

Maine Department of Transportation
Highway Program

GEOTECHNICAL SERIES 100 REPORT

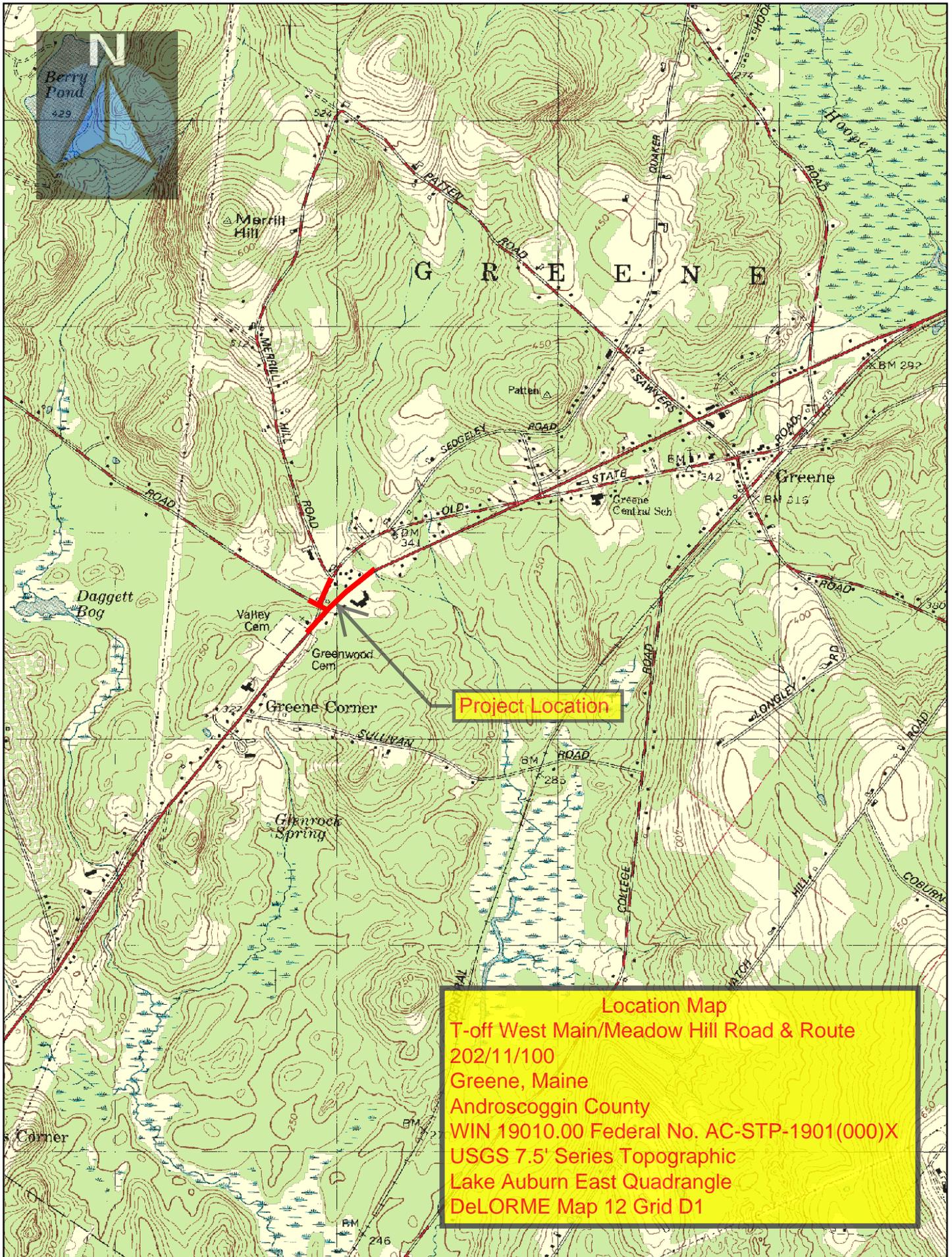
Route 202
Greene, Maine

Prepared by:
Scott A. Hayden, C.G.
Soils Research Scientist

Androscoggin County

WIN 19010.00
Fed Project #: AC-STP-1901(000)X
February 27, 2013

Soils Report No. 2013-114
TEDOCS# 1267631



Map Scale 1:24000

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Highway Program

Brad Foley, Program Manager

Memorandum

DATE: February 27, 2013

TO: Shawn Smith

DEPT: Highway, Region 2

FROM: Scott A. Hayden

DEPT: Highway Program

SUBJECT: 19010.00 Greene Route 202 - Final Soils Report # 2013-114

Project Information

A subsurface investigation has been completed for the reconstruction and intersection improvements of Route 202 and West Main Street. The improvements consist of constructing a T intersection with West Main Street/Meadow Hill Road and Route 202. A 1900-foot section of Route 202 is to be widened to accommodate new turn lanes.

The purpose of the subsurface investigation was to obtain subsurface soil, bedrock, and ground water information along the proposed project site for design and construction purposes. The investigation included the use of a drill rig, falling weight deflectometer (FWD) and ground penetrating radar (GPR).

Subsurface Explorations

Subsurface explorations were conducted by Maine DOT using a CME 45C truck mounted drill rig. Bore hole logging was performed by Maine DOT.

Power Auger Borings

Sixteen power augers borings were conducted along the project site (See Boring Logs). Power auger borings were conducted using 5" solid stem augers. Soils were described and sampled directly from the auger flights. The majority of borings were placed full width at 4 station locations along Route 202 to collect data in the travel lanes and adjacent shoulders to determine and compare the roadway structure.

	Left Shoulder		Left Travel		Right Travel		Right Shoulder	
	20'	15'	9'		9'	15'	20'	
22+74		X	X		X	X		
26+24	X	X	X		X	X	X	
30+74		X	X					
36+74					X	X		
	E P		C L		E P			
	X = Power Auger Boring Locations							

Hand Auger Boring, Rod Sounding

One hand auger boring and one hand sounding was conducted in the vicinity of station 4+74 to investigate the native soils in a proposed new construction area.

Soil Sampling – Laboratory Testing

A total of 19 soil samples were collected from the power auger borings and tested at the Maine DOT Materials and Testing laboratory, located in Bangor Maine. Grain size and water content testing was conducted on each sample. Based upon laboratory test results, soil samples were classified according to the Unified Classification System, AASHTO Soil Classification and Maine DOT Frost Susceptibility Rating. Testing results are summarized on the attached Laboratory Testing Summary Sheet at the back of this report.

Subsurface Evaluation

Existing HMA Thickness

Existing pavement thickness estimates are provided based on power auger borings and ground penetrating radar data (See attached boring logs and ground penetrating data included at the back of this report).

Power Auger Borings – Fourteen power auger borings were conducted through the existing pavement to determine pavement thickness. Pavement thickness was determined by measuring the boring side wall. See boring logs and Table 1 for a listing of the pavement thicknesses.

GPR Data – GPR data was collected in the left and right wheel path of both lanes. Pavement thickness estimates were developed using Geophysical Survey Systems Inc. (GSSI) RADAN GPR Data Processing Software. Pavement depth thicknesses were used to ground truth the GPR data. GPR pavement thickness averages have been provided utilizing a 100' interval. These estimates are reported at the back of this report.

A summary/comparison of the existing pavement thickness derived from power auger borings verses the GPR pavement thickness estimate is shown in Table 1 below:

**Table 1: Pavement Thickness Summary/Comparison
Route 202**

	Rte. 202 Westbound		Rte. 202 Eastbound		Meadow Hill / West Main
	Travel Lane	Shoulder	Travel Lane	Shoulder	Travel Lane
Power Auger Data					
Range of Thickness (in)	7.0 – 10.5	3.0 – 8.0	10.0 – 11.0	4.0 – 5.0	3.0 – 3.5
Average Thickness (in)	9.2	5.0	10.7	4.3	3.25
Ground Penetrating Radar Data	Travel Lane				
Range of Thickness (in)	7.9 – 10.0				-
Average Thickness (in)	8.8				-

Existing Base Thickness/Quality (Route 202)

Power auger borings were conducted in the travel lanes and shoulders at stations 22+74, 26+24, 30+74, and 36+74 to determine the thickness and quality of the existing base material. These adjacent borings were conducted to determine if base material beneath the existing shoulders would be suitable for lane expansion to accommodate the addition of turn lanes. The existing pavement thickness, base thickness, base material quality, and base material classification along Route 202 are shown below in Table 2.

**Table 2: Route 202 - Existing Base Material Thickness/Quality
Travel Lane vs. Shoulder Comparison**

Left Lane

RTE. 202 LEFT TRAVEL LANE – WEST BOUND (9' offset)					RTE. 202 LEFT SHOULDER - PAVED (15' offset)					UNPAVED (20')
Station	Pave. Thick	Base Thick	Base Quality % fines	Base Class AASHTO/ Unified	Station	Pave. Thick	Base Thick	Base Quality % fines	Base Class AASHTO/ Unified	
22+74	10.5"	48"	29%	A-2-4/SM Ref 4.9'	22+74	4.0"	14"	15%	A-1-b/SM	
							40"	20%	A-2-4/SM	
						total	54"		Ref 4.8'	
26+24	7.0" Solid	50"	17%-21%	A-2-4/SM	26+24	3.0" Solid	55"	13%	A-1-b/SM	60",13%, A-1-b
	3.0" Un-bound					2.0" Un-bound				
30+74	10"	34"	15%	A-1-b/SM	30+74	8.0"	35"	15%	A-1-b/SM	
		16"	29%	A-2-4/SM			17"	29%	A-2-4/SM	
	total	50"				total	52"			

Right Lane

RTE. 202 RIGHT TRAVEL LANE – EAST BOUND (9' offset)					RTE. 202 RIGHT SHOULDER - PAVED (15' offset)					UNPAVED (20')
Station	Pave. Thick	Base Thick	Base Quality % fines	Base Class AASHTO/ Unified	Station	Pave. Thick	Base Thick	Base Quality % fines	Base Class AASHTO/ Unified	
22+74	11.0"	43"	29%	A-2-4/SM Ref 4.5'	22+74	4.0"	15"	15%	A-1-b/SM	
							17"	20%	A-2-4/SM	
						total	32"		Ref 3.0'	
26+24	10.0"	50"	17%-21%	A-2-4/SM	26+24	4.0"	20"	19%	A-1-b/SM	20",19%,A-1-b
							36"	26%	A-2-4/SM	40",26%,A-2-4
						total	56"		Wet@2.0'	60" Wet@1.7'
36+74	11.0"	49"	24%	A-2-4/SM	36+74	5"	55"	32%	A-2-4/SM	
									Wet@2.0'	

Existing Roadway Base (Route 202)

Classification:	A-1-b, A-2-4
Percent Passing #200:	15% - 29%
Range of Base Material Thickness:	43" – 50"
Average Thickness:	48"

The existing base generally consists of gravelly SANDS. This granular material was generally encountered full depth at each boring location and is classified (AASHTO / Unified) as an A-2-4 / SM soil. No distinct layers were identified in the borings.

Although this base material is classified as granular, the percentage of fines passing the #200 sieve is relatively high.

Existing Shoulder Base (Route 202)

Classification:	A-1-b, A-2-4
Percent Passing #200:	13% - 32%
Range of Shoulder Base Material Thickness:	32" – 56"
Average Thickness:	50"

The existing base materials beneath the shoulders are similar in overall thickness to the granular material underlying the travel lanes. However, the shoulder material differs in that two distinct granular layers were identified in the majority of shoulder borings.

The upper layer of granular shoulder material (approximately 14"-20" thick) consists of gravelly SANDS. This layer is slightly more granular than the underlying material and the material encountered beneath the travel lanes. This material is classified (AASHTO / Unified) as an A-1-b / SM soil. The lower granular layer (approximately 17" – 40" thick) is classified (AASHTO / Unified) as an A-2-4 / SM soil similar to the base material encountered beneath the travel lanes.

