

**STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION**

Subject: Project No.: 0103-0247
Occum Maintenance
Facility
Norwich

Date: February 6, 2015

MEMORANDUM

to: Mr. Gregory Dorosh
Trans. Principal Engineer
Bureau of Engineering
and Construction

from: Leo L. Fontaine
Trans. Principal Engineer
Bureau of Engineering
and Construction

1. Transmitted are the following:

- Roadway Geotechnical Report
- Structure Geotechnical Report
- Plans:
- Correspondence:

2. This transmittal is being made:

- In response to your request dated July 30, 2014.
- Initiated by this office

3. Comments:

4. Please take the following action:

- Please review and forward to
- Please review for incorporation into the design of the project
- For your use and information

cc: Leo Fontaine – Michael McDonnell – Amy Hare
John Waleszczyk – Michael Strong
Ron Libatique – Deborah Silva
Svetlana Kaminsky – Matt Easdon

Geotechnical Roadway Report-Transmittal Format

Project Description : This project is located at the existing maintenance and salt shed facility on Taftville-Occum Road in the town of Occum. The property is currently used as a full maintenance facility, with salt shed. This project includes the construction of a new maintenance facility building, a cast-in-place retaining wall, driveways, parking, and a stormwater basin. The existing salt shed will remain.

This design meets the requirements of the CT DOT 2005 Geotechnical Design Manual, and the IBC 2003 CT Building Code 2005 (with 2009 Supplement).

Geotechnical Information and Site Conditions:

Surficial Geology: Published USGS Mapping indicates the presence of sand and gravel overlying fines.

Bedrock Geology: Published USGS mapping indicates the presence of Tatnic Hill Formation, a local gneiss or schist.

Site Conditions: Stockpiles of various construction materials, debris, and miscellaneous fill are on site.

Subsurface Exploration and Testing Data:

- Boring location plan attached.
- Boring Logs attached.
- Laboratory test data attached.
- Rock core data sheet attached.
- Geologic Profile attached.

Observations:

Boring contractor New England Boring Contractors of Glastonbury, CT advanced six (6) Type "A" structural borings to depths of 26 to 36 feet, and four (4) Type "B" roadway borings to depths of 10.5 to 17 feet using conventional drilling methods. Split spoon samples were collected at intervals of five (5) feet, and rock cores were collected where rock was encountered. Groundwater was encountered in all the borings. Zero-hour groundwater readings were taken at the completion of each boring.

Generalized subsurface soil data to the depth of exploration:

Thickness (ft)	Description
5 to 11	Miscellaneous Fill – Varying amounts of loose sand and gravel with varying types of construction debris
5.5 to 15	Sand and Gravel – Medium dense to dense brown fine to coarse Sand with little to some fine to coarse gravel, cobbles present, trace silt.
0 to 5	Glacial Till – Dense brown/gray fine Sand, little gravel, trace silt Gneiss Bedrock – Gray Gneiss, medium grained, medium hard to hard, slightly to moderately fractured, slightly to moderately weathered.

- A geologic profile was developed along the center of the proposed building and is attached. See the boring location plan for the profile location.
- Groundwater was encountered in all of the borings. Elevation of groundwater encountered ranged from El. 51.9 feet on the western side of the site to El. 56 on the eastern side of the site. Below the footprint of the building, the average groundwater elevation encountered was El. 55 feet. Groundwater elevations encountered may be slightly elevated from actual groundwater levels due to the introduction of water flush into the borings during the drilling process.

Recommendations:

Maintenance Facility:

- Preliminary plan/elevation views provided shows the estimated bottom of footing to be El 57 to 54.5 feet. (Final Floor El. = 62.2 feet.) The existing subgrade (Sand and Gravel) at the proposed depth of foundations is suitable for footing support. Excavated materials are not to be reused below the building footings but may be used as embankment fill.
- Found the proposed maintenance facility building on spread footing at El. 54.5 feet. The plans should call for a minimum 3.5 foot embedment for all building footings.
- The building should be founded on spread footings constructed on 12 inches of granular fill. The granular fill should extend 12 inches beyond the limits of the footing, and may bear on prepared in-situ soil.
- Reuse of excavated materials is not recommended.
- The Factored Strength Limit Bearing Resistance is 3.8 tsf, and the Factored Service Limit Bearing Resistance is 3.75 tsf.
Based on a preliminary settlement analysis, immediate settlement of the building should be less than 1 inch and post construction settlements should be negligible.

Cast-In-Place Retaining Wall:

- Preliminary plan/elevation views provided shows the estimated bottom of footing at El. 59 and 61. The existing subgrade (Sand and Gravel) that is anticipated at the proposed depth of the wall foundation is suitable for footing support. As shown on the geologic profile, the retaining wall is in a location where there are miscellaneous fill stockpiles which may reach a depth beyond that which is shown at R-3. Provide a note on the Retaining Wall plan within the Structural Plan Set stating that "Miscellaneous Fill containing bricks, timer, concrete and other construction/maintenance debris may be encountered at the proposed footing elevation. Should this happen, contact the Department's Soils and Foundations section for direction regarding depth of over excavation and backfilling requirements." Excavated materials consisting of miscellaneous fill are not to be reused below the retaining wall footing but may be used as embankment fill.

- Found the proposed retaining wall on spread footings at El. 59 and 61 as shown on the bridge plans, constructed on 12 inches of granular fill. The plans should call for a 4 foot minimum embedment of the wall footings.
- Immediate settlement is expected to be less than 1/2" and post construction settlements should be negligible.
- The Factored Bearing Resistances for the Strength and Service Limits of the Retaining Wall is included on the Geotechnical Wall Design Parameters sheet attached to this report.

