> <td>silt -130</td> <td>0</td>	_									Glaciofluvial	Brown c-f SAND	, little m-f gravel, little	silt -130	0				
10 S-5 10 12 9 13 24 16 Brown SILT, trace f-sand -125 15 S-6 4 4 5 9 24 20 Brown SILT, trace f-sand -125 20 S-6 4 4 5 9 24 20 Brown SILT, trace f-sand -125 20 S-7 6 9 10 11 24 22 Brown SILT, trace f-sand -120 20 S-7 6 9 10 11 24 22 Brown SILT, trace f-sand -115 25 Sample Type: S = Split Spoon C = Core UP = Undisturbed Piston V = Vane Shear Test -110 25 Sample Type: S = Split Spoon C = Core UP = Undisturbed Piston V = Vane Shear Test -110 26 Sample Type: S = Split Spoon C = Core UP = Undisturbed Piston V = Vane Shear Test -110 26 No. of No. of No. of Sheet 1 of 1 -1 of 1 26 No. of No. of Sheet 1 of 1	_	S-4	14	16	15	16	24	18			Brown c-f SAND	, little m-f gravel, little	silt _					
10 - S-5 10 12 9 13 24 16 Brown SILT, trace f-sand - 125 15 S-6 4 4 5 9 24 20 Brown SILT, trace f-sand - 120 20 S-7 6 9 10 11 24 22 Brown SILT, trace f-sand - 120 20 S-7 6 9 10 11 24 22 Brown SILT, trace f-sand - 115 25 S-8 6 8 9 13 24 22 Brown SILT, trace f-sand - 115 25 S-8 6 8 9 13 24 22 Brown SILT, trace f-sand - - 115 25 Sample Type: S = Split Spoon C = Core UP = Undisturbed Piston V = Vane Shear Test - 110 No test No test No test Sheet 1 of 1 1 1 of 1 Soli Sample: 8 Core Runs: No test Sheet 1 of 1 1 <td>_</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td colspan="12">24 18 Brown c-f SAND, little m-f gravel, little silt Lacustrine Brown SILT, trace f-sand</td>	_						24 18 Brown c-f SAND, little m-f gravel, little silt Lacustrine Brown SILT, trace f-sand											
- S-5 10 12 9 13 24 16 Brown SILT, trace f-sand -125 15 S-6 4 4 5 9 24 20 Brown SILT, trace f-sand -120 20 S-7 6 9 10 11 24 22 Brown SILT, trace f-sand -120 20 S-7 6 9 10 11 24 22 Brown SILT, trace f-sand -115 25 S-8 6 8 9 13 24 22 Brown SILT, trace f-sand -115 25 S-8 6 8 9 13 24 22 Brown SILT, trace f-sand -115 25 S-8 6 8 9 13 24 22 Brown SILT, trace f-sand -110 Sample Type: S = Split Spoon C = Core UP = Undisturbed Piston V = Vane Shear Test Proportions Used: Trace = 1 - 10%, Little = 10 - 20%, Some = 20 - 35%, And = 35 - 50% Sheet 1 of 1 No. of No. of No. of No. of Sheet 1 of 1 Soil Sampl	10-												-					
15 - S-6 4 4 5 9 24 20 Brown SILT, trace f-sand - 120 20 - S-7 6 9 10 11 24 22 Brown SILT, trace f-sand - 120 20 - S-7 6 9 10 11 24 22 Brown SILT, trace f-sand - 115 25 - - S-8 6 8 9 13 24 22 Brown SILT, trace f-sand - - - - - - - - - 115 - <	_	S-5	10	12	9	13	24	16			Brown SILT, trac	e f-sand	-					
15 - S-6 4 4 5 9 24 20 Brown SILT, trace f-sand - 120 20 - S-7 6 9 10 11 24 22 Brown SILT, trace f-sand - 115 20 - S-7 6 9 10 11 24 22 Brown SILT, trace f-sand - 115 25 - - S-8 6 8 9 13 24 22 Brown SILT, trace f-sand - <td< td=""><td>_</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>,</td><td></td><td>- 125</td><td>5</td></td<>	_										,		- 125	5				
15 -	_												-					
15 -	_												-					
S-6 4 4 5 9 24 20 Brown SILT, trace f-sand -120 20 S-7 6 9 10 11 24 22 Brown SILT, trace f-sand -115 25 S-8 6 8 9 13 24 22 Brown SILT, trace f-sand -115 25 S-8 6 8 9 13 24 22 Brown SILT, trace f-sand -110 Sample Type: S = Split Spoon C = Core UP = Undisturbed Piston V = Vane Shear Test -110 Total Penetration in Earth: 25ft Rock: ft NO. of Sheet 1 of 1 No. of No. of No. of Sheet 1 of 1 1 of 1 Soil Samples: 8 Core Runs: SM001-M REV 1/02 SM001-M REV 1/02 SM001-M REV 1/02	15-												-					
- -	_	S-6	4	4	5	9	24	20			Brown SILT, trac	e f-sand	-					
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	_												- 120	0				
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	_												-					
20 - S-7 6 9 10 11 24 22 Brown SILT, trace f-sand - - 115 - S-8 6 8 9 13 24 22 Brown SILT, trace f-sand - 115 - S-8 6 8 9 13 24 22 Brown SILT, trace f-sand - - 115 25 - - Sample Type: S = Split Spoon C = Core UP = Undisturbed Piston V = Vane Shear Test Proportions Used: Trace = 1 - 10%, Little = 10 - 20%, Some = 20 - 35%, And = 35 - 50% - 110 Total Penetration in Earth: 25ft No. of Soil Samples: 8 Core Runs: SM-001-M REV 1/02 Soil Samples: 8 Core Runs: SM-001-M REV 1/02 SM-001-M REV 1/02	_												-					
- S-7 6 9 10 11 24 22 Brown SILT, trace f-sand - - 115 - S-8 6 8 9 13 24 22 Brown SILT, trace f-sand - - 115 - S-8 6 8 9 13 24 22 Brown SILT, trace f-sand - - - - 115 - Sample Type: S = Split Spoon C = Core UP = Undisturbed Piston V = Vane Shear Test - - - - - - - 10 - - 10 - - 10 - - 10 - - 10 - - 10 - - 10 - - 10 - 10 - - 10 - 10 - 10 - 10 - 10 10 1 10 1 10 1 10 1 10 1 - 10 - 5 - 5 - 5 -	20-												-					
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	_	S-7	6	9	10	11	24	22			Brown SILT, trac	e f-sand	-					
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	_										,		- 115	5				
- S-8 6 8 9 13 24 22 Brown SILT, trace f-sand - 25 - - Image: Second sec	_												-					
25 END OF BORING 25ft Sample Type: S = Split Spoon C = Core UP = Undisturbed Piston V = Vane Shear Test Proportions Used: Total Penetration in NOTES: Earth: 25ft No. of No. of Soil Samples: 8 Core Core Soil Samples: 8 Core Core Soil Samples: 8 Core Core Soil Samples: 8	_	S-8	6	8	9	13	24	22			Brown SII T, trac	e f-sand	-					
Image: Second state of the second s	25—										,							
	_										END OF BORIN	G 25ft	-					
Sample Type: S = Split Spoon C = Core UP = Undisturbed Piston V = Vane Shear Test Proportions Used: Trace = 1 - 10%, Little = 10 - 20%, Some = 20 - 35%, And = 35 - 50% Total Penetration in NOTES: Sheet Earth: 25ft Rock: ft 1 of 1 No. of No. of Soil Samples: 8 Core Runs:														0				
Proportions Used: Trace = 1 - 10%, Little = 10 - 20%, Some = 20 - 35%, And = 35 - 50% Total Penetration in NOTES: Sheet Earth: 25ft Rock: ft 1 of 1 No. of No. of Sol Samples: 8 Core Runs: SM-001-M REV 1/02			Samp	le Ty	vpe:	S = 3	Split Sp	boon	C = 0	Core UP = Un	disturbed Piston	V = Vane Shear	Test					
Total Penetration in NOTES: Sheet Earth: 25ft Rock: ft 1 of 1 No. of No. of Soil Samples: 8 Core Runs:		F	Propo	rtions	s Use	d: 1	Frace =	1 - 10	0%,	Little = 10 - 20	%, Some = 20 -	- 35%, And = 35 -	50%					
Earth: 25ft Rock: ft No. of No. of Soil Samples: 8 Core Runs:	Total P	enetratio	n in				NO	TES:					Sheet					
No. of No. of SM-001-M REV 1/02	Earth: 2	25ft	Rock	: ft														
	No. of Soil Sa	mples: 8	No Co	o. of ore R	uns: -								SM-001-M REV. 1/0	/02				