At station 26+24 borings were conducted beyond the paved shoulder area at an offset of 20' left and 20' right to determine if granular material was present beyond the paved portion of the shoulder. Granular material similar to that described above was encountered full depth at each boring location.

Although the shoulder base material is classified as granular, the percentage of fines passing the #200 sieve is relatively high.

Wet soil conditions were encountered as shallow as 1.7' in borings conducted in the right shoulder at stations 26+24 and 36+74.

Existing Roadway Base (Meadow Hill / West Main)

Classification:	A-1-b
Percent Passing #200:	12% - 14%
Range of Base Material Thickness:	26" – 42"
Average Thickness:	34"

The existing roadway base material beneath Meadow Hill Road and West Main Street consists of gravelly SANDS similar to the shoulder base material encountered beneath Route 202. This material is classified (AASHTO / Unified) as an A-1-b / SM soil with 12% - 14% passing the # 200 sieve.

Native Soils

Native soils are mapped by the Natural Resources Conservation Service as glaciofluvial deposits. These soils are anticipated to consist of Silty SANDS and Sandy SILTS similar to samples S1, S2 and S4. Samples of these soils indicate relative high silt content (38% - 50%). These soils are moderately frost susceptible. NRCS maps depicting soil type and depth to water table have been included at the back of this report.

Bedrock

Power auger borings encountered refusals in all four borings conducted at station 22+74. It is anticipated that these refusals are likely due to a shallow bedrock surface. Refusal locations and depths are listed below.

Table 3: Power Auger Refusal Location/Depth

Station	15' Left	9' Left	9' Right	15' Right
22+74	4.8' Refusal	3.0' Refusal	4.5' Refusal	4.9' Refusal

It is anticipated that the bedrock lithology in this area will likely be igneous and would require blasting to remove.

New construction is proposed between stations 4+50 and 5+50. A rod sounding was conducted at 4+64, 5' right, to investigate any potential for shallow bedrock. The rod sounding penetrated to a depth of 8' without encountering any refusal.

Frost Susceptible Soils/Frost Penetration

The sandy SILT / Silty SAND native soils are anticipated to be moderately frost susceptible. Frost ratings can be found on the Laboratory Testing Summary Sheet. Frost action in soils requires the presence of frost susceptible soils, ground temperatures below 32° F, and water. Proper drainage of the pavement structure and the lowering or draw down of the ground table through ditching and/or underdrain is critical in minimizing the damaging effects of frost action throughout this project.

The Maine Design Freezing Index for this project is approximately 1580. Frost penetration depth beneath a snow free pavement is anticipated to be between 33" (silt or clay) and 80" (sand or gravel) based on the 1955 Army Corps of Engineers, "Prediction of Freezing Temperature Penetration in New England".

Drainage

Wet soil conditions were encountered within the existing base layer(s) at stations 26+24 and 36+74 in the eastbound travel and shoulder area. Ditching will be critical in providing pavement structure drainage and water table drawdown if design expectations are to be met. Ditches should be constructed with a minimum depth of 3 feet below finished grade when possible.

FWD Testing Results

FWD data was collected every 200 feet in the eastbound and westbound lanes. The data was collected at an approximate offset of 9' right.

Deflection Data

FWD deflection data for the pavement and lower subbase/subgrade layers are relatively low and uniform indicating good pavement conditions and uniform subgrade soil conditions.

The FWD deflection plots are included at the back of this report.

FWD Analysis

The FWD analysis was conducted for each travel lane using the following variables:

Design Life: 12
Initial Serviceability: 4.5
Reliability Level: 90%

Future 18-kip P2.5 ESALs (Design Life): 1,752,000
Terminal Serviceability: 2.5
Overall Standard Deviation: .45

Pavement thickness used for the DARWin analysis was taken from ground penetrating radar estimates. Gravel thicknesses used were taken from power auger borings. A summary of the FWD analysis is shown in Table 4.

Table 4: Summary of FWD Analysis

Design Variables	% Passing	Range	Average	75 Percentile
<i>Route 202 Eastbound</i>				
Existing SN exceeds Future SN	100%			
Pavement Modulus (psi)		100,152 – 266,546	156,251	114,800
Subgrade Resilient Modulus (psi)		5,479 – 12,401	7,302	6,140
<i>Route 202 Westbound</i>				
Existing SN exceeds Future SN	100%			
Pavement Modulus (psi)		119,223 – 197,109	164,934	154,900
Subgrade Resilient Modulus (psi)		4,643 – 9,369	7,392	6,240

Existing Structural Number

The existing structural number exceeds the future traffic structural number along the Route 202 portion of this project. Testing was not conducted along West Main Street.

Subgrade Resilient Modulus (M_r)

The subgrade resilient modulus values are very high (>12,000psi) in the vicinity of station 22+00. This high value may indicate the presence of a relatively shallow bedrock surface. See attached FWD analysis data. Power auger boring refusals were encountered at station 22+74.

Conclusions/Recommendations

1. Falling weight deflectometer data and Darwin analysis indicates that the existing structural number meets or exceeds the future structural number along the Route 202 portion of this project.
2. The existing base material beneath the existing travel lanes and shoulders are adequate in thickness. Based on limited subsurface explorations it is anticipated that the granular base material extends outward to an offset of 20-feet from centerline. The quality of the existing base material is marginal due to relatively high silt content.
3. Wet soil conditions were encountered within the existing base layer(s) at stations 26+24 and 36+74 in the eastbound travel and shoulder area. Ditching will be critical in providing pavement structure drainage and water table drawdown if design expectations are to be met. Ditches should be constructed with a minimum depth of 3 feet below finished grade when possible.
4. Bedrock could be as shallow as 3-feet below the existing pavement surface between stations 21+00 and 23+00. This relatively shallow bedrock surface may be encountered depending on the final design and construction needs. If bedrock excavation is necessary blasting will be required.
5. According to maintenance personnel there are no differential heaving issues associated with the possible shallow bedrock surface underlying Route 202 between stations 21+00 and 23+00.

February 12, 2013

Falling Weight Deflectometer (FWD) Summary Sheet

Project #: 19010.00
Town(s): Greene
Route(s): 11/202
Date Tested: 08/30/2012
Requested By: S Hayden
Direction of Testing: East and West

# Of FWD tests: 18	# Of Power Augers/Spoons - 14
Design Life: 12	Future 18-kip P2.5 ESALs (Design Life): 1,752,000
Initial Serviceability: 4.5	Terminal Serviceability: 2.5
Reliability Level: 90%	Overall Standard Deviation: .45

Locations

Station (Feet)

Description

Comments:

Pavement depths used for DARWin analysis were taken from Ground Penetrating Radar Summary sheets.

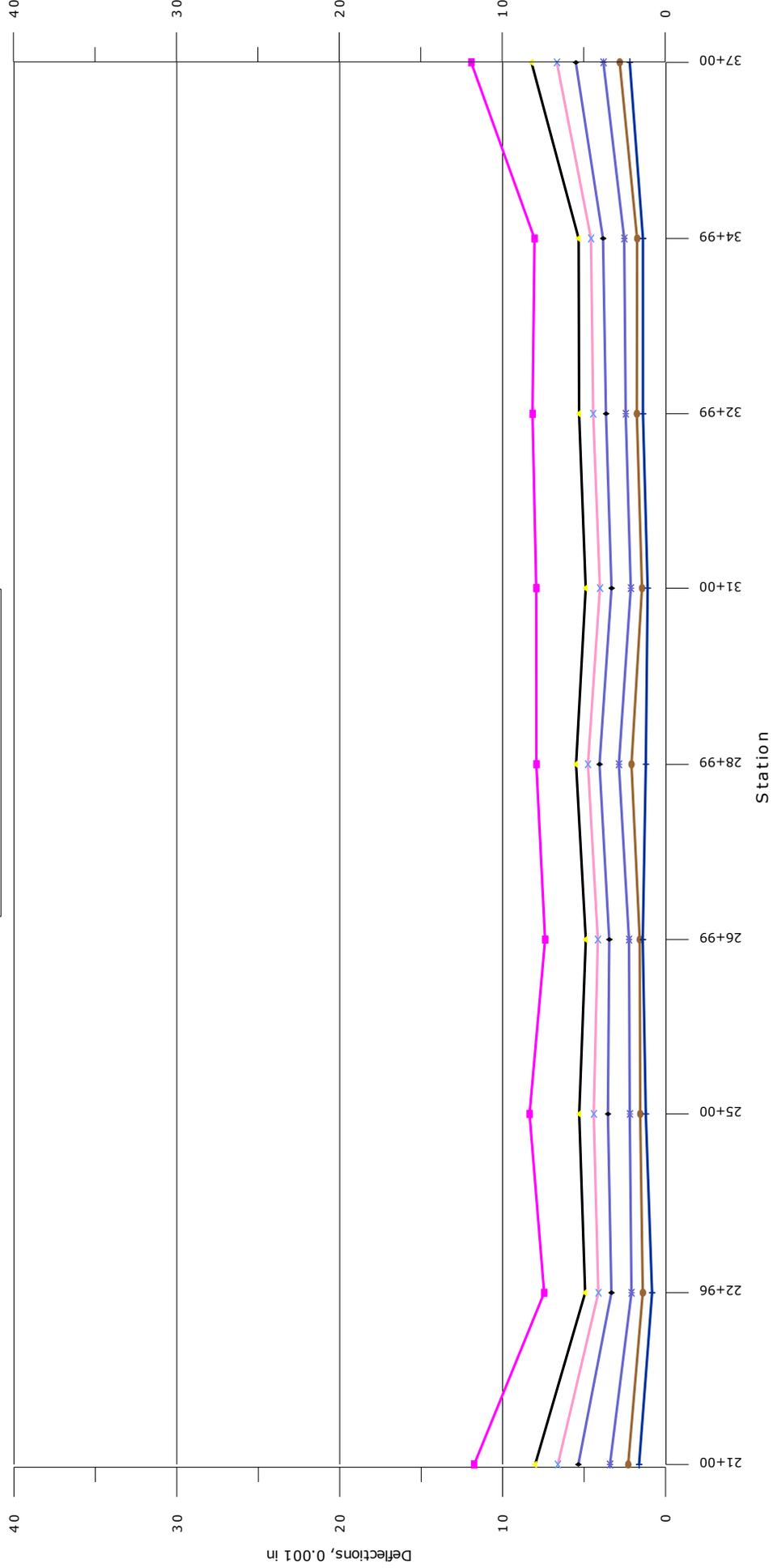
Data was reported for the right wheel path in both the east and west bound lanes.