Construction Considerations:

- The foundation of the building may be constructed using open excavation techniques. Maintain a maximum temporary earth slope of 1.5(H) to 1(V). The need for TERS is not anticipated.
- TERS may be needed for retaining wall construction. Maximum slope rates for establishing limits for TERS shall be 1(V) to 1.5(H). Cantilever sheetpiling is feasible.
- Groundwater will be encountered 1 to 2 feet above portions of the proposed bottom of excavation for both the building and the retaining wall. Dewatering can be accomplished through the use of low points within the excavation and sump pumps within the excavation. This should be paid for under Structure Excavation – Earth (Complete).

Appendix Information:

Figures:

Project Location Plan
USGS Surficial Soils Map
USGS Bedrock Geology Map
Boring Location Plan
Geologic Profile Plan

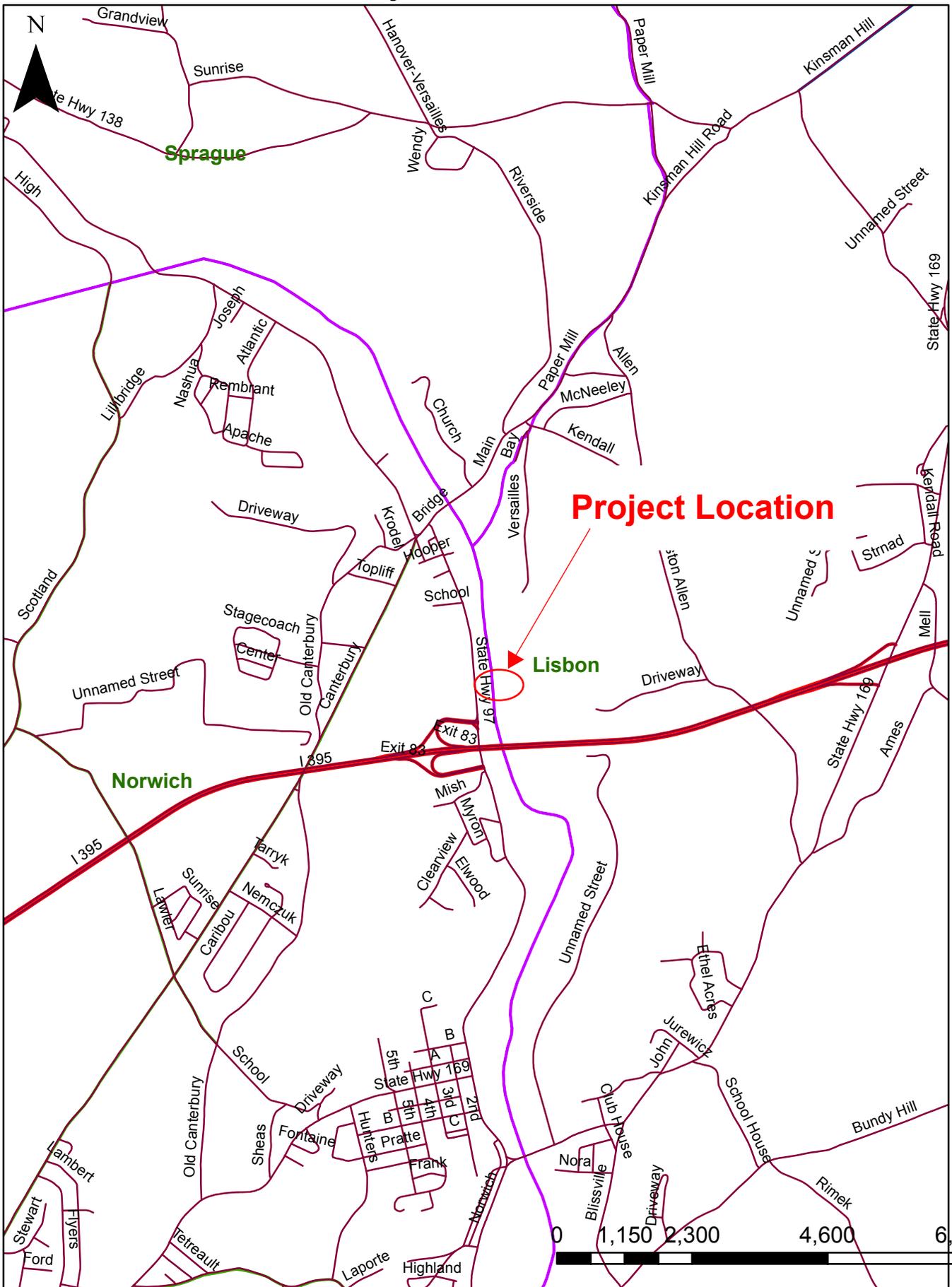
Subsurface Data:

Boring Logs
Rock Core Data Sheet

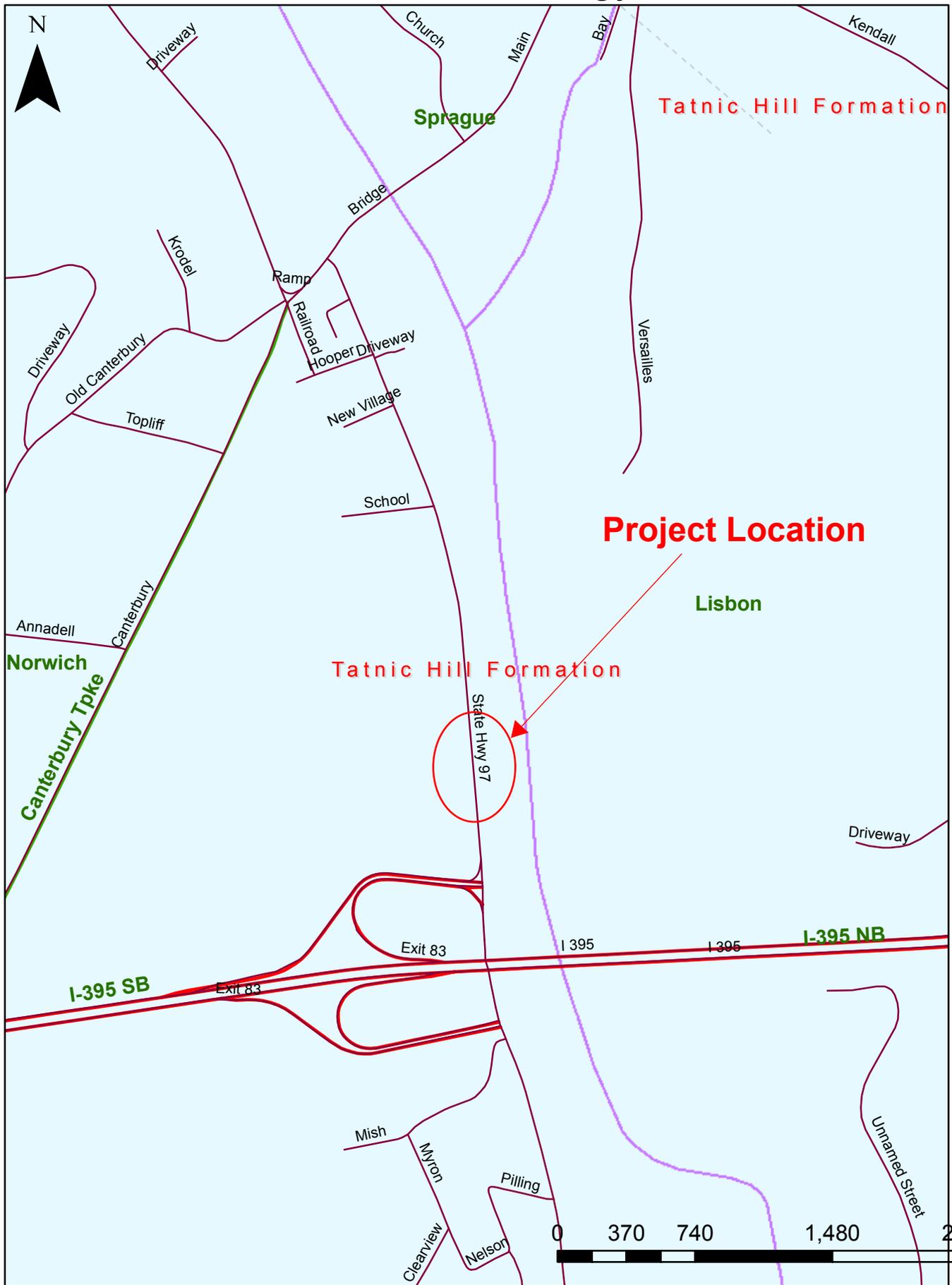
Design Data:

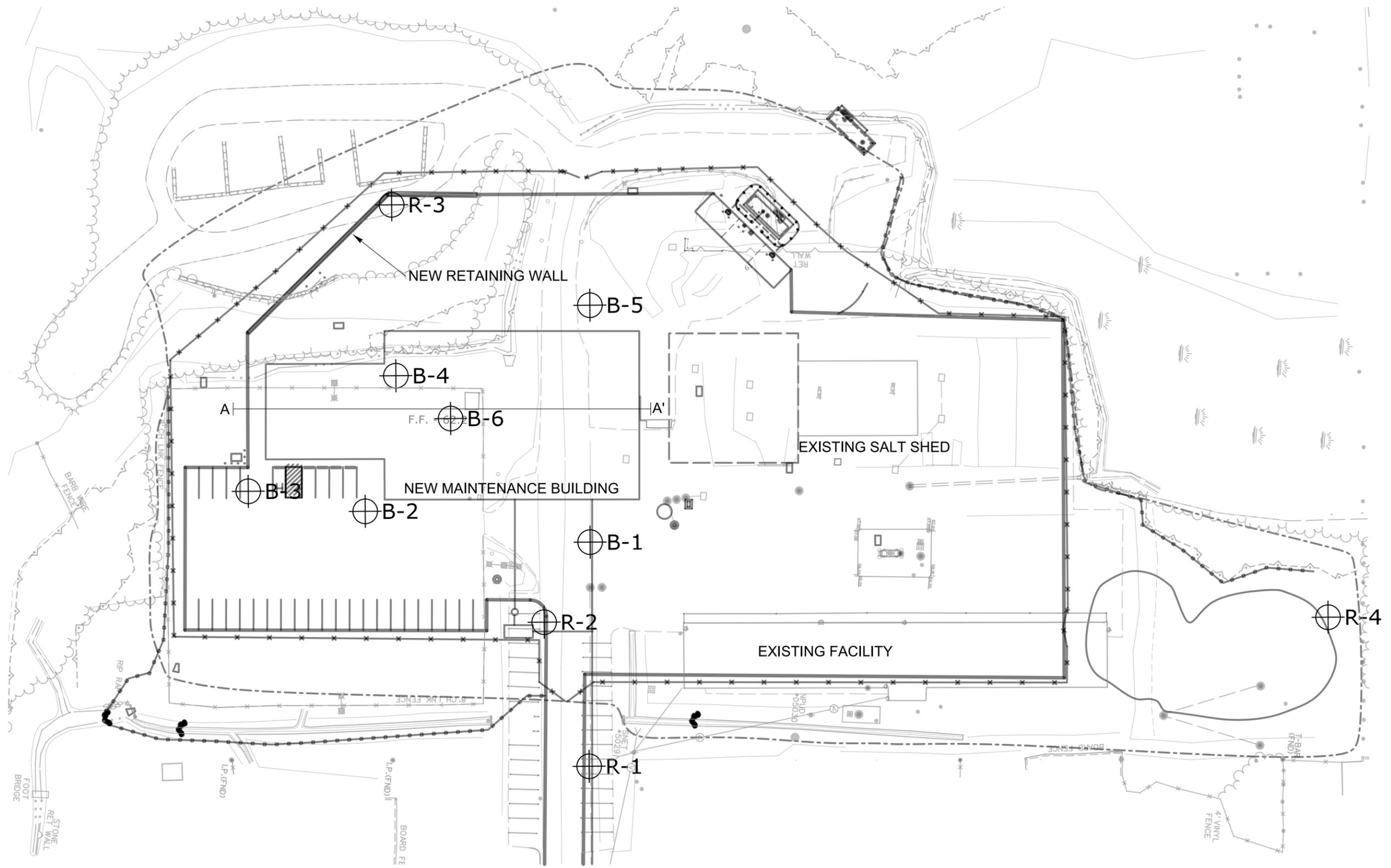
Geotechnical Wall Design Parameters Sheet