Driller:	А	. Mcke	erna			C	onne	cticu	it DOT Borin	ng Report	Hole No.: B-4		
Inspect	or: T	. Ta				Town:		Meric	len		Stat./Offset:		
Engine	er: A	llison	McCa	auliffe	e	Project	No.:	2018	-0108		Northing:		
Start D	ate: 1	1-19-1	9			Route N	lo.:				Easting:		
Finish [Date: 1	1-19-1	9			Bridge I	No.:				Surface Elevation: 1	33.5	
Project	Descript	ion: T	own	of Me	eride	n TOD	Signa	al Upg	grades				
Casing	Size/Typ	e: 3.2	5" HS	SA	:	Sample	r Type	/Size:	1-3/8 inch ID		Core Barrel Type:		
Hamme	er Wt.:		Fall:	in.		Hamme	er Wt.:	140	Fall: 30in.				
Ground	water Ot	oservat	ions:	@7	.0 A	TD							
			5	SAMF	PLES	; 	1	1	р _й с				(£
(ff	a <u>o</u>		Blow	is on		- i	- L	\ 0	alize	Ма	terial Description		uo
oth	nplo e/N		Sam	pler			i i i i i i i i i i i i i i i i i i i		nera ata scrij		and Notes		vati
Del	Sai Typ	р	er 6 i	inche	s	Pel	Re	R R	Str De				Шe
0-									Asphalt	Asphalt (3")			1
-	0.4	10	-	0	0				Fill		.		
-	S-1	10	5	2	2	24	8			Gray c-f SAND, s	some m-f gravel, little	silt	
-	0.0		•	•	•								
-	S-2	2	2	2	2	24	8			Gray c-f SAND, s	some m-f gravel, little	silt	-130
5-										Grav to brown c-	f SAND some m-f gr	avel little	
-	S-3	4	4	4	6	24	4			silt	. e		
-									Lacustrine	Brown f SAND, a	and silt		-
_	S-4	7	8	6	9	24	16	and silt, 3" layer of c-f	sand with	-			
-								-125					
10-													-
-	S-5	6	5	3	5	24	22			Brown SILT, trac	e f-sand		-
-													-
-													-
-													- 120
15—													
-	S-6	4	2	2	5	24	22			Brown SILT, trac	e f-sand		Γ
-													
_													-
_													-115
20-													-
-	S-7	5	9	10	9	24	22			Brown SILT. trac	e f-sand		-
-										,			-
_													-
	S-8	9	11	13	14	24	22			Brown SILT, trac	e f-sand, trace f-grave	el towards	-110
25—										upper portion of s	sample		-
										END OF BORIN	G 25ft		-
_													<u>}</u>
		Samp	le Ty	pe:	S = S	Split Sp	boon	C = 0	Core UP = Ur	disturbed Piston	V = Vane Shear 7	Fest	
	F	Propor	tions	Use	d: T	race =	1 - 1()% ,	Little = 10 - 20	%, Some = 20 -	- 35%, And = 35 - 4	50%	
Total P	enetratio	n in				NOT	FES:					Shee	et
Earth:	25ft	Rock:	ft									TOT	I
No. of Soil Sa	mples [.] 8	No Co	o. of ore Ri	uns: -								SM-001-M P	FV 1/02
_ <u> </u>		5										1 0 00 i will	

Driller:	А	. Mcke	erna			C	onne	cticu	it DOT Borir	ng Report	Hole No.: B-5	
Inspect	or: T	. Ta				Town:		Merid	len		Stat./Offset:	
Engine	er: A	llison	McCa	auliffe	e	Project	No.:	2018	-0108		Northing:	
Start D	ate: 1	1-20-1	9			Route N	lo.:				Easting:	
Finish [Date: 1	1-20-1	9			Bridge I	No.:				Surface Elevation: 2	30.0
Project	Descript	ion: T	own	of M	eride	en TOD	Signa	al Upg	jrades			
Casing	Size/Typ	e: 3.2	5" H	SA		Sample	r Type	/Size:	1-3/8 inch ID		Core Barrel Type:	
Hamme	er Wt.:		Fall:	in.		Hamme	er Wt.:	140	Fall: 30in.			
Ground	water Ot	oservat	ions:	@6	AT	D			1			
Depth (ft)	Sample Type/No.	р	Blow Sam er 6 i	SAME s on pler inche	s s	Pen. (in.)	Rec. (in.)	RQD %	Generalized Strata Description	Ma	terial Description and Notes	Elevation (ft)
0-									Asphalt Base	Asphalt (3") Gravel Base (6")		- 130
-	S-1	5	4	6	6	24	8		Fill	Auger kept walki patch, had to bre Brown c-f SAND,	ng lifting up the paver ak asphalt and drill do , some m-f gravel, littl	e silt
5-	S-2	6	8	6	7	24	1			Brown c-f SAND gravel lodged at Brown c-f SAND	, some m-f gravel, littl tip little m-f gravel, little	e silt, – 125
_	S-3	8	, little silt	_								
-	S-4	6	8	8	8	24	-					
	S-5	3	2	2	3	24	22			Brown f SAND, a	and silt	- 120 - -
	S-6	4	6	8	8	24	22			Brown SILT		- - - 115 - - -
20	S-7	6	6	6	8	24	22			Brown SILT		- 110 -
- S-8 6 8 8 8 24 22 Brown SILT												
-		0.5.5			0						G 25ft	
	F	Samp Propor	tions	pe: Use	s=: d: 1	Split Sp Frace =	1 - 100	0 = ()%, I	Little = $10 - 20^{\circ}$	%, Some = 20 -	v = vane Snear - 35%, And = 35 - 35%	50%
Total P	enetratio	n in				NO	TES:					Sheet
Earth:	25ft	Rock:	ft									1 of 1
No. of	mnlee. Ø	No	D. Of	une.								SM-001-M REV 1/02
	inpies. 0			uns								