FWD DEFLECTION DATA

WIN/Town:	019010.00 - Greene	Reported By:	COLSON, STEPHEN W
Route:	11/202	Tested:	8/30/2012
Comments:	West Bound Lane		
		Reported:	2/12/2013

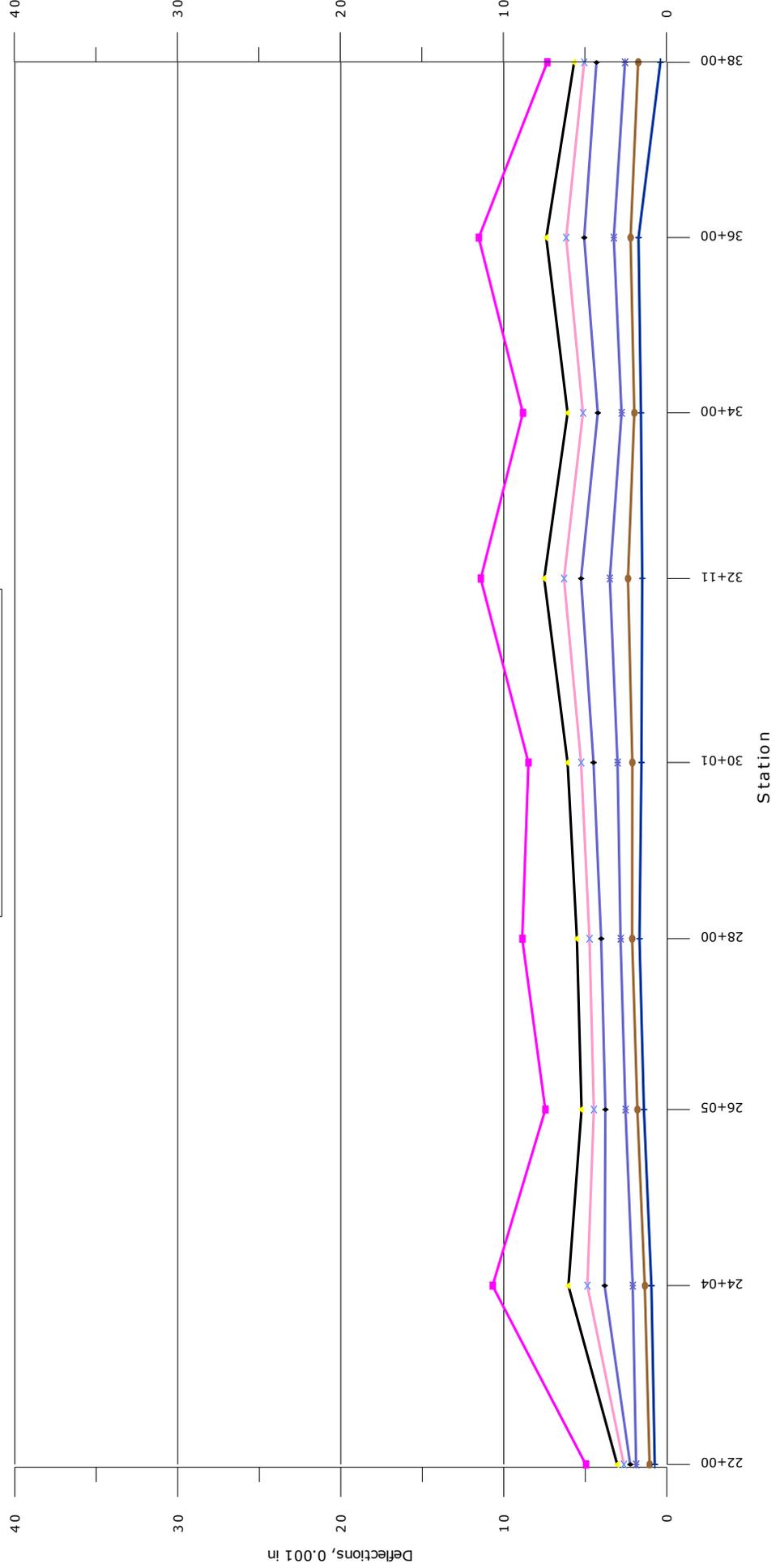
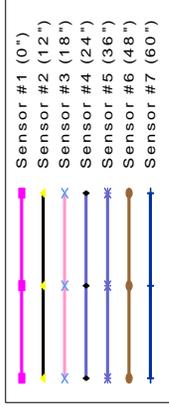
- Sensor #1 (0")
- Sensor #2 (12")
- x Sensor #3 (18")
- ♦ Sensor #4 (24")
- * Sensor #5 (36")
- ♦ Sensor #6 (48")
- ♦ Sensor #7 (60")





FWD DEFLECTION DATA

WIN/Town:	019010.00 - Greene	Reported By:	COLSON, STEPHEN W
Route:	11/202	Tested:	8/30/2012
Comments:	East Bound Lane		
		Reported:	2/12/2013



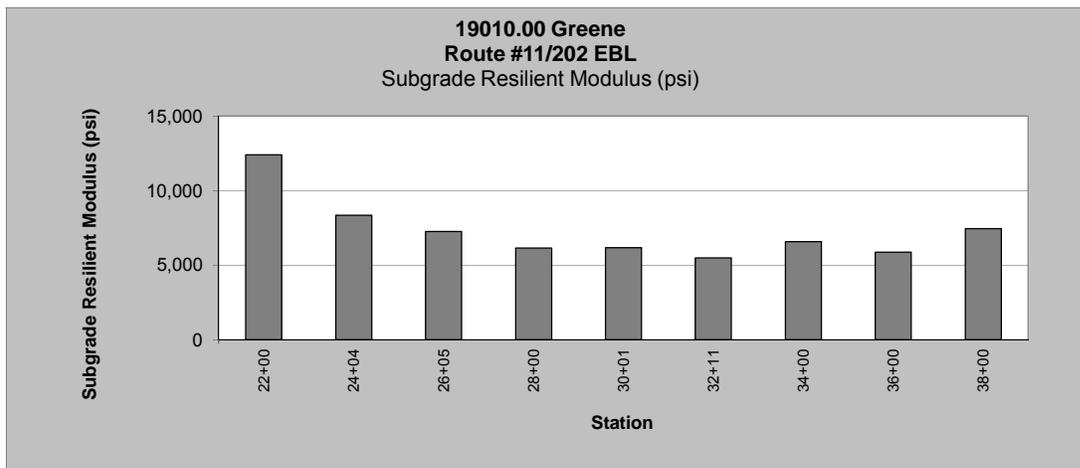
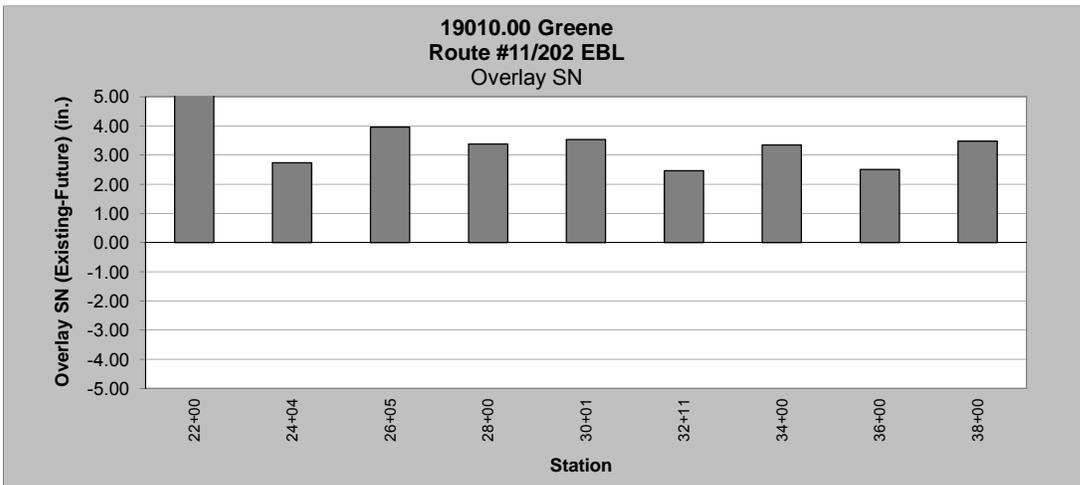
**19010.00 Greene
Route #11/202 EBL**

Station (Feet)	Existing Structural Number (in.)	Future Traffic Structural Number (in.)	Overlay Structural Number (Existing - Future)	Recommended Pavement Thickness (in.)	Pavement Modulus (psi)	Subgrade Resilient Modulus (psi)	Pavement Depth (in)	Combined Pavement/Gravel Depth Used for Calculation (in)
22+00	8.69	3.07	5.62	-	266,546	12,401	10.0	30.0
24+04	6.27	3.54	2.73	-	100,152	8,346	8.2	30.0
26+05	7.67	3.72	3.95	-	183,142	7,256	8.7	30.0
28+00	7.32	3.94	3.38	-	159,386	6,141	8.8	30.0
30+01	7.46	3.93	3.53	-	168,803	6,178	9.3	30.0
32+11	6.56	4.10	2.46	-	114,801	5,479	8.8	30.0
34+00	7.19	3.85	3.34	-	151,307	6,582	8.9	30.0
36+00	6.51	4.00	2.51	-	112,187	5,880	9.1	30.0
38+00	7.17	3.69	3.48	-	149,934	7,458	9.3	30.0

Possible Weak Soils (<3000)

Possible Shallow Bedrock (>8000)

Pavement depths were taken from Ground Penetrating Radar Summary Sheet.



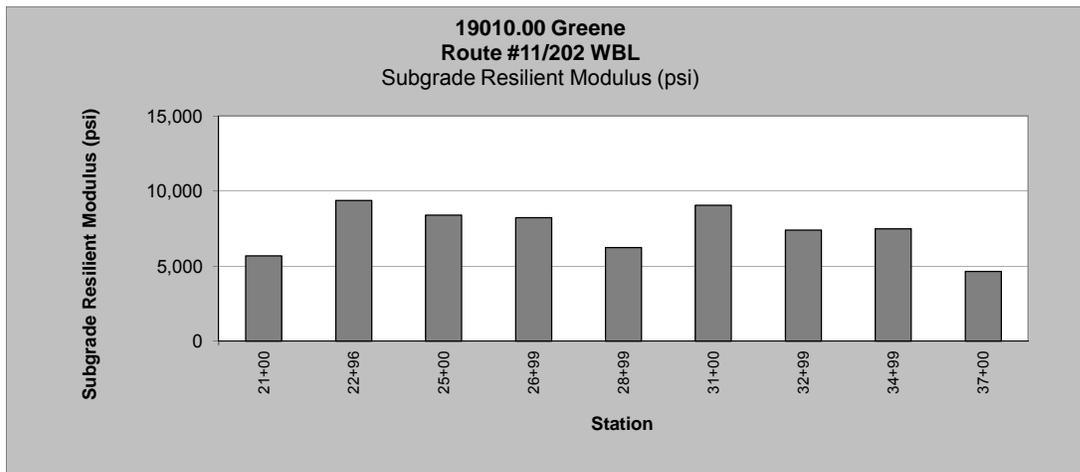
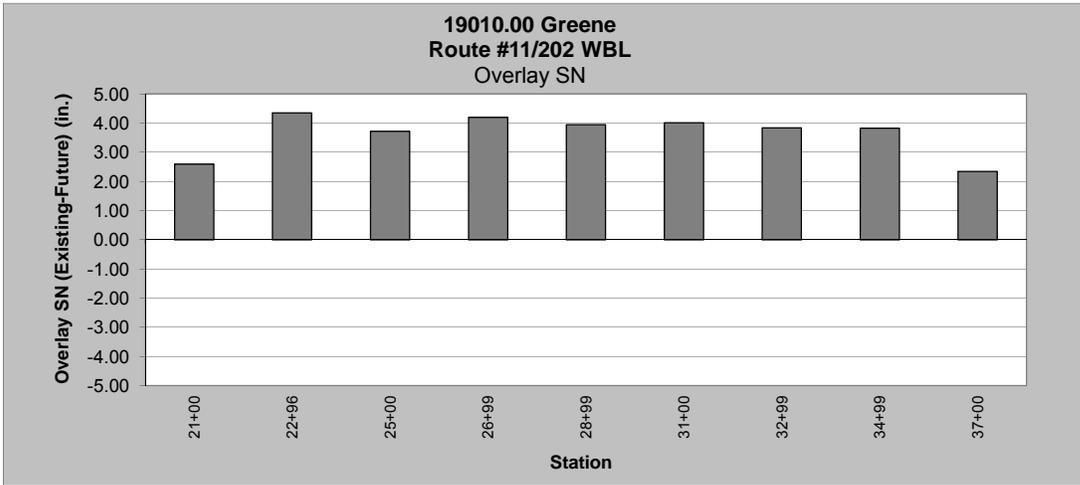
**19010.00 Greene
Route #11/202 WBL**

Station (Feet)	Existing Structural Number (in.)	Future Traffic Structural Number (in.)	Overlay Structural Number (Existing - Future)	Recommended Pavement Thickness (in.)	Pavement Modulus (psi)	Subgrade Resilient Modulus (psi)	Pavement Depth (in)	Combined Pavement/Gravel Depth Used for Calculation (in)
21+00	6.64	4.05	2.59	-	119,223	5,690	9.3	30.0
22+96	7.75	3.40	4.35	-	188,995	9,369	10.0	30.0
25+00	7.25	3.53	3.72	-	154,901	8,407	8.2	30.0
26+99	7.76	3.56	4.20	-	189,642	8,237	8.7	30.0
28+99	7.86	3.92	3.94	-	197,109	6,243	8.8	30.0
31+00	7.45	3.44	4.01	-	168,054	9,053	9.3	30.0
32+99	7.54	3.70	3.84	-	173,887	7,395	8.8	30.0
34+99	7.50	3.68	3.82	-	171,556	7,489	8.7	30.0
37+00	6.68	4.34	2.34	-	121,036	4,643	9.3	30.0

Possible Weak Soils (<3000)

Possible Shallow Bedrock (>8000)

Pavement depths were taken from Ground Penetrating Radar Summary Sheet.