Project Location



Bedrock Geology





REV.	DATE	REVISION DESCRIPTION	SHEET NO.	Plotted Date: 1/21/2015

DESIGNER/DRAFTER:
AEH
CHECKED BY:
-

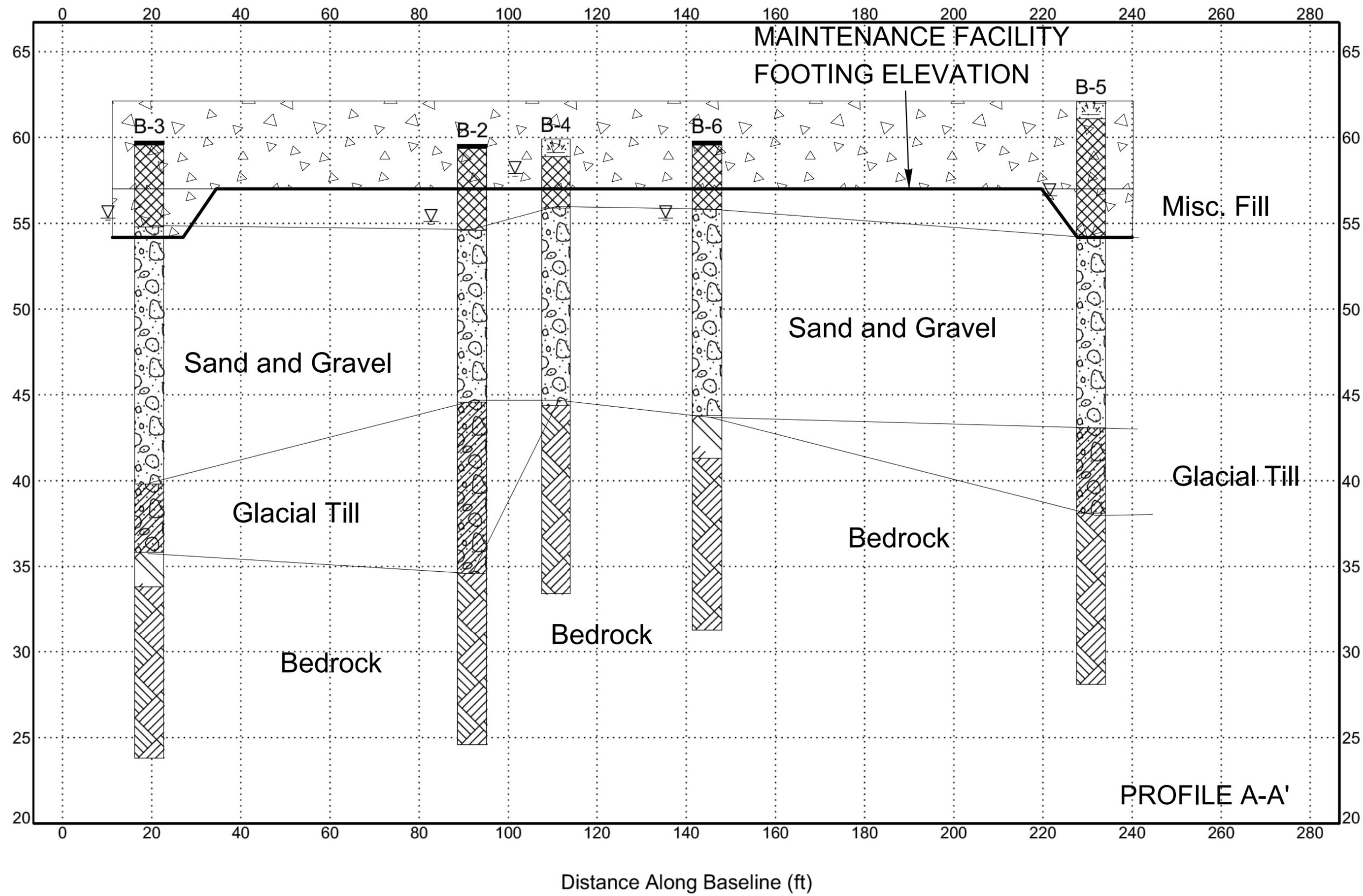

STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION

SIGNATURE/
 BLOCK:
OFFICE OF ENGINEERING
 APPROVED BY:

PROJECT TITLE:
**CONSTRUCTION OF A NEW
 MAINTENANCE FACILITY**

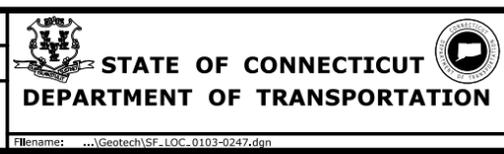
TOWN:
**OCCUM
 NORWICH, CT**
 DRAWING TITLE:
BORING LOCATION PLAN

PROJECT NO.
103-247
 DRAWING NO.
 -
 SHEET NO.
 -



REV.	DATE	REVISION DESCRIPTION	SHEET NO.	Plotted Date: 1/30/2015

DESIGNER/DRAFTER:
AEH
 CHECKED BY:
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SIGNATURE/
 BLOCK:
OFFICE OF ENGINEERING
 APPROVED BY:

PROJECT TITLE:
**CONSTRUCTION OF A NEW
 MAINTENANCE FACILITY**

TOWN:
**OCCUM
 NORWICH, CT**
 DRAWING TITLE:
**GEOLOGIC PROFILE, BLDG
 SECTION A-A'**

PROJECT NO.
103-247
 DRAWING NO.
 -
 SHEET NO.