Driller:	Μ	I. St. J	lohn			C	onne	cticu	It DOT Bori	ng Report	Hole No.: B-6	
Inspect	or: T	. Ta				Town:		Meric	len		Stat./Offset:	
Engine	er: A	llison	McCa	auliffe	e	Project	No.:	2018	-0108		Northing:	
Start D	ate: 1	1-25-1	9			Route N	lo.:				Easting:	
Finish [Date: 1	1-25-1	9			Bridge I	No.:				Surface Elevation: 1	28.25
Project	Descript	ion: T	own	of M	eride	en TOD	Signa	al Upg	jrades			
Casing	Size/Typ	e: 3.2	25" H	SA		Sample	r Type	/Size:	1-3/8 inch ID		Core Barrel Type:	
Hamme	er Wt.:		Fall:	in.		Hamme	er Wt.:	140	Fall: 30in.			
Ground	water Ob	oservat	tions:	@1	2.0	ATD			1			
			5	SAMF	PLES	\$						(tt)
(ft)	a Ç.		Blow	vs on			- L	.0	alize	Ma	terial Description	ion
pth	npl Ne(San	npler			. (j		ner ata scri		and Notes	vati
Del	Sai Typ	p	er 6	inche	es	Pel	Re	R Q	Derge			E
0-									Concrete	Concrete (8")		
_									Base	Gray c-f SAND, s	some c-f gravel, little s	silt, (gravel
_	S-1	4	5	13	10	24	10		Fill	1 base 8") Brown c-f SAND	. little c-f gravel. little s	silt
_											, J ,	-125
_	S-2	6	7	7	14	24				Brown c-f SAND	, little c-f gravel, little s	silt
5-										Brown c-f SAND	some silt	
_	S-3	3	27	33	16	24	14					
_									Orregia	Brown c-f SAND	, some c-f gravel, little	e silt
_	S-4	3	2	3	17	24	14		Organics	Dark brown black	k SILT, with organic fi	bers
_				-					Glaciofluvial	Brown c-f SAND	, little m-f gravel, little	silt
10-												
	S-5	15	18	12	14	24	8				somo o faravol, son	
_	00		10	12	14					BIOWIT C-I SAND	, some c-i glavel, som	
_												
_												- 115
15												
10	5.6	21	25	22	27	24						. –
	3-0	21	25	33	21	24	4			Brown c-t SAND	, little i gravel, little sil	
_												-
_												-110
												-
20-												-
_	S-7	14	15	30	28	24	24			Brown c-f SAND	, little f gravel, trace s	ilt –
_												-
_												- 105
-	S-8	23	24	28	27	24	24			Brown c-f SAND	, little f gravel, trace s	ilt –
25—												
_										END OF BORIN	G 25ft	-
-		S om=			e - 1			c - c		diaturbad Diatar		
	Г	oainp ⊃ronoi	ne Ty	he: Pe:	s=∶ d∙⊓	opiil Sf Frace -	1 _ 1	ບ=(1% '		IUISIUIDEU PISION	v = vane Snear	50%
Total D	onotrotic			, 030	u. I			<i>,</i> 70, 1	Little - 10 - 20	- /0, GOINE - 20 -	- 5570, Anu - 55-3	Shoot
	chelialio Seff		. ft				153					1 of 1
Earth: 2	201[_						
Soil Sa	mples: 8	C	ore R	uns: -								SM-001-M REV. 1/02