Ground Penetrating Radar (GPR) Estimated Pavement Thickness

019010.00 - Greene

Explanation of Ground Penetrating (GPR) Data Collection and Analysis:

GPR data was collected in the left and right wheel path of both lanes. Data was collected at 1 foot intervals along the entire section. Pavement thickness estimates were developed using Geophysical Survey Systems Inc. (GSSI) RADAN GPR Data Processing Software. Where available, pavement thickness from Geotechnical borings and/or pavement cores collected by MaineDOT personnel were used in developing the estimated GPR pavement thicknesses.

GPR pavement thickness averages are to be considered for estimating purposes only. Actual pavement thickness may vary.

Additional Comments			

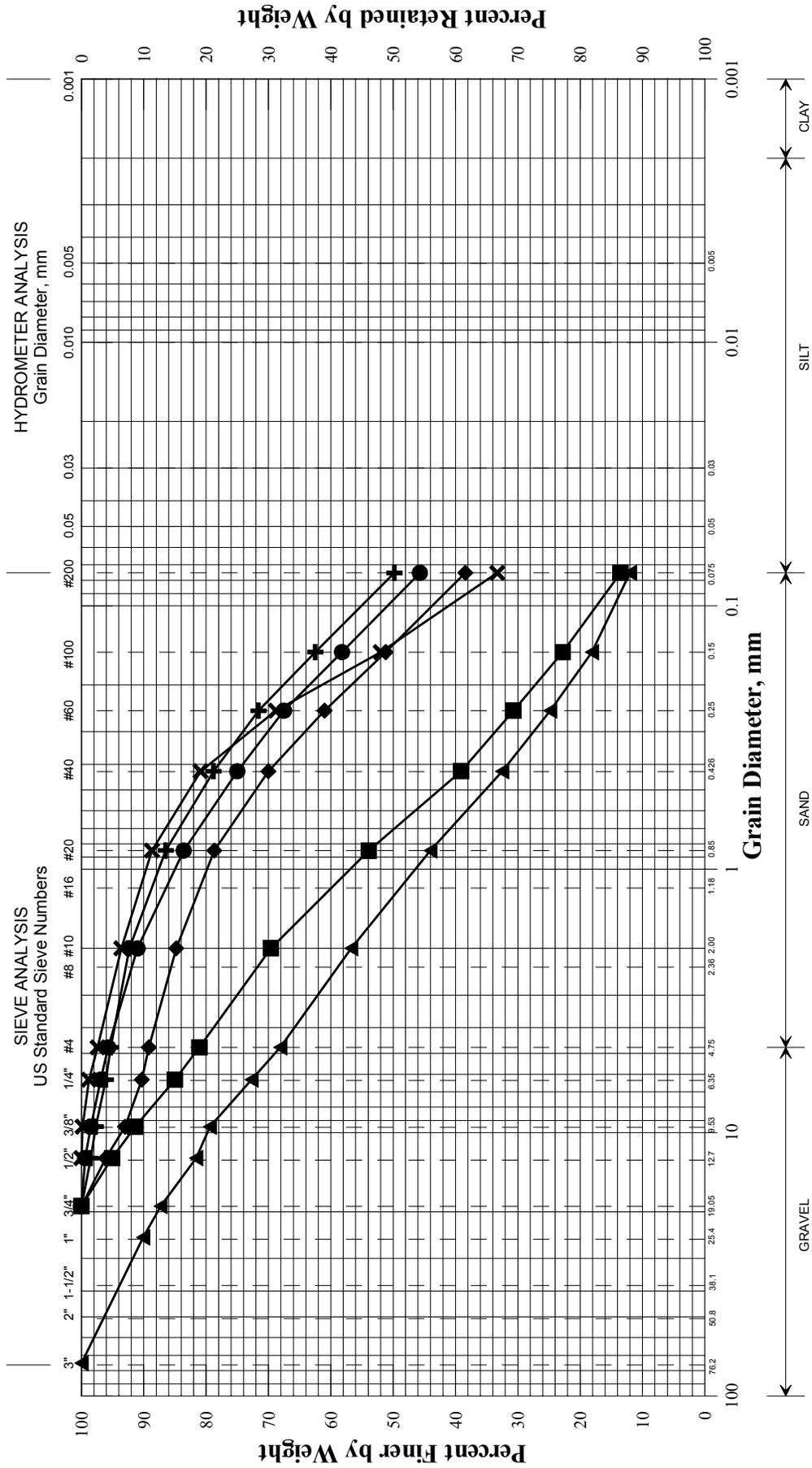
Project Manager		Reported By	
SMITH, SHAWN A		VOSE, RYAN K	

Lane Tested		Test Date	
MAINLINE		8/30/2012	
	Analysis Distance, ft.		Overall Minimum Thickness, in.
	100		7.9
			Overall Maximum Thickness, in.
			10

***Depth at this location may be impacted by a bridge deck or other pavement anomaly.
Highlighted inches indicate either the Overall Minimum or Overall Maximum thickness.**

Station Limits, feet	Average Depth, in.	Station Limits, feet	Average Depth, in.	Station Limits, feet	Average Depth, in.
20+00	7.9	21+00	9.3	22+00	10.0
24+00	8.2	25+00	8.0	26+00	8.7
28+00	8.8	29+00	8.3	30+00	9.3
32+00	8.8	33+00	8.9	34+00	8.7
36+00	9.1	37+00	9.3	38+00	8.6

State of Maine Department of Transportation
GRAIN SIZE DISTRIBUTION CURVE

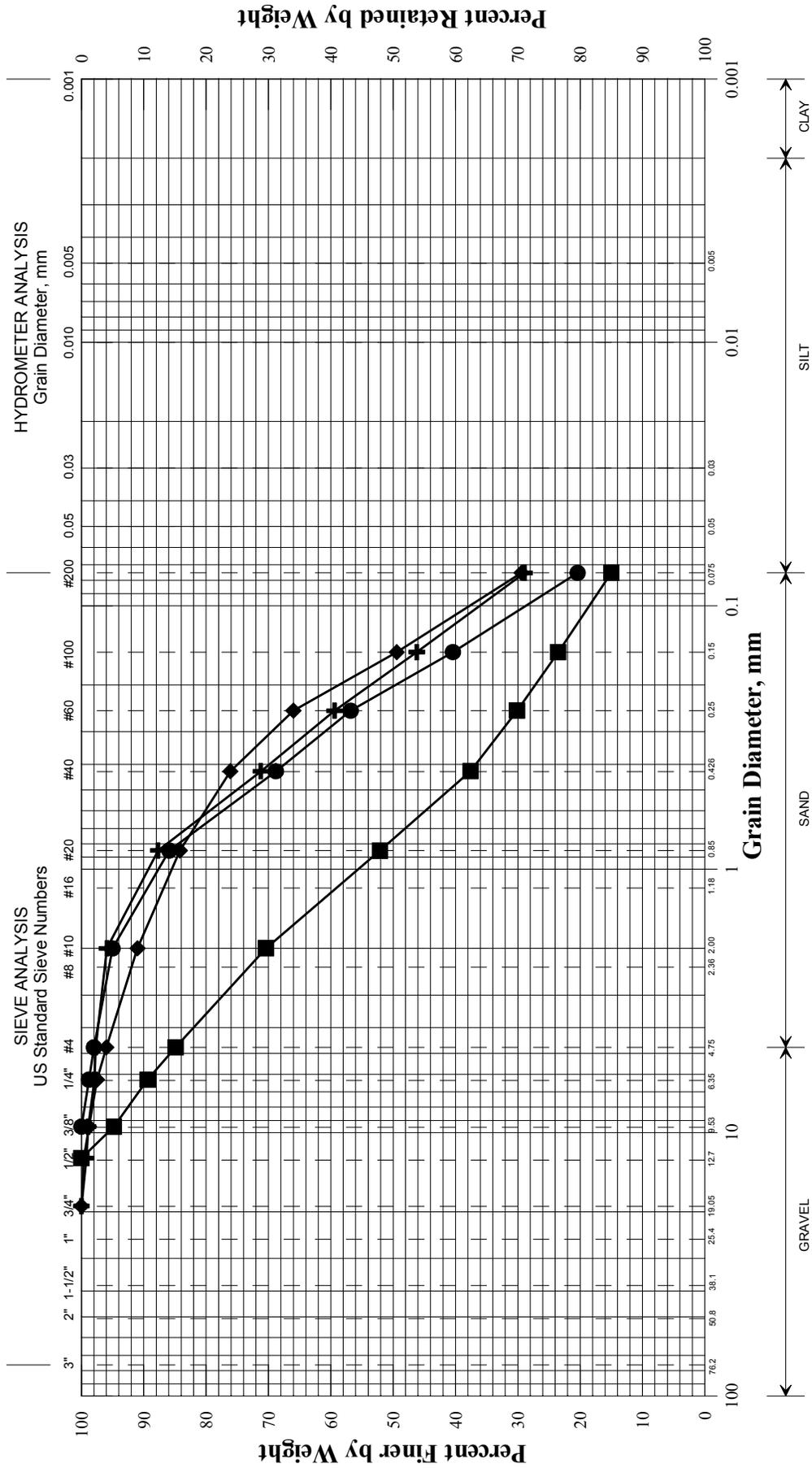


UNIFIED CLASSIFICATION

Boring/Sample No.	Station	Offset, ft	Depth, ft	Description	W, %	LL	PL	PI
+ HB-GREE-101/S1	3+64.5	33.0 LT	0.2-1.7	Sandy SILT, trace gravel.	42.2			
◆ HB-GREE-101/S2	3+64.5	33.0 LT	1.7-5.0	Silty SAND, little gravel.	18.5			
■ HB-GREE-102/S3	1+69.5	8.5 RT	0.29-3.8	SAND, little gravel, little silt.	5.0			
● HB-GREE-102/S4	1+69.5	8.5 RT	3.8-6.5	Silty SAND, trace gravel.	18.7			
▲ HB-GREE-103/S5	4+08	1.3 RT	0.25-2.4	SAND, some gravel, little silt.	2.2			
✕ HB-GREE-103/S6	4+08	1.3 RT	2.4-7.4	SAND, some silt, trace gravel.	7.3			