Filename: ...Geotech\SF_LOC_0103-0247.dgn

Driller: T. Roe	Connecticut DOT Boring Report		Hole No.: B-1
Inspector: A. Hare	Town: Norwich	Stat./Offset:	
Engineer: A. Hare	Project No.: 0103-0247	Northing: 775671.627	
Start Date: 11-7-14	Route No.:	Easting: 1191827.719	
Finish Date: 11-7-14	Bridge No.:	Surface Elevation: 57.8	

Project Description: New Maintenance Facility

Casing Size/Type: 4"	Sampler Type/Size: 2" SS	Core Barrel Type: NQ2
Hammer Wt.: 300lb Fall: 24in.	Hammer Wt.: 140lb Fall: 30in.	

Groundwater Observations: @5 after 0 hours

Depth (ft)	SAMPLES					Generalized Strata Description	Material Description and Notes	Elevation (ft)		
	Sample Type/No.	Blows on Sampler per 6 inches							Pen. (in.)	Rec. (in.)
0										
5	S-1	22	26	27	21	24	15 4	92	PAVEMENT STRUCTURE MISC. FILL Brown f-c SAND, little f-c gravel, tr. silt Subbase gravel	55
5	S-2	13	17	8	5	24	14 2		SAND and GRAVEL Brown f-c SAND, tr. silt Dark brown f SAND, some silt	50
10	S-3	21	50/4"			10	2		Brown f-c SAND and f-c GRAVEL	45
15	S-4	34	11	20	21	24	8		GLACIAL TILL Gray f SAND, little c gravel	40
20	C-1					60	62	92	BEDROCK Gray GNEISS, medium grained, slightly weathered, slightly fractured, joints spaced 1 to 10 inches, hard. Core times: 5, 5, 5.5, 6, 7.5 min.	35
25	C-2					60	57		Gray GNEISS, medium grained, slightly weathered, slightly fractured, joints spaced 0 to 9 inches, hard. Core times: 6, 5.5, 6.5, 6, 7 min.	30
30									END OF BORING 29ft	25
35										20
40										15
45										10
50										

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 Earth: 18.5ft Rock: 10.5ft	NOTES: Solid Stem Augers to 10 ft. 4" Casing to depth.	Sheet 1 of 1
No. of Soil Samples: 4 No. of Core Runs: 2		SM-001-M REV. 1/02

Driller: T. Roe	Connecticut DOT Boring Report		Hole No.: B-2
Inspector: A. Hare	Town: Norwich	Stat./Offset:	
Engineer: A. Hare	Project No.: 0103-0247	Northing: 775531.379	
Start Date: 11-3-14	Route No.:	Easting: 1191819.896	
Finish Date: 11-3-14	Bridge No.:	Surface Elevation: 59.6	

Project Description: New Maintenance Facility

Casing Size/Type: 4"	Sampler Type/Size: 2" SS	Core Barrel Type: NQ2
Hammer Wt.: 300lb Fall: 24in.	Hammer Wt.: 140lb Fall: 30in.	

Groundwater Observations: @4.5 after 0 hours

Depth (ft)	SAMPLES					Generalized Strata Description	Material Description and Notes	Elevation (ft)
	Sample Type/No.	Blows on Sampler per 6 inches						
0								
5	S-1	18	19	29	50	24	19	
5	S-2	3	5	6	9	24	12	
10	S-3	21	26	44	50/5"	23	15	
15	S-4	11	11	11	11	24	15	
20	S-5	50/1"				1	0	
25								
30	C-1					60	58	93
35	C-2					60	57	69
40								
45								
50								

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 Earth: 23.75ft Rock: 11.25ft	NOTES: Solid Stem Augers to 10 ft. 4" Casing to depth.	Sheet 1 of 1
No. of Soil Samples: 5	No. of Core Runs: 2	SM-001-M REV. 1/02

Driller: T. Roe	Connecticut DOT Boring Report		Hole No.: B-3
Inspector: A. Hare	Town: Norwich	Stat./Offset:	
Engineer: A. Hare	Project No.: 0103-0247	Northing: 775458.216	
Start Date: 11-3-14	Route No.:	Easting: 1191813.275	
Finish Date: 11-4-14	Bridge No.:	Surface Elevation: 59.8	

Project Description: New Maintenance Facility

Casing Size/Type: 4"	Sampler Type/Size: 2" SS	Core Barrel Type: NQ2
Hammer Wt.: 300lb Fall: 24in.	Hammer Wt.: 140lb Fall: 30in.	

Groundwater Observations: @4.5 after 0 hours

Depth (ft)	SAMPLES					Generalized Strata Description	Material Description and Notes	Elevation (ft)
	Sample Type/No.	Blows on Sampler per 6 inches						
0								
5	S-1	20	50	18	16	24	12	
5	S-2	6	5	5	7	24	8	
10	S-3	16	22	26	30	24	5	
15	S-4	8	8	6	6	24	8	
20	S-5	16	18	25	50	24	6	
25								
30	C-1					60	58	46
35	C-2					60	62	100
40								
45								
50								

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 Earth: 24ft Rock: 12ft	NOTES: Solid Stem Augers to 10 ft. 4" Casing to depth.	Sheet 1 of 1
No. of Soil Samples: 5 No. of Core Runs: 2		SM-001-M REV. 1/02

Driller: T. Roe	Connecticut DOT Boring Report		Hole No.: B-4
Inspector: A. Hare	Town: Norwich	Stat./Offset:	
Engineer: A. Hare	Project No.: 0103-0247	Northing: 775543.577	
Start Date: 11-5-14	Route No.:	Easting: 1191734.938	
Finish Date: 11-5-14	Bridge No.:	Surface Elevation: 59.9	

Project Description: New Maintenance Facility

Casing Size/Type: 4"	Sampler Type/Size: 2" SS	Core Barrel Type: NQ2
Hammer Wt.: 300lb Fall: 24in.	Hammer Wt.: 140lb Fall: 30in.	