Inspector: T. Ta Town: Meriden Stat/Offset: Engineer: Allison McCauliffe Project No:: 2018-0108 Northing: Stan Date: 11-25-19 Bridge No:: Satisfie: Satisfie: Finish Date: 11-25-19 Bridge No:: Satisfie: Surface Elevation: 130.5 Project Description: Town of Meriden TOD Signal Upgrades Core Barrel Type: Casing Size/Type: 3.25" HSA Sampler Type/Size: 1-3/8 inch ID Core Barrel Type: Groundwater Observations: @14.0 ATD Topsoil Topsoil Topsoil (3') Fill Sampler Sampler Type: Topsoil Topsoil (3') Topsoil (3') S-1 3 3 10 12 24 14 Topsoil S-3 7 8 12 16 Topsoil Topsoil Topsoil (3') S-4 14 14 30 24 16 Giaciofluvial Brown of SAND, little of gravel, little silt Brown of SAND, ittle of Gravel, itace silt Giacial Till Giacial Till Red brown of SAND, some silt, little m-f gravel <	Driller:	M. St.	Johr	ı			Со	nne	cticu	it DOT Borir	ng Report	Hole No.: B-7		
Engine: Allison McCauliffe Project No.: 2018-0108 Northing: Start Date: 11-25-19 Bridge No:: Start Date: Easting: Project Description: Town of Meriden TOD Signal Upgrades Start Date: 11-25-19 Bridge No:: Start Date: Upgrades Casing SizeType: 3.25* HSA Sampler Type/Size: 1-3/8 inch ID Core Barrel Type: Hammer WL: Fail: Solution: Gore Barrel Type: Groundwater Observations: @14.0 ATD Fail: Solution: Bridge Barrel Type: Hammer WL: Fail: Solution: Fail:: Solution: Fail::	Inspector:	T. Ta				Towr	n:		Meric	len		Stat./Offset:		
Start Date: 11-26-19 Route No.: Easting: Finish Date: 11-26-19 Bridge No.: Surface Elevation: 130.5 Project Description: Town of Merden TOD Signal Upgrades Casing Size/Type: 3.25" HSA Sampler Type/Size: 1-3/8 inch ID Core Barrel Type: Casing Size/Type: 3.25" HSA Sampler Type/Size: 1-3/8 inch ID Core Barrel Type: Core Barrel Type: Groundwater Observations: Cype of Size/Type: 3.25" HSA Sampler Type/Size: 1-3/8 inch ID Core Barrel Type: Groundwater Observations: Cype of Size/Type: Sampler Type: Material Description and Notes Fill Groundwater Observations: Cype of Size/Type: Biows on Sampler per 6 inches Cype of Size/Type: Topsoil Topsoil Glaciofluvial Topsoil Topsoil Topsoil Brown of SAND, little of gravel, little silt. 130 S-5 10 6 7 24 18 Glaciofluvial Brown of SAND, little of gravel, little silt. 125 S-4 14 14 30 24 16 Glaciofluvial Red brown of SAND, some silt, little m-f gravel	Engineer:	Allisor	n Mc	Caulif	fe	Proje	ect N	lo.:	2018 [.]	-0108		Northing:		
Finish Date: 11-25-19 Bridge No.: Surface Elevation: 130.5 Project Description: Town of Meriden TOD Signal Upgrades Core Barrel Type: Core Barrel Type: Hammer WL: Fall: in. Hammer WL: 140 Fall: 30in. Core Barrel Type: Groundwater Observations: ©14.0 ATD SAMPLES Material Description and Notes 0 Image Structure Sampler Type: Ginches © © © © 0 </td <td>Start Date:</td> <td>11-25</td> <td>-19</td> <td></td> <td></td> <td>Rout</td> <td>e No</td> <td>D.:</td> <td></td> <td></td> <td></td> <td>Easting:</td> <td></td> <td></td>	Start Date:	11-25	-19			Rout	e No	D.:				Easting:		
Project Description: Town of Meriden TOD Signal Upgrades Casing Size/Type: 3.25" HSA Sampler Type/Size: 1-3/8 inch ID Core Barrel Type: Groundwater Observations: @14.0 ATD Sampler Type: Sampler Type/Size: Sampler Type/Size: Tail: 30in. Groundwater Observations: @14.0 ATD Sampler Type: Sampler Type/Size: Sampler Type/Size: Tail: 30in. Groundwater Observations: @14.0 ATD Sampler Type: Sampler Type/Size: Topsoil Material Description and Notes Image: Topsoil (3") Size: 10 6 7 24 18 Topsoil (3") Topsoil (3") Size: 10 6 7 24 18 Topsoil (3") Topsoil (3") Size: 10 6 7 24 18 Topsoil (3") Topsoil (3") Topsoil (3") Size: 10 10 17 18 24 20 Topsoil (3") Topsoil (3") Size: Size: 10 10 17	Finish Date:	11-25	-19			Bridg	ge N	0.:				Surface Elevation: 1	130.5	
Casing Size/Type: 3.25" HSA Sampler Type/Size: 1-3/8 Inch ID Core Barrel Type: Hammer Wt: Fall: in. Hammer Wt: 140 Fall: 30in. Core Barrel Type: Groundwater Observations: SAMPLES Material Description and Notes Image: Sampler Type/Size: 1-3/8 Inches Material Description and Notes Image: Sampler Type/Size: 1-3/8 Inches Image: Sampler Type/Size: 1-	Project Desc	cription:	Tow	n of N	/lerid	en TC	DD 8	Signa	al Upg	jrades		-		
Hammer Wt:: Fall: in. Hammer Wt:: 140 Fall: 30in. Groundwater Observations: @ 14.0 ATD SAMPLES Material Description and Notes Material Description and Notes Image: Comparison of the second	Casing Size	Type: 3	.25" I	HSA		Sam	pler	Туре	/Size:	1-3/8 inch ID		Core Barrel Type:		
Groundwater Observations: @14.0 ATD SAMPLES Blows on Server, Server, Se	Hammer Wt	.:	Fa	II: in.		Ham	mer	Wt.:	140	Fall: 30in.				
SAMPLES Sampler Blows on Sampler E <the<< td=""><td>Groundwate</td><td>r Observ</td><td>ation</td><td>s: @</td><td>14.0</td><td>ATC</td><td>)</td><td></td><td></td><td>1 1</td><td></td><td></td><td></td><td></td></the<<>	Groundwate	r Observ	ation	s: @	14.0	ATC)			1 1				
Lip Blows on Sampler per 6 inches Blows on Sampler per 6 inches Ei State in the set set set set set set set set set se				SAM	IPLE	S				pe c				(Ħ
E Sampler per 6 inches E Sampler Signation E Signation Signa	E o	<u>o</u>	Blo	o swa	n		<u> </u>	L	、 0	alize	Ма	terial Description		uo
B B Per 6 inches B D C <thc< th=""> C <thc< th=""> C <thc< th=""> <thc< th=""> C C<</thc<></thc<></thc<></thc<>	npi npi)e/D	Sa	mple	r		-	i) j		nera ata scrij		and Notes		vati
0 S-1 3 3 10 12 24 14 Topsoil Topsoil (3") Brown c-f SAND, little f gravel, little silt Brown c-f SAND, little f gravel, trace silt 130 5 -	Sar Del	<u>×</u>	per 6	3 inch	es		5 1	Re	R R	De: De:				Ele
- S-1 3 3 10 12 24 14 14 14 14 14 14 18 10 6 6 7 24 18 10 18 10 6 6 7 24 18 18 10 10 6 6 7 24 18 18 10 10 12 24 18 14 14 14 30 24 16 10 10 17 18 24 16 10 10 17 18 24 18 14 14 30 24 16 10 10 17 18 24 18 10 10 17 18 24 18 14 14 30 24 18 14 14 30 24 18 16 120 140 140 140 120 </td <td>0</td> <td></td> <td></td> <td></td> <td></td> <td>_</td> <td></td> <td></td> <td></td> <td>Topsoil</td> <td>Topooil (2")</td> <td></td> <td></td> <td></td>	0					_				Topsoil	Topooil (2")			
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- S-2 10 6 6 7 24 18 adjuint for a set of the s											Brown c-f SAND,	, little c-f gravel, little s	silt, with	-
5 -	- S-	2 10) 6	6	7	2	24	18			Brown c-f SAND,	, little c-f gravel, little s	silt	-
5 - S-3 7 8 12 16 24 20 125 - S-4 14 14 14 30 24 16 Red brown c-f SAND, little f gravel, trace silt 125 10 - S-5 10 10 17 18 24 18 Glacial Till Red brown c-f SAND, some silt, little m-f gravel 120 15 S-6 22 31 36 32 24 12 Red brown c-f SAND, some silt, little m-f gravel 115 20 S-7 100/3" 3 2 12 Red brown c-f SAND, some silt, little m-f gravel 110 20 S-7 100/3" 3 2 12 Red brown c-f SAND, some silt, little m-f gravel 110 20 S-7 100/3" 3 2 110 END OF BORING 20.3ft 110										Glaciofluvial	Brown c-f SAND,	, little f gravel, trace si	ilt	_
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S-4 14 14 14 14 14 14 14 14 14 14 30 24 16 Red brown c-f SAND, some silt, little m-f gravel -120 10 S-5 10 10 17 18 24 18 Red brown c-f SAND, some silt, little m-f gravel -120 15 S-6 22 31 36 32 24 12 Red brown c-f SAND, some silt, little m-f gravel -115 20 S-7 100/3" 3 2 12 Red brown c-f SAND, some silt, little m-f gravel -110 20 S-7 100/3" 3 2 10 10 10 110 20 S-7 100/3" 3 2 10 END OF BORING 20.3ft -110 20 S-7 100/3" S S 2 -110 -110			Ũ			-	.	20						-
10 14 14 14 14 14 14 14 14 14 14 14 15 10 5.5 10 10 17 18 24 18 Image: Constraint of the second sec		1 1/	1 1/	1 1/	30	2		16			Red brown c-f SA	AND, some silt, little n	n-f gravel	-
10 S-5 10 10 17 18 24 18 Red brown c-f SAND, some silt, little m-f gravel -120 15 S-6 22 31 36 32 24 12 Red brown c-f SAND, some silt, little m-f gravel -115 20 S-7 100/3" 3 2 Red brown c-f SAND, some silt, little m-f gravel -110 20 S-7 100/3" 3 2 Red brown c-f SAND, some silt, little m-f gravel -110 20 S-7 100/3" 3 2 Red brown c-f SAND, some silt, little m-f gravel -110 20 S-7 100/3" 3 2 -110 -110 25 I I I I I -115			r 1-	, 1 1	00			10		Glacial Till			-	-
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15 S-6 22 31 36 32 24 12 Red brown c-f SAND, some silt, trace m-f gravel -115 20 S-7 100/3" 3 2 Red brown c-f SAND, some silt, little m-f gravel -110 20 S-7 100/3" 3 2 Red brown c-f SAND, some silt, little m-f gravel -110 25 - - - - - - - 25 - - - - - - - 25 - - - - - - - - 105 - - - - - - - -	- 3-			J 17	18		.4	18			Red brown c-f SA	AND, some silt, little n	n-f gravel	_
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15 S-6 22 31 36 32 24 12 Red brown c-f SAND, some silt, trace m-f gravel -115 20 S-7 100/3" 3 2 Red brown c-f SAND, some silt, little m-f gravel -110 20 S-7 100/3" 3 2 Red brown c-f SAND, some silt, little m-f gravel -110 25 100/3" 3 2 100 -105													-	-
- S-6 22 31 36 32 24 12 20 S-7 100/3" 3 2 Red brown c-f SAND, some silt, trace m-f gravel - 20 S-7 100/3" 3 2 - - 25 - - - - - - 25 - - - - - - 25 - - - - - - - - - - - - - - - - - - - - - - - - <td>15</td> <td></td> <td>-</td> <td>-115</td>	15												-	-115
20 <u>S-7</u> 100/3" 3 2 <u>Red brown c-f SAND, some silt, little m-f gravel</u> 110 END OF BORING 20.3ft	- S-	6 22	2 31	1 36	32	2	24	12			Red brown c-f SA	AND, some silt, trace	m-f gravel	-
20 S-7 100/3" 3 2 Red brown c-f SAND, some silt, little m-f gravel 110 - - - - - - - 25 - - - - -													-	_
20 S-7 100/3" 3 2 Red brown c-f SAND, some silt, little m-f gravel 110 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -														_
20 S-7 100/3" 3 2 Red brown c-f SAND, some silt, little m-f gravel 110 - - - - - - - - 110 - - - - - - - - - 110 - <td></td> <td>_</td>														_
END OF BORING 20.3ft	20 S-	7 100	/3''			3	3	2			Red brown c-f SA	AND, some silt, little n	n-f gravel	-110
END OF BORING 20.3ft														_
											END OF BORIN	G 20.3ft		_
	_													
25-	_													
$\vdash 105$	25-												l l	405
													F	-105
														-
Sample Type: S = Split Spoon C = Core UP = Undisturbed Piston V = Vane Shear Test		Sam	ple 7	уре:	S =	Split	Spo	oon	C = 0	Core UP = Un	disturbed Piston	V = Vane Shear T	Fest	
Proportions Used: Trace = 1 - 10%, Little = 10 - 20%, Some = 20 - 35%, And = 35 - 50%		Prop	ortio	ns Us	ed:	Trace	e = '	1 - 10)%, I	Little = 10 - 20	%, Some = 20 -	35%, And = 35 - 8	50%	
Total Penetration in NOTES: Sheet	Total Penetr	ation in				N	IOT	ES:					Sheet	
Earth: 20.3ft Rock: ft	Earth: 20.31	t Roc	k: ft											I
No. of No. of SM-001-M REV 1/02	No. of Soil Sample	s: 7	No. o Core	f Runs:									SM-001-M RF	V. 1/02