019010.00	WIN
Greene	Town
WHITE, TERRY A	Reported by/Date
	11/26/2012

State of Maine Department of Transportation
GRAIN SIZE DISTRIBUTION CURVE

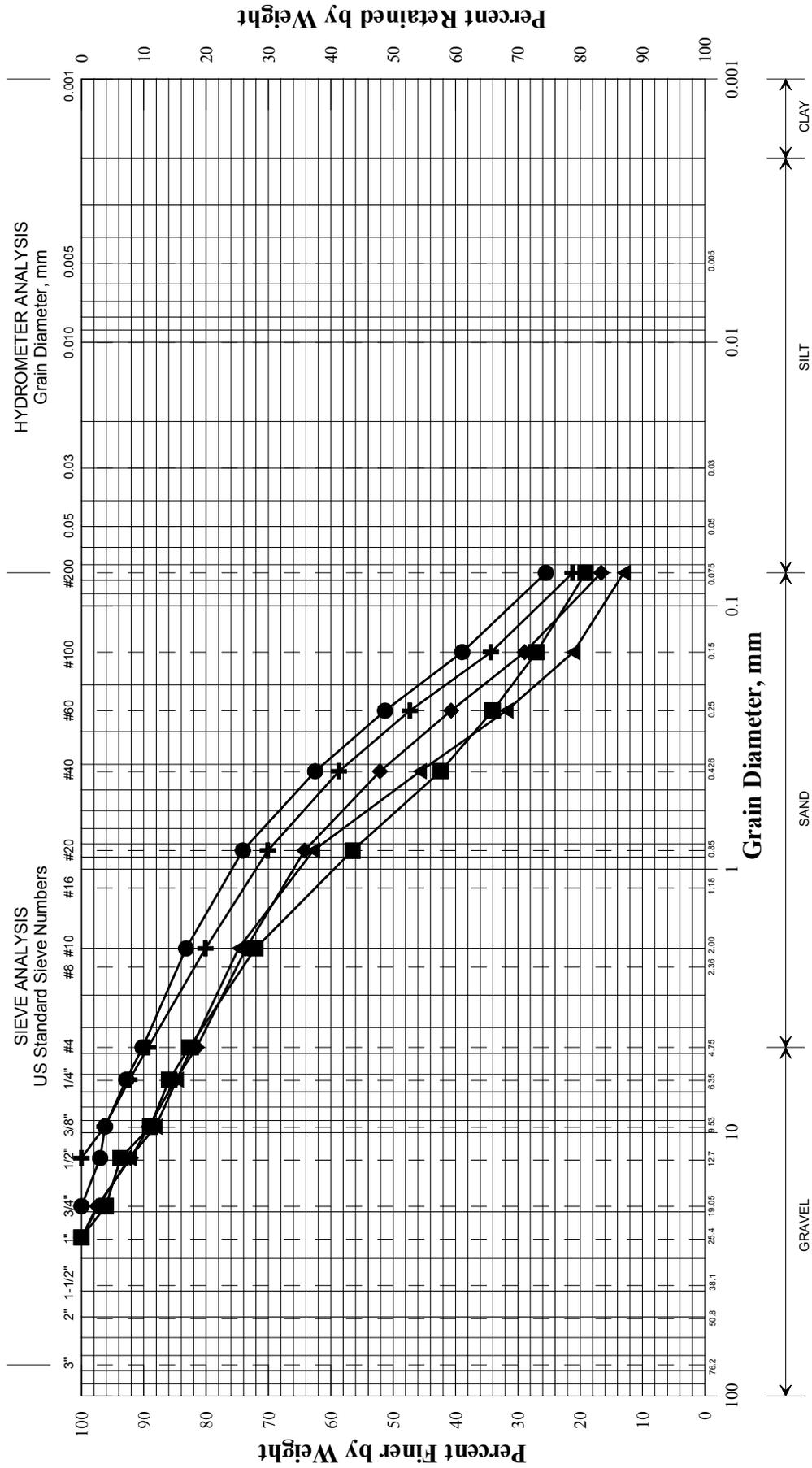


UNIFIED CLASSIFICATION

WIN	019010.00
Town	Greene
Reported by/Date	WHITE, TERRY A 11/26/2012

Boring/Sample No.	Station	Offset, ft	Depth, ft	Description	W, %	LL	PL	PI
+	22+74.5	9.0 RT	0.92-2.0	SAND, some silt, trace gravel.	5.7			
◆	22+74.5	9.0 RT	2.0-4.5	SAND, some silt, trace gravel.	3.9			
■	22+74.5	15.0 RT	0.33-1.6	SAND, little gravel, little silt.	4.5			
●	22+74.5	15.0 RT	1.6-3.0	SAND, some silt, trace gravel.	4.9			
▲								
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State of Maine Department of Transportation
GRAIN SIZE DISTRIBUTION CURVE

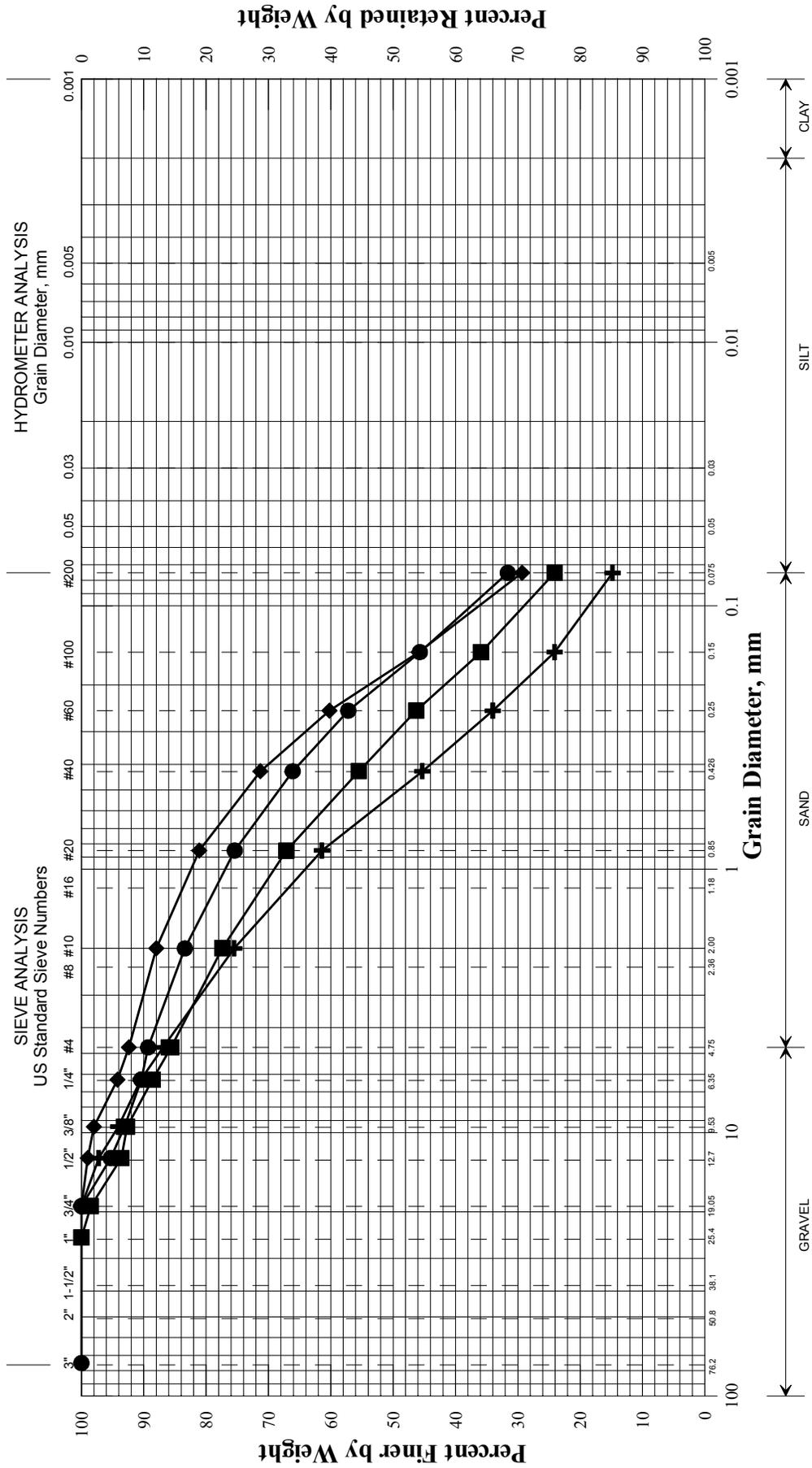


UNIFIED CLASSIFICATION

Boring/Sample No.	Station	Offset, ft	Depth, ft	Description	W, %	LL	PL	PI
+	26+24.5	9.0 RT	0.83-3.6	SAND, some silt, little gravel.	2.3			
◆	26+24.5	9.0 RT	3.6-5.0	SAND, little gravel, little silt.	9.2			
■	26+24.5	15.0 RT	0.33-2.0	SAND, little silt, little gravel.	7.9			
●	26+24.5	15.0 RT	2.0-5.0	SAND, some silt, trace gravel.	16.2			
▲	26+24.5	15.0 LT	0.42-5.0	SAND, little gravel, little silt.	5.5			
×								