Groundwater Observations: @2 after 0 hours

Depth (ft)	SAMPLES					Generalized Strata Description	Material Description and Notes	Elevation (ft)		
	Sample Type/No.	Blows on Sampler per 6 inches			Pen. (in.)				Rec. (in.)	RQD %
0	S-1	2	5	5	10	24	12	TOPSOIL MISC FILL	TOPSOIL Brown f-c SAND, little f-c gravel, tr.silt	55
5	S-2	5	4	4	5	24	9			
10	S-3	23	28	31		18		BEDROCK	Brown f-c SAND, some f-c gravel, tr. silt, with cobbles	50
15	S-4	33	50/5"			11	10		Brown f SAND, some c gravel, tr. silt, with cobbles	45
20	C-1					60	57	BEDROCK	Gray GNEISS, medium grained, slightly fractured, slightly weathered, joints spaced 3 to 13.5 inches, hard. Core times: 4.5, 5, 5.5, 6, 6.5 min.	40
25	C-2					60	54		Gray GNEISS, medium grained, slightly fractured, slightly weathered, joints spaced 0 to 14 inches, hard. Core times: 4.5, 3.5, 5.5, 5, 4.5 min.	35
30									END OF BORING 26.5ft	30
35										25
40										20
45										15
50										10

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 Earth: 16.5ft Rock: 10ft	NOTES: Solid Stem Augers to 10 ft. 4" Casing to depth.	Sheet 1 of 1
No. of Soil Samples: 4	No. of Core Runs: 2	SM-001-M REV. 1/02

Driller: T. Roe	Connecticut DOT Boring Report		Hole No.: B-5
Inspector: A. Hare	Town: Norwich	Stat./Offset:	
Engineer: A. Hare	Project No.: 0103-0247	Northing: 775659.781	
Start Date: 11-4-14	Route No.:	Easting: 1191681.925	
Finish Date: 11-5-14	Bridge No.:	Surface Elevation: 62.1	

Project Description: New Maintenance Facility

Casing Size/Type: 4"	Sampler Type/Size: 2" SS	Core Barrel Type: NQ2
Hammer Wt.: 300lb Fall: 24in.	Hammer Wt.: 140lb Fall: 30in.	

Groundwater Observations: @5.5 after 0 hours

Depth (ft)	SAMPLES					Generalized Strata Description	Material Description and Notes	Elevation (ft)		
	Sample Type/No.	Blows on Sampler per 6 inches							Pen. (in.)	Rec. (in.)
0	S-1	6	9	21	30	24	12	TOPSOIL MISC. FILL	TOPSOIL Brown f-c SAND, little f-c gravel, tr. silt	60
5	S-2	14	9	8	7	24	14			
10	S-3	31	21	21	25	24	8	SAND AND GRAVEL	Brown f-c SAND and f-c GRAVEL, tr. silt Orangeish brown f-c GRAVEL and f-c SAND, tr. silt	50
15	S-4	50/5"				5	0			
20	S-5	23	20	26	21	24	11	GLACIAL TILL	Gray f-c SAND, little f-c GRAVEL, tr. silt	40
25	C-1					60	63	BEDROCK	Gray GNEISS, medium grained, slightly fractured, slightly weathered, joints spaced 3 to 28 inches, very hard. Core times: 4.5, 6, 7.8, 6, 7.5 min.	35
30	C-2					60	56			
35									END OF BORING 34ft	25
40										20
45										15
50										

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 Earth: 23.75ft Rock: 10.25ft	NOTES: Solid Stem Augers to 10 ft. 4" Casing to depth.	Sheet 1 of 1
No. of Soil Samples: 5 No. of Core Runs: 2		SM-001-M REV. 1/02

Driller: T. Roe	Connecticut DOT Boring Report		Hole No.: B-6
Inspector: A. Hare	Town: Norwich	Stat./Offset:	
Engineer: A. Hare	Project No.: 0103-0247	Northing: 775579.465	
Start Date: 11-4-14	Route No.:	Easting: 1191758.57	
Finish Date: 11-4-14	Bridge No.:	Surface Elevation: 59.8	

Project Description: New Maintenance Facility

Casing Size/Type: 4"	Sampler Type/Size: 2" SS	Core Barrel Type: NQ2
Hammer Wt.: 300lb Fall: 24in.	Hammer Wt.: 140lb Fall: 30in.	