Driller:	А	. Mcke	erna			Co	onne	cticu	it DOT Borir	ng Report	Hole No.: B-8		
Inspect	or: T	. Ta			-	Town:		Meric	len		Stat./Offset:		
Engine	er: A	llison	McCa	auliffe	e I	Project	No.:	2018	-0108		Northing:		
Start D	ate: 1	1-20-1	9			Route N	lo.:				Easting:		
Finish [Date: 1	1-20-1	9		I	Bridge I	No.:				Surface Elevation: 2	134.5	
Project	Descript	ion: T	own	of M	eride	n TOD	Signa	al Upg	grades				
Casing	Size/Typ	e: 3.2	5" HS	SA	:	Sample	r Type	/Size:	1-3/8 inch ID		Core Barrel Type:		
Hamme	er Wt.:		Fall:	in.	I	Hamme	er Wt.:	140	Fall: 30in.				
Ground	water Ob	oservat	ions:	@9	.0 A	TD			1				
			5	SAMF	PLES				p c				ŧ
(ft)	e .		Blow	/s on		- L	Ĺ	.0	alize	Ма	terial Description		No
pth	mpl De/N		Sam	pler		i).	c. (j	â	ner ata scri		and Notes	1	vat
Del	Sai Typ	р	er 6 i	inche	es	Pel	Re	R D	Derte			L	Шe
0-									Concrete	Concrete (4")			
-	0.4	4-		-	-		10		Base	Gravel Base (6")			
_	S-1	15	14	1	5	24	10		Fill	Brown to black c silt. with coal and	-f SAND, little c-f grav I brick	^v el, little	
_		_	_							,		—	
_	S-2	5	7	6	4	24	10			Dark brown c-f S	AND, little silt, with br	ick –	
5-												-1	30
_	S-3	18	13	9	9	24	16		Clasieflundial	Brown c-f SAND	, little m-f gravel, little	silt –	
_									Giacionuviai	Brown c-f SAND	, little silt	—	
- S-4 13 11 9 8 24 16 Brown f SAND, some silt, 1" pockets of s													
_	• •			•	•					trace silt (wet at f	tip of spoon)	-	
10-									Lacustrine			- 1:	25
	S-5	6	7	6	8	24	16			Prown CLAV tra	oo f oond	-	
_	0-0	0	'	0	0					BIOWII CLAT, IIA		_	
												_	
												_	
45												- 1:	20
15-	0.0	0	0	7	40	04	10					_	
	3-0	0	0	1	12	24	10			Brown CLAY, tra	ce f-sand	_	
_												_	
_												_	
												-1	15
20-												_	
_	S-7	14	14	19	15	24	18			Brown CLAY, tra	ce f-sand	_	
_												_	
_												_	
_	S-8	14	14	14	13	24	20			Brown CLAY, tra	ce f-sand	-1	10
25—													
_										END OF BORIN	G 25ft		
_		Some		nc:	e - 6	Solit S-				disturbed Distan	V - Vono Shaar		
	Г	Samp	ie Ty tione	he: Hec	s=t ⊤ ∿	race –	1 _ 1	ບ=(1% '	JUIE UP = UN	iuisiui deu Piston % Some - 20	v = varie Shear	50%	
Total D	onotrotic		10115	030	u. I			<i>,</i> 70,	Little - 10 - 20	70, COME - 20 -	- 0070, And - 00-	Sto /u	
	enetratio		£				15:					1 of 1	
Earth: 2	2011	KOCK:											
Soil Sa	mples: 8	Co	ore R	uns: -								SM-001-M REV.	1/02