WIN	019010.00
Town	Greene
Reported by/Date	WHITE, TERRY A 11/26/2012

State of Maine Department of Transportation
GRAIN SIZE DISTRIBUTION CURVE

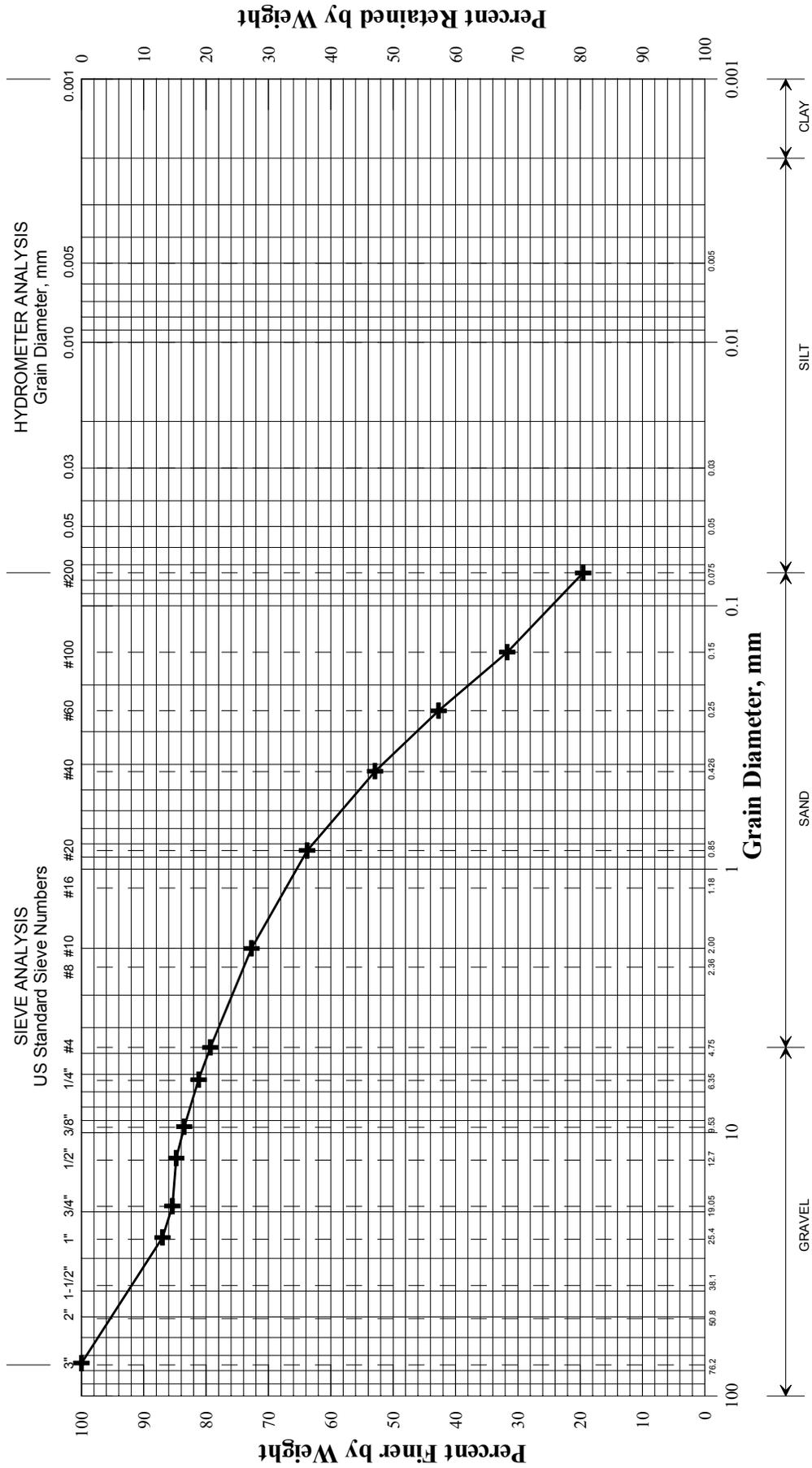


UNIFIED CLASSIFICATION

Boring/Sample No.	Station	Offset, ft	Depth, ft	Description	W, %	LL	PL	PI
+	30+74.4	9.0 LT	0.83-3.7	SAND, little silt, little gravel.	2.6			
◆	30+74.5	9.0 LT	3.7-5.0	SAND, some silt, trace gravel.	17.7			
■	36+74.5	9.0 RT	0.92-5.0	SAND, some silt, little gravel.	10.5			
●	36+74.5	15.0 RT	0.42-5.0	SAND, some silt, little gravel.	15.0			
▲								
×								

WIN	019010.00
Town	Greene
Reported by/Date	WHITE, TERRY A 11/26/2012

State of Maine Department of Transportation
GRAIN SIZE DISTRIBUTION CURVE



UNIFIED CLASSIFICATION

Boring/Sample No.	Station	Offset, ft	Depth, ft	Description	W, %	LL	PL	PI
HA-5.0/S1	4+74.4	10.0 LT	0.3-5.0	SAND, some gravel, little silt.	4.4			

WIN	019010.00
Town	Greene
Reported by/Date	WHITE, TERRY A 12/5/2012

Maine Department of Transportation Soil/Rock Exploration Log US CUSTOMARY UNITS		Project: Meadow Hill Rd., West Maine St. and Route 11/202 Location: Greene, Maine	Boring No.: HB-GREE-101 WIN: 19010.00
Driller: MaineDOT	Elevation (ft.)		Auger ID/OD: 5" Dia.
Operator: Enos/Giles/Daggett	Datum: NAVD88		Sampler: Off Flights
Logged By: B. Wilder	Rig Type: CME 45C		Hammer Wt./Fall: N/A
Date Start/Finish: 10/31/12-10/31/12	Drilling Method: Soild Stem Auger		Core Barrel: N/A
Boring Location: 3+64.5, 33.0 ft Lt.	Casing ID/OD: N/A		Water Level*: None Observed
Definitions: D = Split Spoon Sample MD = Unsuccessful Split Spoon Sample attempt U = Thin Wall Tube Sample R = Rock Core Sample V = Insitu Vane Shear Test SSA = Solid Stem Auger		Definitions: S _u = Insitu Field Vane Shear Strength (psf) T _v = Pocket Torvane Shear Strength (psf) q _p = Unconfined Compressive Strength (ksf) S _{u(lab)} = Lab Vane Shear Strength (psf) WOH = weight of 140lb. hammer WOR = weight of rods WOC = weight of casing	

Depth (ft.)	Sample Information								Elevation (ft.)	Graphic Log	Visual Description and Remarks	Laboratory Testing Results/AASHTO and Unified Class.
	Sample No.	Pen./Rec. (in.)	Sample Depth (ft.)	Blows (/6 in.) Shear Strength (psf) or RQD (%)	N-value	Casing Blows						
0	S1		0.20 - 1.70					-0.20		TOPSOIL. Dark brown, moist, fine to medium sandy SILT, little organics, roots. Light brown, wet, fine to medium SAND, little silt.	G#266683 A-4, SM WC=42.2% G#266684 A-4, SM WC=18.5%	
	S2		1.70 - 5.00					-1.70				
5								-5.00		Bottom of Exploration at 5.00 feet below ground surface. NO REFUSAL		
10												
15												
20												
25												

Remarks:
Meadow Hill Road

Maine Department of Transportation Soil/Rock Exploration Log US CUSTOMARY UNITS		Project: Meadow Hill Rd., West Maine St. and Route 11/202 Location: Greene, Maine	Boring No.: HB-GREE-102 WIN: 19010.00
Driller: MaineDOT	Elevation (ft.)		Auger ID/OD: 5" Dia.
Operator: Enos/Giles/Daggett	Datum: NAVD88		Sampler: Off Flights
Logged By: B. Wilder	Rig Type: CME 45C		Hammer Wt./Fall: N/A
Date Start/Finish: 10/31/12-10/31/12	Drilling Method: Soil Stem Auger		Core Barrel: N/A
Boring Location: 1+69.5, 8.5 ft Rt.	Casing ID/OD: N/A		Water Level*: None Observed
Definitions: D = Split Spoon Sample MD = Unsuccessful Split Spoon Sample attempt U = Thin Wall Tube Sample R = Rock Core Sample V = Insitu Vane Shear Test SSA = Solid Stem Auger	Definitions: S _u = Insitu Field Vane Shear Strength (psf) T _v = Pocket Torvane Shear Strength (psf) q _p = Unconfined Compressive Strength (ksf) S _{u(lab)} = Lab Vane Shear Strength (psf) WOH = weight of 140lb. hammer WOR = weight of rods WOC = weight of casing	Definitions: WC = water content, percent LL = Liquid Limit PL = Plastic Limit PI = Plasticity Index G = Grain Size Analysis C = Consolidation Test	

Depth (ft.)	Sample Information								Elevation (ft.)	Graphic Log	Visual Description and Remarks	Laboratory Testing Results/AASHTO and Unified Class.
	Sample No.	Pen./Rec. (in.)	Sample Depth (ft.)	Blows (/6 in.) Shear Strength (psf) or RQD (%)	N-value	Casing Blows						
0	S3		0.29 - 3.80			SSA		-0.29		3 1/2" PAVEMENT. Brown, moist, fine to coarse SAND, some gravel, trace silt.	G#266685 A-1-b, SM WC=5.0%	
5	S4		3.80 - 6.50					-3.80		Brown, wet, silty, fine to medium SAND, little organics.	G#266686 A-4, SM WC=18.7%	
								-6.50		Bottom of Exploration at 6.50 feet below ground surface. NO REFUSAL		

Remarks:
Meadow Hill Road

Maine Department of Transportation Soil/Rock Exploration Log US CUSTOMARY UNITS		Project: Meadow Hill Rd., West Maine St. and Route 11/202 Location: Greene, Maine	Boring No.: HB-GREE-103 WIN: 19010.00
Driller: MaineDOT	Elevation (ft.)		Auger ID/OD: 5" Dia.
Operator: Enos/Giles/Daggett	Datum: NAVD88		Sampler: Off Flights
Logged By: B. Wilder	Rig Type: CME 45C		Hammer Wt./Fall: N/A
Date Start/Finish: 10/31/12-10/31/12	Drilling Method: Soild Stem Auger		Core Barrel: N/A
Boring Location: 4+08, 1.3 ft Rt.	Casing ID/OD: N/A		Water Level*: None Observed
Definitions: D = Split Spoon Sample MD = Unsuccessful Split Spoon Sample attempt U = Thin Wall Tube Sample R = Rock Core Sample V = Insitu Vane Shear Test SSA = Solid Stem Auger		Definitions: S _u = Insitu Field Vane Shear Strength (psf) T _v = Pocket Torvane Shear Strength (psf) q _p = Unconfined Compressive Strength (ksf) S _{u(lab)} = Lab Vane Shear Strength (psf) WOH = weight of 140lb. hammer WOR = weight of rods WOC = weight of casing	

Depth (ft.)	Sample Information								Elevation (ft.)	Graphic Log	Visual Description and Remarks	Laboratory Testing Results/AASHTO and Unified Class.
	Sample No.	Pen./Rec. (in.)	Sample Depth (ft.)	Blows (/6 in.) Shear Strength (psf) or RQD (%)	N-value	Casing Blows						
0	S5		0.25 - 2.40			SSA		-0.25		3" PAVEMENT.	G#266687 A-1-b, SW-SM WC=2.2%	
										Brown, damp, fine to coarse SAND, some gravel, trace silt.	-0.25	
	S6		2.40 - 7.40					-2.40		Light brown, damp, fine to coarse SAND, some silt, occasional cobbles.	-2.40	G#266688 A-2-4, SM WC=7.3%
5												
10												
15												
20												
25												
								-7.40		Bottom of Exploration at 7.40 feet below ground surface. REFUSAL	-7.40	

Remarks:
West Main Street

Maine Department of Transportation Soil/Rock Exploration Log US CUSTOMARY UNITS		Project: Meadow Hill Rd., West Maine St. and Route 11/202 Location: Greene, Maine	Boring No.: HB-GREE-104 WIN: 19010.00
Driller: MaineDOT	Elevation (ft.)		Auger ID/OD: 5" Dia.
Operator: Enos/Giles/Daggett	Datum: NAVD88		Sampler: Off Flights
Logged By: B. Wilder	Rig Type: CME 45C		Hammer Wt./Fall: N/A
Date Start/Finish: 10/31/12-10/31/12	Drilling Method: Soild Stem Auger		Core Barrel: N/A
Boring Location: 22+74.5, 9.0 ft Rt.	Casing ID/OD: N/A		Water Level*: None Observed
Definitions: D = Split Spoon Sample MD = Unsuccessful Split Spoon Sample attempt U = Thin Wall Tube Sample R = Rock Core Sample V = Insitu Vane Shear Test SSA = Solid Stem Auger		Definitions: S _u = Insitu Field Vane Shear Strength (psf) T _v = Pocket Torvane Shear Strength (psf) q _p = Unconfined Compressive Strength (ksf) S _{u(lab)} = Lab Vane Shear Strength (psf) WOH = weight of 140lb. hammer WOR = weight of rods WOC = weight of casing	

Depth (ft.)	Sample Information								Elevation (ft.)	Graphic Log	Visual Description and Remarks	Laboratory Testing Results/AASHTO and Unified Class.
	Sample No.	Pen./Rec. (in.)	Sample Depth (ft.)	Blows (/6 in.) Shear Strength (psf) or RQD (%)	N-value	Casing Blows						
0	S7		0.92 - 2.00			SSA		-0.92		11" PAVEMENT.		
								-2.00		Brown, dry, fine to coarse SAND, little gravel, trace silt.		
	S8		2.00 - 4.50					-2.00		Brown, dry, fine to coarse SAND, little gravel, little silt.	G#266689 A-2-4, SM WC=5.7% G#266690 A-2-4, SM WC=3.9%	
5								-4.50		Bottom of Exploration at 4.50 feet below ground surface. REFUSAL		
10												
15												
20												
25												