Groundwater Observations: @4.5 after 0 hours

Depth (ft)	SAMPLES					Generalized Strata Description	Material Description and Notes	Elevation (ft)			
	Sample Type/No.	Blows on Sampler per 6 inches							Pen. (in.)	Rec. (in.)	RQD %
0	S-1	14	14	19	47	24	15		PAVEMENT STRUCTURE MISC FILL	Brown f-c SAND, some f-c gravel, tr. silt, with cobbles	
5	S-2	15 50/5"				11	10		SAND AND GRAVEL	Brown f-c SAND, some f-c gravel, tr. silt, with cobbles	55
10	S-3	31	40	31	28	24	8			Brown f-c SAND, some f-c gravel, tr. silt with cobbles	50
15	S-4	50/3"				3	0			No Recovery.	45
20	C-1					60	56	75	WEATHERED BEDROCK	Gray GNEISS, medium grained, slightly fractured, slightly weathered, joints spaced 0 to 14 inches, hard. Core times: 3.5, 4, 5, 4, 5 min.	40
25	C-2					60			BEDROCK	Gray GNEISS, medium grained, slightly fractured, slightly weathered, joints spaced 0 to 25 inches, hard. Core times: 6, 6.5, 5, 4.5 min.	35
30										END OF BORING 28.5ft	30
35											25
40											20
45											15
50											10

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 Earth: 16.75ft Rock: 12.5ft	NOTES: Solid Stem Augers to 10 ft. 4" Casing to depth.	Sheet 1 of 1
No. of Soil Samples: 4 No. of Core Runs: 2		SM-001-M REV. 1/02

Driller: T. Roe	Connecticut DOT Boring Report		Hole No.: R-1
Inspector: A. Hare	Town: Norwich	Stat./Offset:	
Engineer: A. Hare	Project No.: 0103-0247	Northing: 775682.107	
Start Date: 11-6-14	Route No.:	Easting: 1191965.724	
Finish Date: 11-6-14	Bridge No.:	Surface Elevation: 58.5	

Project Description: New Maintenance Facility

Casing Size/Type:	Sampler Type/Size: 2" SS	Core Barrel Type:
Hammer Wt.: Fall: in.	Hammer Wt.: 140 Fall: 30in.	

Groundwater Observations: @7.5 after 0 hours

Depth (ft)	SAMPLES					Generalized Strata Description	Material Description and Notes	Elevation (ft)
	Sample Type/No.	Blows on Sampler per 6 inches						
0								
5	S-1	9	10	11	9	24	10	55
5	S-2	4	11	25	38	24	16	50
10	S-3	37	35	45	32	24	21	45
15	S-4	10	11	13	12	24	0	40
20								40
25								35
30								30
35								25
40								20
45								15
50								10

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 Earth: 17ft Rock: ft	NOTES: Solid Stem Augers to 10 ft. 4" HSA to depth.	Sheet 1 of 1
No. of Soil Samples: 4	No. of Core Runs: ---	SM-001-M REV. 1/02

Driller: T. Roe	Connecticut DOT Boring Report		Hole No.: R-2
Inspector: A. Hare	Town: Norwich	Stat./Offset:	
Engineer: A. Hare	Project No.: 0103-0247	Northing: 775647.21	
Start Date: 11-6-14	Route No.:	Easting: 1191879.268	
Finish Date: 11-6-14	Bridge No.:	Surface Elevation: 57.4	

Project Description: New Maintenance Facility

Casing Size/Type:	Sampler Type/Size: 2" SS	Core Barrel Type:
Hammer Wt.: Fall: in.	Hammer Wt.: 140 Fall: 30in.	

Groundwater Observations: @5.5 after 0 hours

Depth (ft)	SAMPLES					Generalized Strata Description	Material Description and Notes	Elevation (ft)
	Sample Type/No.	Blows on Sampler per 6 inches						
0								
	S-1	11	12	27	48	24	16	
								55
5	S-2	14	7	9	18	24	10 9	
								50
10	S-3	10	11	14	16	24	20	
								45
15	S-4	7	21	31	28	24	10 7	
								40
20								35
25								30
30								25
35								20
40								15
45								10
50								5

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 Earth: 17ft Rock: ft	NOTES: Solid Stem Augers to 10 ft. 4" HSA to depth.	Sheet 1 of 1
No. of Soil Samples: 4	No. of Core Runs: ---	SM-001-M REV. 1/02

Driller: T. Roe	Connecticut DOT Boring Report		Hole No.: R-3
Inspector: A. Hare	Town: Norwich	Stat./Offset:	
Engineer: A. Hare	Project No.: 0103-0247	Northing: 775532.53	
Start Date: 11-6-14	Route No.:	Easting: 1191629.957	
Finish Date: 11-6-14	Bridge No.:	Surface Elevation: 74.1	

Project Description: New Maintenance Facility

Casing Size/Type:	Sampler Type/Size: 2" SS	Core Barrel Type:
Hammer Wt.: Fall: in.	Hammer Wt.: 140 Fall: 30in.	

Groundwater Observations: @8.5 after 0 hours

Depth (ft)	SAMPLES					Generalized Strata Description	Material Description and Notes	Elevation (ft)	
	Sample Type/No.	Blows on Sampler per 6 inches							Pen. (in.)
0							MISC. FILL		
5	S-1	11	11	4	8	24	16	Dark brown f SAND, some silt	70
5	S-2	3	2	2	2	24	11 9	Dark brown f SAND, some silt Gray f. SAND	
10	S-3	30	26	50/4"		16	15	GLACIAL TILL Brown f-c GRAVEL and f-c SAND	65
15	S-4	8	9	9	9	24	17	Gray f SAND	60
20								END OF BORING 17ft	55
25									50
30									45
35									40
40									35
45									30
50									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%

Total Penetration in Earth: 17ft Rock: ft	NOTES: Solid Stem Augers to 10 ft. 4" HSA to depth.	Sheet 1 of 1
No. of Soil Samples: 4	No. of Core Runs: ---	SM-001-M REV. 1/02

Driller: T. Roe	Connecticut DOT Boring Report		Hole No.: R-4
Inspector: A. Hare	Town: Norwich	Stat./Offset:	
Engineer: A. Hare	Project No.: 0103-0247	Northing: 776130.55	
Start Date: 11-5-14	Route No.:	Easting: 1191837.402	
Finish Date: 11-5-14	Bridge No.:	Surface Elevation: 58.2	

Project Description: New Maintenance Facility

Casing Size/Type:	Sampler Type/Size: 2" SS	Core Barrel Type:
Hammer Wt.: Fall: in.	Hammer Wt.: 140 Fall: 30in.	