Driller:	A	Mcke	erna			Co	onne	cticu	It DOT Bori	ng Report	Hole No.: B-9	
Inspect	or: T.	Та			•	Town:		Meric	len		Stat./Offset:	
Engine	er: A	lison	McCa	auliffe	e I	Project	No.:	2018	-0108		Northing:	
Start D	ate: 1 ⁻	1-20-1	9			Route N	lo.:				Easting:	
Finish [Date: 1	1-20-1	9			Bridge I	No.:				Surface Elevation: 2	24.5
Project	Descripti	on: T	own	of M	eride	n TOD	Signa	al Up <u>c</u>	grades			
Casing	Size/Typ	e: 3.2	5" HS	SA	:	Sample	r Type	/Size:	1-3/8 inch ID		Core Barrel Type:	
Hamme	er Wt.:		Fall:	in.		Hamme	r Wt.:	140	Fall: 30in.			
Ground	water Ob	servat	ions:	@1	0.0	ATD				1		
			S	SAMF	PLES	S						l (j)
(ft)	, Ö		Blow	15 OD		-	-		alize	Ma	terial Description) uo
oth	nple e/N		Sam	pler		i.	i.		ata		and Notes	vati
Dep	Sar Typ	р	er 6 i	nche	es	Per	Rec	RQ	Des Des			е Ш
0-						_			C :11			
-	S-1	5	8	8	7	24	8			Brown to gray c-i silt	f SAND, some m-f gra	vel, little
_	S-2	8	10	15	26	24	12			Brown to gray c-t silt, with brick	f SAND, some c-f gra	vel, little
5-												- 120
_	S-3	21	8	5	3	24	16			Brown to dark br little silt, with bric	own c-f SAND, little c k	-f gravel,
_	S-4	10	8	5	5	24	14			Brown c-f SAND Dark brown f SA	, little c-f gravel, some ND, and silt, with dec	e silt
-										wood		- 115
10-										Brown to dark br	own c-f SAND, some	silt, little
-	S-5	4	2	6	5	24	18		Glaciofluvial	wood		
-										Brown c-f SAND	, some m-f gravel, littl	
-												
-												-110
15—												
-	S-6	8	21	19	31	24	18			Brown c-r SAND	, some c-i gravel, illie	, siit
-									Lacustrine	Brown f SAND, s	some silt	
-												
_												105
20-												- 105
_	S-7	8	10	13	10	24	22			Brown CLAY, tra	ce f-sand	
-												
_												_
_	S-8	7	18	13	15	24	22			Brown CLAY, tra	ce f-sand	
25-												100
_										END OF BORIN	G 25ft	_
_												
		Samp	le Ty	pe:	S = 5	Split Sp	oon	C = 0	Core UP = Ur	ndisturbed Piston	V = Vane Shear	Test
	F	Propor	tions	Use	d: T	race =	1 - 10)%,	Little = 10 - 20	9%, Some = 20 -	- 35%, And = 35 -	50%
Total P	enetratio	n in				NOT	TES:					Sheet
Earth: 2	25ft	Rock:	ft									
No. of	mnles [,] 8	No	ס. of סופ Rי	ins: -								SM-001-M REV/ 1/02
u												

Driller:	А	. Mcke	erna			С	onne	cticu	ıt DOT Boriı	ng Report	Hole No.: B-10		
Inspect	or: T	Та				Town:		Meric	len		Stat./Offset:		
Engine	er: A	llison	McCa	auliff	e	Project	No.:	2018	-0108		Northing:		
Start D	ate: 1 [·]	1-21-1	9			Route I	No.:				Easting:		
Finish I	Date: 1	1-21-1	9			Bridge	No.:				Surface Elevation: 2	119.0	
Project	Descript	ion: T	own	of M	eride	en TOE) Signa	al Upg	grades				
Casing	Size/Typ	e: 3.2	25" H	SA		Sample	er Type	/Size:	1-3/8 inch ID		Core Barrel Type:		
Hamme	er Wt.:		Fall:	in.		Hamme	er Wt.:	140	Fall: 30in.				
Ground	lwater Ob	serva	tions:	@7	.0 /	٩TD							
			5	SAM	PLES	<u> </u>							£
(f)	. o		Dia						lize	Ma	terial Description		i) uc
th (e/N/e		San	vs on noler		(in	. (in	8	era ta crip	IVId	and Notes		atic
Jep	San	р	er 6	inche	es	Pen	Sec	2 Q	Gen Stra Des				lev
	0 F							<u> </u>	000				
										Topsoil (3")	o clear utilities. Auge	red to 5ft to	_
									r	make hole straig	ht.		
_												-	_
Brown to dark brown c-f SAND, little c-f gravel, little silt, (observed from hand dug cuttings)													
5-										Brown c-f SAND	, little c-f gravel, little	silt	_
-	S-1	3	8	18	20	24	18		Glaciofluvial	Brown c-f SAND	little silt	-	_
-												-	_
-	S-2	24	28	25	18	24	18			Brown c-f SAND	, some c-f gravel, little	e silt	_
-												-	-110
10-											little cilt	-	_
-	S-3	6	2	9	17	24	10			BIOWIT C-I SAIND	, indie Sin	-	_
-									Lacustrine	Brown SILT, little	e f sand		_
-													_
_													—105
15													_
-	S-4	6	8	9	11	24	16			Brown CLAY var	ved with silt		_
-													_
_													_
_												,	-100
20-													_
	S-5	4	8	11	13	24	22				wod with ailt		_
	5-5	-	0		15	24				BIOWII CLAT VAI	ved with sit		
_		_	•		40							-	
	S-6	1	6	11	12	24	22			Brown CLAY var	ved with silt	-	-95
25-													_
-										END OF BORIN	G 25ft		_
-		S		(DC)	e –			<u> </u>		diaturbad Diatar	V - Vono Chasa		_
	Sample Type: S = Split Spoon C = Core UP = Undisturbed Piston V = Vane Shear Test Proportions Upped: Trace = 1, 10% Little = 10, 20% Some = 20, 25% And = 25, 50%												
Total D	Proportions Used: Trace = $1 - 10\%$, Little = $10 - 20\%$, Some = $20 - 35\%$, And = $35 - 50\%$												
	enetration	n	a				169:					1 of	ι 1
Earth: 1	251[Kock	: Tt										
Soil Sa	mples: 6	C	ore R	uns: ·								SM-001-M RE	EV. 1/02