Remarks:
Route 11/202

Maine Department of Transportation Soil/Rock Exploration Log US CUSTOMARY UNITS		Project: Meadow Hill Rd., West Maine St. and Route 11/202 Location: Greene, Maine	Boring No.: HB-GREE-105 WIN: 19010.00
Driller: MaineDOT	Elevation (ft.)		Auger ID/OD: 5" Dia.
Operator: Enos/Giles/Daggett	Datum: NAVD88		Sampler: Off Flights
Logged By: B. Wilder	Rig Type: CME 45C		Hammer Wt./Fall: N/A
Date Start/Finish: 10/31/12-10/31/12	Drilling Method: Soild Stem Auger		Core Barrel: N/A
Boring Location: 22+74.5, 15.0 ft Rt.	Casing ID/OD: N/A		Water Level*: None Observed
Definitions: D = Split Spoon Sample MD = Unsuccessful Split Spoon Sample attempt U = Thin Wall Tube Sample R = Rock Core Sample V = Insitu Vane Shear Test SSA = Solid Stem Auger	Definitions: S _u = Insitu Field Vane Shear Strength (psf) T _v = Pocket Torvane Shear Strength (psf) q _p = Unconfined Compressive Strength (ksf) S _{u(lab)} = Lab Vane Shear Strength (psf) WOH = weight of 140lb. hammer WOR = weight of rods WOC = weight of casing	Definitions: WC = water content, percent LL = Liquid Limit PL = Plastic Limit PI = Plasticity Index G = Grain Size Analysis C = Consolidation Test	

Depth (ft.)	Sample Information								Elevation (ft.)	Graphic Log	Visual Description and Remarks	Laboratory Testing Results/AASHTO and Unified Class.
	Sample No.	Pen./Rec. (in.)	Sample Depth (ft.)	Blows (/6 in.) Shear Strength (psf) or RQD (%)	N-value	Casing Blows						
0	S9		0.33 - 1.60			SSA		-0.33		4" PAVEMENT.		
	S10		1.60 - 3.00					-1.60		Brown, damp, fine to coarse SAND, some gravel, trace silt.	G#266691 A-1-b, SM WC=4.5%	
								-3.00		Light brown, damp, fine to coarse SAND, little gravel, little silt.	G#266692 A-2-4, SM WC=4.9%	
5												
10												
15												
20												
25												
										Bottom of Exploration at 3.00 feet below ground surface. REFUSAL		

Remarks:
Route 11/202

Maine Department of Transportation Soil/Rock Exploration Log US CUSTOMARY UNITS		Project: Meadow Hill Rd., West Maine St. and Route 11/202 Location: Greene, Maine	Boring No.: HB-GREE-106 WIN: 19010.00
Driller: MaineDOT	Elevation (ft.):		Auger ID/OD: 5" Dia.
Operator: Enos/Giles/Daggett	Datum: NAVD88		Sampler: Off Flights
Logged By: B. Wilder	Rig Type: CME 45C		Hammer Wt./Fall: N/A
Date Start/Finish: 10/31/12-10/31/12	Drilling Method: Soild Stem Auger		Core Barrel: N/A
Boring Location: 26+24.5, 9.0 ft Rt.	Casing ID/OD: N/A		Water Level*: None Observed
Definitions: D = Split Spoon Sample MD = Unsuccessful Split Spoon Sample attempt U = Thin Wall Tube Sample R = Rock Core Sample V = Insitu Vane Shear Test SSA = Solid Stem Auger	Definitions: S _u = Insitu Field Vane Shear Strength (psf) T _v = Pocket Torvane Shear Strength (psf) q _p = Unconfined Compressive Strength (ksf) S _{u(lab)} = Lab Vane Shear Strength (psf) WOH = weight of 140lb. hammer WOR = weight of rods WOC = weight of casing	Definitions: WC = water content, percent LL = Liquid Limit PL = Plastic Limit PI = Plasticity Index G = Grain Size Analysis C = Consolidation Test	

Depth (ft.)	Sample Information								Elevation (ft.)	Graphic Log	Visual Description and Remarks	Laboratory Testing Results/ AASHTO and Unified Class.
	Sample No.	Pen./Rec. (in.)	Sample Depth (ft.)	Blows (/6 in.) Shear Strength (psf) or RQD (%)	N-value	Casing Blows						
0	S11		0.83 - 3.60			SSA			-0.83	10" PAVEMENT.		
										Brown, dry, fine to coarse SAND, some gravel, trace silt.	G#266693 A-2-4, SM WC=2.3%	
	S12		3.60 - 5.00						-3.60			
										Brown, moist, fine to coarse SAND, little gravel, little silt, occasional cobble.	G#266694 A-2-4, SM WC=9.2%	
5									-5.00	Bottom of Exploration at 5.00 feet below ground surface. NO REFUSAL		
10												
15												
20												
25												

Remarks:
Route 11/202

Maine Department of Transportation Soil/Rock Exploration Log US CUSTOMARY UNITS		Project: Meadow Hill Rd., West Maine St. and Route 11/202 Location: Greene, Maine	Boring No.: HB-GREE-107 WIN: 19010.00
Driller: MaineDOT	Elevation (ft.)		Auger ID/OD: 5" Dia.
Operator: Enos/Giles/Daggett	Datum: NAVD88		Sampler: Off Flights
Logged By: B. Wilder	Rig Type: CME 45C		Hammer Wt./Fall: N/A
Date Start/Finish: 10/31/12-10/31/12	Drilling Method: Soild Stem Auger		Core Barrel: N/A
Boring Location: 26+24.5, 15.0 ft Rt.	Casing ID/OD: N/A		Water Level*: None Observed
Definitions: D = Split Spoon Sample MD = Unsuccessful Split Spoon Sample attempt U = Thin Wall Tube Sample R = Rock Core Sample V = Insitu Vane Shear Test SSA = Solid Stem Auger	Definitions: S _u = Insitu Field Vane Shear Strength (psf) T _v = Pocket Torvane Shear Strength (psf) q _p = Unconfined Compressive Strength (ksf) S _{u(lab)} = Lab Vane Shear Strength (psf) WOH = weight of 140lb. hammer WOR = weight of rods WOC = weight of casing	Definitions: WC = water content, percent LL = Liquid Limit PL = Plastic Limit PI = Plasticity Index G = Grain Size Analysis C = Consolidation Test	

Depth (ft.)	Sample Information								Elevation (ft.)	Graphic Log	Visual Description and Remarks	Laboratory Testing Results/AASHTO and Unified Class.
	Sample No.	Pen./Rec. (in.)	Sample Depth (ft.)	Blows (/6 in.) Shear Strength (psf) or RQD (%)	N-value	Casing Blows						
0	S13		0.33 - 2.00			SSA		-0.33		4" PAVEMENT. Brown, moist, fine to coarse SAND, some gravel, little silt.	G#266695 A-1-b, SM WC=7.9%	
	S14		2.00 - 5.00					-2.00		Light brown, wet, fine to coarse SAND, some silt, little gravel.	G#266696 A-2-4, SM WC=16.2%	
5								-5.00		Bottom of Exploration at 5.00 feet below ground surface. NO REFUSAL		
10												
15												
20												
25												

Remarks:
Route 11/202

Maine Department of Transportation Soil/Rock Exploration Log US CUSTOMARY UNITS		Project: Meadow Hill Rd., West Maine St. and Route 11/202 Location: Greene, Maine	Boring No.: HB-GREE-108 WIN: 19010.00
Driller: MaineDOT	Elevation (ft.):		Auger ID/OD: 5" Dia.
Operator: Enos/Giles/Daggett	Datum: NAVD88		Sampler: Off Flights
Logged By: B. Wilder	Rig Type: CME 45C		Hammer Wt./Fall: N/A
Date Start/Finish: 10/31/12-10/31/12	Drilling Method: Soild Stem Auger		Core Barrel: N/A
Boring Location: 26+24.5, 20.0 ft Rt.	Casing ID/OD: N/A		Water Level*: None Observed
Definitions: D = Split Spoon Sample MD = Unsuccessful Split Spoon Sample attempt U = Thin Wall Tube Sample R = Rock Core Sample V = Insitu Vane Shear Test SSA = Solid Stem Auger		Definitions: S _u = Insitu Field Vane Shear Strength (psf) T _v = Pocket Torvane Shear Strength (psf) q _p = Unconfined Compressive Strength (ksf) S _{u(lab)} = Lab Vane Shear Strength (psf) WOH = weight of 140lb. hammer WOR = weight of rods WOC = weight of casing	

Depth (ft.)	Sample Information								Elevation (ft.)	Graphic Log	Visual Description and Remarks	Laboratory Testing Results/AASHTO and Unified Class.
	Sample No.	Pen./Rec. (in.)	Sample Depth (ft.)	Blows (/6 in.) Shear Strength (psf) or RQD (%)	N-value	Casing Blows						
0						SSA					Brown, moist, fine to coarse SAND, some gravel, little silt. ≈S13	
								-1.70			Light brown, wet, fine to coarse SAND, some silt, little gravel. ≈S14	
5								-5.00			Bottom of Exploration at 5.00 feet below ground surface. NO REFUSAL	
10												
15												
20												
25												

Remarks:
Route 11/202

Maine Department of Transportation Soil/Rock Exploration Log US CUSTOMARY UNITS		Project: Meadow Hill Rd., West Maine St. and Route 11/202 Location: Greene, Maine	Boring No.: HB-GREE-109 WIN: 19010.00
Driller: MaineDOT	Elevation (ft.)		Auger ID/OD: 5" Dia.
Operator: Enos/Giles/Daggett	Datum: NAVD88		Sampler: Off Flights
Logged By: B. Wilder	Rig Type: CME 45C		Hammer Wt./Fall: N/A
Date Start/Finish: 10/31/12-10/31/12	Drilling Method: Soild Stem Auger		Core Barrel: N/A
Boring Location: 26+24.5, 10.0 ft Lt.	Casing ID/OD: N/A		Water Level*: None Observed
Definitions: D = Split Spoon Sample MD = Unsuccessful Split Spoon Sample attempt U = Thin Wall Tube Sample R = Rock Core Sample V = Insitu Vane Shear Test SSA = Solid Stem Auger	Definitions: S _u = Insitu Field Vane Shear Strength (psf) T _v = Pocket Torvane Shear Strength (psf) q _p = Unconfined Compressive Strength (ksf) S _{u(lab)} = Lab Vane Shear Strength (psf) WOH = weight of 140lb. hammer WOR = weight of rods WOC = weight of casing		Definitions: WC = water content, percent LL = Liquid Limit PL = Plastic Limit PI = Plasticity Index G = Grain Size Analysis C = Consolidation Test

Depth (ft.)	Sample Information								Elevation (ft.)	Graphic Log	Visual Description and Remarks	Laboratory Testing Results/AASHTO and Unified Class.
	Sample No.	Pen./Rec. (in.)	Sample Depth (ft.)	Blows (/6 in.) Shear Strength (psf) or RQD (%)	N-value	Casing Blows						
0						SSA			-0.58	7" PAVEMENT.		
									-0.83	3" Unbound Pavement.		
										Brown, dry, fine to coarse SAND, some gravel, trace silt. ≈S11		
									-3.70			
5									-5.00	Brown, moist, fine to coarse SAND, little gravel, little silt, occasional cobble. ≈S12		
										Bottom of Exploration at 5.00 feet below ground surface. NO REFUSAL		
10												
15												
20												
25												