Groundwater Observations: @5.5 after 0 hours

Depth (ft)	SAMPLES					Generalized Strata Description	Material Description and Notes	Elevation (ft)				
	Sample Type/No.	Blows on Sampler per 6 inches							Pen. (in.)	Rec. (in.)	RQD %	
0	S-1	2	3	4	5	24	12	TOPSOIL GLACIAL TILL	TOPSOIL Brown f SAND, tr. silt	55		
5	S-2	13	26	25	30	24	12				Brown f-c SAND and f-c GRAVEL, tr. silt Brown f SAND, tr. silt	50
10	S-3	50/6"				6	3				Brownish Gray f-c SAND and f-c GRAVEL, with cobbles	45
15								END OF BORING 10.5ft	45			
20									40			
25									35			
30									30			
35									25			
40									20			
45									15			
50									10			

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 Earth: 17ft Rock: ft	NOTES: Solid Stem Augers to 5 ft. 4" HSA to depth.	Sheet 1 of 1
No. of Soil Samples: 4	No. of Core Runs: ---	SM-001-M REV. 1/02

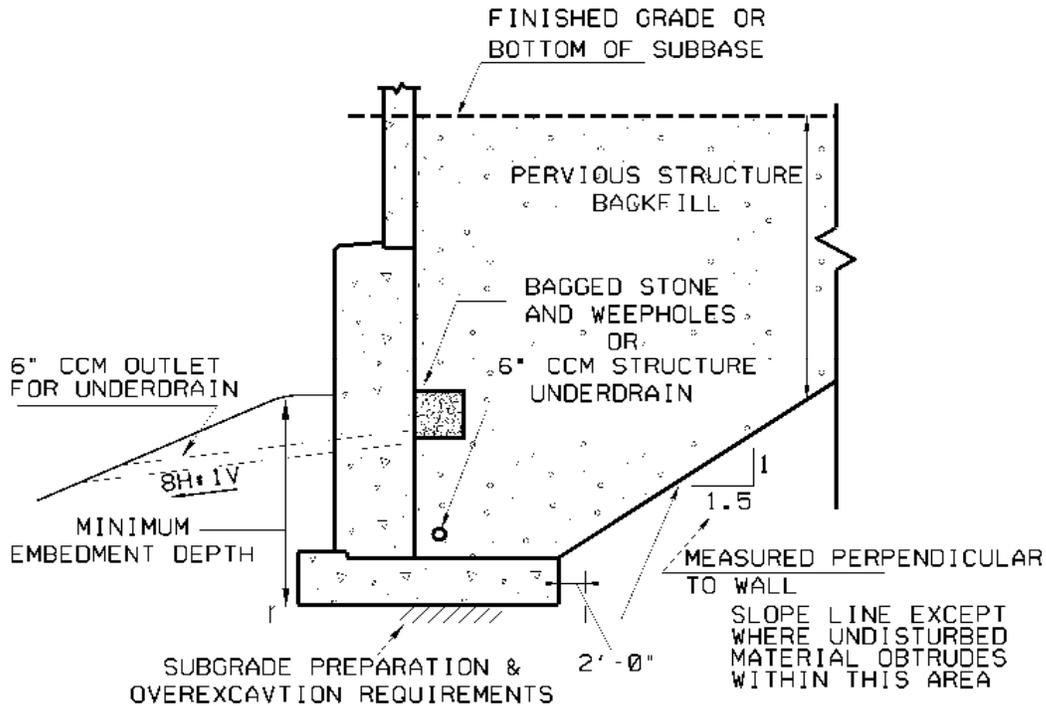
Rock Core Data Sheet

Project No.	Route	Description	Town	Driller	Inspector	Engineer	Date
103-247	Facility		Occum	NEBC	AEH	AEH	11-3-14



Boring No.	Sample No.	Sample Depth (ft)	Rock Type	Color	Grain Size	Bedding	Fracturing	Weathering	Strength	Drill Rates (min/ft)	Rec. (%)	RQD (%)
B-2	C-1	25 - 30	Gneiss	Gray	Medium	Massive	Moderate	Fresh	Hard	4, 5, 4.5, 5, 4	58	93
B-2	C-2	30 - 35	Gneiss	Gray	Medium	Massive	High	Fresh	Medium	4.5, 4, 5, 3.5, 3.5	57	69
B-3	C-1	26 - 31	Gneiss	Gray	Medium	Interbedded	Moderate	Moderate	Hard	3, 3.5, 3.5, 4, 5	58	46
B-3	C-2	31 - 36	Gneiss	Gray	Medium	Interbedded	Moderate	Fresh	Hard	3.5, 3.5, 4, 4.5, 4.5	62	100

Geotechnical Wall Design Parameters
Project No. 0103-0247
Retaining Wall



Factored Resistances

	Strength Limit	Service Limit
Bearing	5.76 tsf	4.75 tsf
Sliding	0.6V	0.6V

V=total vertical force

Lateral Earth Loads

Soil Unit Weight, γ :	125 pcf
Lateral Earth Pressure(static):	33 psf
Live Load Surcharge-Uniform Earth Pressure*:	$0.31 \gamma h_{eq}$

* h_{eq} based on AASHTO-LRFD Table 3.11.6.4-2

Foundation Design Details

Minimum Embedment Depth:	4 ft.
Backwall Drainage:	Bagged Stone and Weepholes
Subgrade Preparation:	1 ft of Granular Fill
Maximum Temporary Cut Slope:	1(V):1.5(H)

Additional Comments

- Design recommendations based on 2011 *AASHTO LRFD* and *ConnDOT Bridge Design Manual*.
- Preliminary plans/cross sections provided show the bottom of footing to be at elevation 59.0 and 61.0 ±
- Include the following logs on the wall plan sheets: R-3.