Driller: A. Mckerna				C	Connecticut DOT Boring Report				Hole No.: B-11				
Inspect	or: T	. Ta				Town:		Meric	len		Stat./Offset:		
Engine	er: A	llison	McCa	auliffe	e	Project	No.:	2018	-0108		Northing:		
Start D	ate: 1	1-22-1	9			Route N	lo.:				Easting:		
Finish [Date: 1	1-22-1	9			Bridge I	No.:				Surface Elevation: 2	19.0	
Project	Descript	ion: T	own	of M	eride	en TOD	Signa	al Upg	grades				
Casing	Size/Typ	e: 3.2	5" HS	SA		Sample	r Type	/Size:	1-3/8 inch ID		Core Barrel Type:		
Hamme	er Wt.:		Fall:	in.		Hamme	nmer Wt.: 140 Fall: 30in.						
Ground	water Ob	oservat	ions:	@4	.0 A	ATD			1				1
			S	SAMF	PLES	S	1	1					(£
(ft)	a lo.		Blow	/s on		- -	- L	` 0	alize	Ма	terial Description		uo
pth	npl Ne(Sam	pler					ner ata scri		and Notes		vat
De	Sal Typ	р	er 6 i	inche	es	Pe	Ř	L C C	Derte				Ele
0-									Concrete	Concrete (4")			+
_	0.4			40	-		10		Base	Gray c-f SAND, I	ittle c-f gravel, little si	lt, Gravel	-
-	5-1	14	14	10	1	24	10		Fill	Base (8") Brown to black c	-f SAND, little c-f grav	vel, little	-
_		_	•	_	_		10			silt, with cinder		, ,;] +	-
_	S-2	1	6	5	5	24	12			Brown f SAND	some silt (verv moist)	SIIL	-115
5-									Glaciofluvial	, .	, (101) (101)		-
_	S-3	3	4	7	8	24	18			Brown f SAND a	nd SILT		-
_										Brown c-f SAND	and SILT, little m-f gr	avel	-
_	S-4	6	4	5	9	24	10			Brown to dark brown c-f SAND, little little silt, organic fibers at 8.5ft		n-f gravel,	-
_													-110
10-													L
_	S-5	15	17	15	18	24	20		Lacustrine	Brown SILT_trac	e f sand		
_							_						
_													
_													-105
15-													
	S-6	3	8	8	14	24	20			Brown SILT trac	e f sand 2" nockets (of c_f sand	
_			•	•	•••					Drown Ole 1, trac			L
_													L
													-100
20-													
20	9 7	3	15	6	7	24	20				e feerd		L
	5-7	5	15	0	1	24	20			BIOWII SILT, IIAC	e i sanu		
	<u> </u>	-	7	7	0		00				<i>с</i> ,		
	5-8	5	1	1	8	24	22			Brown SIL1, trac	e f sand		-95
25-											0.05%		T
										G 2511		Γ	
		Samn	le Tv	pe:	S = 3	Split Sr	boon	C = 0	Core UP=Un	disturbed Piston	V = Vane Shear	Fest	<u>. </u>
	F	Propor	tions	Use	d: 1	Frace =	1 - 1(⊃%, ∣	Little = 10 - 20	%, Some = 20 -	- 35%, And = 35 -	50%	
Total Penetration in				NO	TES:	-				Shee	et		
Farth: 25ft Rock: ft											1 of	1	
No. of No. of													
Soil Sa	Soil Samples: 8 Core Runs:											SM-001-M R	EV. 1/02

APPENDIX B

RESULTS OF LABORATORY TESTING



Client:	Freeman C	Freeman Companies, LLC						
Project:	City of Mer	iden TOD Signa	al Upgrades					
Location:	Meriden, C	т			Project No:	GTX-311005		
Boring ID:	B-1		Sample Type:	bag	Tested By:	ckg		
Sample ID: S2			Test Date:	12/05/19	Checked By:	bfs		
Depth :	2.5-4.5		Test Id:	532851				
Test Comm	ent:							
Visual Description: Moist, reddish			h brown silty sand					
Sample Cor	nment:							





Client:	Freeman Companies, LLC						
Project:	City of Me	iden TOD Sign	al Upgrades				
Location:	Meriden, C	T			Project No:	GTX-311005	
Boring ID:	B-2		Sample Type:	bag	Tested By:	ckg	
Sample ID: S5			Test Date:	12/05/19	Checked By:	bfs	
Depth :	10-12		Test Id:	532860			
Test Comm	ent:						
Visual Desc	ription:	Moist, reddish	h brown sand with silt				
Sample Cor	mment:						



Sample/Test Description Sand/Gravel Particle Shape : ---



Client:	Freeman C	Freeman Companies, LLC						
Project:	City of Me	riden TOD Sign	al Upgrades					
Location:	Meriden, C	Т			Project No:	GTX-311005		
Boring ID:	B-3		Sample Type:	bag	Tested By:	ckg		
Sample ID	: S5		Test Date:	12/05/19	Checked By:	bfs		
Depth :	10-12		Test Id:	532852				
Test Comm	ent:							
Visual Desc	cription:	Moist, reddish	brown clay					
Sample Co	mment:							

Particle Size Analysis - ASTM D422 #200 #100 #40 #60 #20 4 100 Э 90 80 70 60 Percent Finer 50 40 30 20 10 0 100 1000 10 1 0.1 0.01 0.001 Grain Size (mm) % Cobble % Gravel % Sand % Silt & Clay Size 0.0 7.4 92.6 Sieve Name Sieve Size, mm Percent Finer Spec. Percent Complies **Coefficients** $D_{85} = N/A$ $D_{30} = N/A$ 4.75 100 #4 $D_{60} = N/A$ $D_{15} = N/A$ #10 2.00 100 $D_{50} = N/A$ $D_{10} = N/A$ #20 0.85 99 97 #40 0.42 $C_u = N/A$ $C_c = N/A$ #60 0.25 95 **Classification** #100 0.15 94 <u>ASTM</u> N/A #200 0.075 93 AASHTO Silty Soils (A-4 (0))



	Client:	Freeman C	Companies, LLC							
Project: City of Meriden TOD Signal Upgrades										
nà	Location:	Meriden, C	Т			Project No:	GTX-311005			
''9	Boring ID:	B-4		Sample Type:	bag	Tested By:	ckg			
	Sample ID:	S2		Test Date:	12/05/19	Checked By:	bfs			
	Depth :	2.5-4.5		Test Id:	532859					
	Test Comm	ent:								
	Visual Desc	ription:	Moist, olive br	own silty sand	with gravel					
	Sample Cor	nment:								
Pa	Particle Size Analysis - ASTM D422									
			/ \ \ \		/ I I I L	/				



0.5 in	12.50	87	
0.375 in	9.50	83	
#4	4.75	73	
#10	2.00	53	
#20	0.85	39	
#40	0.42	30	
#60	0.25	25	
#100	0.15	21	
#200	0.075	17	

		<u>Coef</u>	<u>efficients</u>				
D ₈₅ =10.6	nm	D ₃₀ =0.4119 mm					
$D_{60} = 2.70$	n	$D_{15} = N/A$					
D ₅₀ =1.67	n	D ₁₀ =N/A					
C _u =N/A		C _c =N/A					
		Class	ifica	tion			
<u>ASTM</u>	N/A	<u>eiuss</u>					
	~.	_		~			

AASHTO Stone Fragments, Gravel and Sand (A-1-b (0))

Sample/Test Description Sand/Gravel Particle Shape : ANGULAR Sand/Gravel Hardness : HARD



Client:	: Freeman Companies, LLC						
Project:	City of Mer	riden TOD Sign	al Upgrades				
Location:	Meriden, C	T			Project No:	GTX-311005	
Boring ID:	B-4		Sample Type:	bag	Tested By:	ckg	
Sample ID:	S5		Test Date:	12/05/19	Checked By:	bfs	
Depth :	10-12		Test Id:	532853			
Test Comm	ent:						
Visual Desc	ription:	Moist, reddish	brown clay				
Sample Cor	nment:						

Particle Size Analysis - ASTM D422 #200 #100 #60 #40 100 90 80 70 60 Percent Finer 50 40 30 20 10 0 100 0.01 0.001 1000 10 1 0.1 Grain Size (mm) % Cobble % Gravel % Sand 0.0 3.7 Sieve Name Sieve Size, mm Percent Finer Spec. Percent Complies

<i>n</i> -	4.75	100	
#10	2.00	100	
#20	0.85	100	
#40	0.42	100	
#60	0.25	100	
#100	0.15	100	
#200	0.075	96	

d		% Silt & Clay Size	
		96.3	
		Coefficients	
	$D_{85} = N/A$	$D_{30} = N/A$	
	$D_{60} = N/A$	D ₁₅ =N/A	
	D ₅₀ = N/A	D ₁₀ = N/A	
	Cu =N/A	C _c =N/A	
	<u>ASTM</u>	Classification N/A	
	<u>AASHTO</u>	Silty Soils (A-4 (0))	
		Sample/Test Description	

Sand/Gravel Particle Shape : ---



	Client:	Freeman C	Companies, LLC				
	Project:	City of Mer	iden TOD Sign	al Upgrades			
Ô	Location:	Meriden, C	T			Project No:	GTX-311005
9	Boring ID:	B-6		Sample Type:	bag	Tested By:	ckg
	Sample ID:	S5		Test Date:	12/05/19	Checked By:	bfs
	Depth :	10-12		Test Id:	532854		
	Test Comm	ent:					
	Visual Desc	ription:	Moist, reddish	brown silty sa	nd with gra	vel	
	Sample Cor	mment:					
•							
D	orticlo	Cizo	Analy	nia AC	сти г	1477	



0.5 in	12.50	96	
0.375 in	9.50	93	
#4	4.75	80	
#10	2.00	64	
#20	0.85	47	
#40	0.42	38	
#60	0.25	34	
#100	0.15	29	
#200	0.075	25	

$D_{50} = 0.99$	01 mm	$D_{10} = N/A$				
$C_u = N/A$		C _c =N/A				
ASTM	N/A Classifi	<u>cation</u>				
<u>AASHTO</u>	Stone Fragmer (A-1-b (0))	nts, Gravel and Sand				
Sample/Test Description Sand/Gravel Particle Shape : ANGULAR						
Sand/Gra	vel Hardness : I	HARD				



	Client:	Freeman C	reeman Companies, LLC									
	Project:	City of Mer	City of Meriden TOD Signal Upgrades									
DÒ	Location:	Meriden, C	Т			Project No:	GTX-311005					
9	Boring ID:	B-7		Sample Type:	bag	Tested By:	ckg					
	Sample ID:	S6		Test Date:	12/05/19	Checked By:	bfs					
	Depth :	15-17		Test Id:	532855							
	Test Comm	ent:										
	Visual Desc	ription:	Moist, reddish	brown silty sa	nd							
	Sample Cor	nment:										
Da	articlo	Sizo	Analya	$sic - \Delta C$	стм г	1422						



Sand/Gravel Hardness : HARD



Client:	Freeman Companies, LLC								
Project:	City of Meriden TOD Signal Upgrades								
Location:	Meriden, C	Meriden, CT Project No: GTX-311005							
Boring ID:	B-8		Sample Type:	bag	Tested By:	ckg			
Sample ID:	S6		Test Date:	12/05/19	Checked By:	bfs			
Depth :	15-17		Test Id:	532856					
Test Comm	ent:								
Visual Desc	ription:	Moist, reddish	brown clay						
Sample Cor	nment:								

Particle Size Analysis - ASTM D422





ſ	Client:	Freeman Companies, LLC								
	Project:	City of Meriden TOD Signal Upgrades								
	Location:	Meriden, C	Т			Project No:	GTX-311005			
	Boring ID:	B-9		Sample Type:	bag	Tested By:	ckg			
	Sample ID:	S8		Test Date:	12/05/19	Checked By:	bfs			
	Depth :	23-25		Test Id:	532857					
	Test Comm	ent:								
	Visual Desc	ription:	Moist, reddish	brown clay						
	Sample Cor	mment:								

Particle Size Analysis - ASTM D422





	Client: Freeman Companies, LLC									
	Project:	City of Mer	riden TOD Sign	al Upgrades						
	Location:	Meriden, C	Т			Project No:	GTX-311005			
	Boring ID:	B-11		Sample Type:	bag	Tested By:	ckg			
	Sample ID:	: S3		Test Date:	12/05/19	Checked By:	bfs			
	Depth :	5-7		Test Id:	532858					
	Test Comm	ent:								
	Visual Description: Moist, reddish brown silty sand									
	Sample Co	mment:								
_		<u> </u>								



Sand/Gravel Hardness : HARD



Client:	Freeman Companies, LLC								
Project:	City of Mer	City of Meriden TOD Signal Upgrades							
Location:	Meriden, C	T			Project No:	GTX-311005			
Boring ID:	B-2		Sample Type:	bag	Tested By:	cam			
Sample ID:	S7		Test Date:	12/12/19	Checked By:	bfs			
Depth :	20-22		Test Id:	532842					
Test Comm	ent:								
Visual Desc	ription:	Moist, reddish	brown silt						
Sample Cor	nment:								

Atterberg Limits - ASTM D4318



Symbol	Sample ID	Boring	Depth	Natural Moisture Content,%	Liquid Limit	Plastic Limit	Plasticity Index	Liquidity Index	Soil Classification
•	S7	B-2	20-22	28	26	22	4	1.6	

Sample Prepared using the WET method

Dry Strength: VERY HIGH Dilatancy: SLOW Toughness: LOW



Client: F	Freeman Companies, LLC								
Project: C	City of Meriden TOD Signal Upgrades								
Location: M	1eriden, C	Т			Project No:	GTX-311005			
Boring ID: E	3-5		Sample Type:	bag	Tested By:	cam			
Sample ID: S	56		Test Date:	12/12/19	Checked By:	bfs			
Depth: 1	5-17		Test Id:	532843					
Test Commer	nt:								
Visual Descri	ption:	Moist, reddish	brown silt						
Sample Com	ment:								

Atterberg Limits - ASTM D4318

Sample Determined to be non-plastic	

Symbol	Sample ID	Boring	Depth	Natural Moisture Content,%	Liquid Limit	Plastic Limit	Plasticity Index	Liquidity Index	Soil Classification
•	S6	B-5	15-17	25	n/a	n/a	n/a	n/a	

Dry Strength: MEDIUM Dilatancy: RAPID Toughness: n/a The sample was determined to be Non-Plastic



ſ	Client:	Freeman Companies, LLC							
	Project:	City of Meriden TOD Signal Upgrades							
	Location:	Meriden, C	Т			Project No:	GTX-311005		
	Boring ID:	B-10		Sample Type:	bag	Tested By:	cam		
	Sample ID:	S5		Test Date:	12/12/19	Checked By:	bfs		
	Depth :	20-22		Test Id:	532844				
ſ	Test Comm	ent:							
	Visual Desc	ription:	Wet, reddish b	orown clay					
	Sample Cor	nment:							

Atterberg Limits - ASTM D4318



Symbol	Sample ID	Boring	Depth	Natural Moisture Content,%	Liquid Limit	Plastic Limit	Plasticity Index	Liquidity Index	Soil Classification
•	S5	B-10	20-22	33	28	20	8	1.6	

Sample Prepared using the WET method

Dry Strength: HIGH Dilatancy: SLOW Toughness: LOW