Remarks:
Route 11/202

Maine Department of Transportation Soil/Rock Exploration Log US CUSTOMARY UNITS		Project: Meadow Hill Rd., West Maine St. and Route 11/202 Location: Greene, Maine	Boring No.: HB-GREE-110 WIN: 19010.00
Driller: MaineDOT	Elevation (ft.)		Auger ID/OD: 5" Dia.
Operator: Enos/Giles/Daggett	Datum: NAVD88		Sampler: Off Flights
Logged By: B. Wilder	Rig Type: CME 45C		Hammer Wt./Fall: N/A
Date Start/Finish: 10/31/12-10/31/12	Drilling Method: Soild Stem Auger		Core Barrel: N/A
Boring Location: 26+24.5, 15.0 ft Lt.	Casing ID/OD: N/A		Water Level*: None Observed
Definitions: D = Split Spoon Sample MD = Unsuccessful Split Spoon Sample attempt U = Thin Wall Tube Sample R = Rock Core Sample V = Insitu Vane Shear Test SSA = Solid Stem Auger		Definitions: S _u = Insitu Field Vane Shear Strength (psf) T _v = Pocket Torvane Shear Strength (psf) q _p = Unconfined Compressive Strength (ksf) S _{u(lab)} = Lab Vane Shear Strength (psf) WOH = weight of 140lb. hammer WOR = weight of rods WOC = weight of casing	

Depth (ft.)	Sample Information								Elevation (ft.)	Graphic Log	Visual Description and Remarks	Laboratory Testing Results/ AASHTO and Unified Class.
	Sample No.	Pen./Rec. (in.)	Sample Depth (ft.)	Blows (/6 in.) Shear Strength (psf) or RQD (%)	N-value	Casing Blows						
0	S15		0.42 - 5.00			SSA		-0.25 -0.42		3" PAVEMENT. 2" Unbound Pavement. Brown, damp, fine to coarse SAND, some gravel, little silt, occasional cobble.	G#266697 A-1-b, SM WC=5.5%	
5								-5.00		Bottom of Exploration at 5.00 feet below ground surface. NO REFUSAL		
10												
15												
20												
25												

Remarks:
Route 11/202

Maine Department of Transportation Soil/Rock Exploration Log US CUSTOMARY UNITS		Project: Meadow Hill Rd., West Maine St. and Route 11/202 Location: Greene, Maine	Boring No.: HB-GREE-111 WIN: 19010.00
Driller: MaineDOT	Elevation (ft.):		Auger ID/OD: 5" Dia.
Operator: Enos/Giles/Daggett	Datum: NAVD88		Sampler: Off Flights
Logged By: B. Wilder	Rig Type: CME 45C		Hammer Wt./Fall: N/A
Date Start/Finish: 10/31/12-10/31/12	Drilling Method: Soild Stem Auger		Core Barrel: N/A
Boring Location: 26+24.5, 20.0 ft Lt.	Casing ID/OD: N/A		Water Level*: None Observed
Definitions: D = Split Spoon Sample MD = Unsuccessful Split Spoon Sample attempt U = Thin Wall Tube Sample R = Rock Core Sample V = Insitu Vane Shear Test SSA = Solid Stem Auger		Definitions: S _u = Insitu Field Vane Shear Strength (psf) T _v = Pocket Torvane Shear Strength (psf) q _p = Unconfined Compressive Strength (ksf) S _{u(lab)} = Lab Vane Shear Strength (psf) WOH = weight of 140lb. hammer WOR = weight of rods WOC = weight of casing	

Depth (ft.)	Sample Information								Elevation (ft.)	Graphic Log	Visual Description and Remarks	Laboratory Testing Results/AASHTO and Unified Class.
	Sample No.	Pen./Rec. (in.)	Sample Depth (ft.)	Blows (/6 in.) Shear Strength (psf) or RQD (%)	N-value	Casing Blows						
0						SSA				Brown, damp, fine to coarse SAND, some gravel, little silt, occasional cobble. ≈S15		
5								-5.00		Bottom of Exploration at 5.00 feet below ground surface. NO REFUSAL		
10												
15												
20												
25												

Remarks:
Route 11/202

Maine Department of Transportation Soil/Rock Exploration Log US CUSTOMARY UNITS		Project: Meadow Hill Rd., West Maine St. and Route 11/202 Location: Greene, Maine	Boring No.: HB-GREE-112 WIN: 19010.00
Driller: MaineDOT	Elevation (ft.)		Auger ID/OD: 5" Dia.
Operator: Enos/Giles/Daggett	Datum: NAVD88		Sampler: Off Flights
Logged By: B. Wilder	Rig Type: CME 45C		Hammer Wt./Fall: N/A
Date Start/Finish: 10/31/12-10/31/12	Drilling Method: Soild Stem Auger		Core Barrel: N/A
Boring Location: 22+74.5, 9.0 ft Lt.	Casing ID/OD: N/A		Water Level*: None Observed
Definitions: D = Split Spoon Sample MD = Unsuccessful Split Spoon Sample attempt U = Thin Wall Tube Sample R = Rock Core Sample V = Insitu Vane Shear Test SSA = Solid Stem Auger		Definitions: S _u = Insitu Field Vane Shear Strength (psf) T _v = Pocket Torvane Shear Strength (psf) q _p = Unconfined Compressive Strength (ksf) S _{u(lab)} = Lab Vane Shear Strength (psf) WOH = weight of 140lb. hammer WOR = weight of rods WOC = weight of casing	

Depth (ft.)	Sample Information								Elevation (ft.)	Graphic Log	Visual Description and Remarks	Laboratory Testing Results/AASHTO and Unified Class.
	Sample No.	Pen./Rec. (in.)	Sample Depth (ft.)	Blows (/6 in.) Shear Strength (psf) or RQD (%)	N-value	Casing Blows						
0						SSA			-0.88	10½" PAVEMENT.		
									-2.20	Brown, dry, fine to coarse SAND, little gravel, trace silt. ≅S7		
									-4.90	Brown, dry, fine to coarse SAND, little gravel, little silt. ≅S8		
5									-4.90	Bottom of Exploration at 4.90 feet below ground surface. REFUSAL		
10												
15												
20												
25												

Remarks:
Route 11/202

Maine Department of Transportation Soil/Rock Exploration Log US CUSTOMARY UNITS		Project: Meadow Hill Rd., West Maine St. and Route 11/202 Location: Greene, Maine	Boring No.: HB-GREE-113 WIN: 19010.00
Driller: MaineDOT	Elevation (ft.)		Auger ID/OD: 5" Dia.
Operator: Enos/Giles/Daggett	Datum: NAVD88		Sampler: Off Flights
Logged By: B. Wilder	Rig Type: CME 45C		Hammer Wt./Fall: N/A
Date Start/Finish: 10/31/12-10/31/12	Drilling Method: Soild Stem Auger		Core Barrel: N/A
Boring Location: 22+74.5, 15.0 ft Lt.	Casing ID/OD: N/A		Water Level*: None Observed
Definitions: D = Split Spoon Sample MD = Unsuccessful Split Spoon Sample attempt U = Thin Wall Tube Sample R = Rock Core Sample V = Insitu Vane Shear Test SSA = Solid Stem Auger		Definitions: S _u = Insitu Field Vane Shear Strength (psf) T _v = Pocket Torvane Shear Strength (psf) q _p = Unconfined Compressive Strength (ksf) S _{u(lab)} = Lab Vane Shear Strength (psf) WOH = weight of 140lb. hammer WOR = weight of rods WOC = weight of casing	

Depth (ft.)	Sample Information								Elevation (ft.)	Graphic Log	Visual Description and Remarks	Laboratory Testing Results/AASHTO and Unified Class.
	Sample No.	Pen./Rec. (in.)	Sample Depth (ft.)	Blows (/6 in.) Shear Strength (psf) or RQD (%)	N-value	Casing Blows						
0						SSA		-0.33		4" PAVEMENT.		
								-1.50		Brown, damp, fine to coarse SAND, some gravel, trace silt. ≈S9		
										Light brown, damp, fine to coarse SAND, little gravel, little silt. ≈S10		
5								-4.80		Bottom of Exploration at 4.80 feet below ground surface. REFUSAL		
10												
15												
20												
25												

Remarks:
Route 11/202

Maine Department of Transportation Soil/Rock Exploration Log US CUSTOMARY UNITS		Project: Meadow Hill Rd., West Maine St. and Route 11/202 Location: Greene, Maine	Boring No.: HB-GREE-114 WIN: 19010.00
Driller: MaineDOT	Elevation (ft.)		Auger ID/OD: 5" Dia.
Operator: Enos/Giles/Daggett	Datum: NAVD88		Sampler: Off Flights
Logged By: B. Wilder	Rig Type: CME 45C		Hammer Wt./Fall: N/A
Date Start/Finish: 10/31/12-10/31/12	Drilling Method: Soild Stem Auger		Core Barrel: N/A
Boring Location: 30+74.5, 9.0 ft Lt.	Casing ID/OD: N/A		Water Level*: None Observed
Definitions: D = Split Spoon Sample MD = Unsuccessful Split Spoon Sample attempt U = Thin Wall Tube Sample R = Rock Core Sample V = Insitu Vane Shear Test SSA = Solid Stem Auger	Definitions: S _u = Insitu Field Vane Shear Strength (psf) T _v = Pocket Torvane Shear Strength (psf) q _p = Unconfined Compressive Strength (ksf) S _{u(lab)} = Lab Vane Shear Strength (psf) WOH = weight of 140lb. hammer WOR = weight of rods WOC = weight of casing	Definitions: WC = water content, percent LL = Liquid Limit PL = Plastic Limit PI = Plasticity Index G = Grain Size Analysis C = Consolidation Test	

Depth (ft.)	Sample Information								Elevation (ft.)	Graphic Log	Visual Description and Remarks	Laboratory Testing Results/ AASHTO and Unified Class.
	Sample No.	Pen./Rec. (in.)	Sample Depth (ft.)	Blows (/6 in.) Shear Strength (psf) or RQD (%)	N-value	Casing Blows						
0	S16		0.83 - 3.70			SSA		-0.83		10" PAVEMENT. Brown, dry, fine to coarse SAND, some gravel, trace silt, occasional cobble.	G#266698 A-1-b, SM WC=2.6%	
	S17		3.70 - 5.00					-3.70		Brown, moist, fine to coarse SAND, some silt, little gravel.	G#266699 A-2-4, SM WC=17.7%	
5								-5.00		Bottom of Exploration at 5.00 feet below ground surface. NO REFUSAL		
10												
15												
20												
25												

Remarks:
Route 11/202

Maine Department of Transportation Soil/Rock Exploration Log US CUSTOMARY UNITS		Project: Meadow Hill Rd., West Maine St. and Route 11/202 Location: Greene, Maine	Boring No.: HB-GREE-115 WIN: 19010.00
Driller: MaineDOT	Elevation (ft.):		Auger ID/OD: 5" Dia.
Operator: Enos/Giles/Daggett	Datum: NAVD88		Sampler: Off Flights
Logged By: B. Wilder	Rig Type: CME 45C		Hammer Wt./Fall: N/A
Date Start/Finish: 10/31/12-10/31/12	Drilling Method: Soild Stem Auger		Core Barrel: N/A
Boring Location: 30+74.5, 13.5 ft Lt.	Casing ID/OD: N/A		Water Level*: None Observed
Definitions: D = Split Spoon Sample MD = Unsuccessful Split Spoon Sample attempt U = Thin Wall Tube Sample R = Rock Core Sample V = Insitu Vane Shear Test SSA = Solid Stem Auger		Definitions: S _u = Insitu Field Vane Shear Strength (psf) T _v = Pocket Torvane Shear Strength (psf) q _p = Unconfined Compressive Strength (ksf) S _{u(lab)} = Lab Vane Shear Strength (psf) WOH = weight of 140lb. hammer WOR = weight of rods WOC = weight of casing	

Depth (ft.)	Sample Information								Elevation (ft.)	Graphic Log	Visual Description and Remarks	Laboratory Testing Results/AASHTO and Unified Class.
	Sample No.	Pen./Rec. (in.)	Sample Depth (ft.)	Blows (/6 in.) Shear Strength (psf) or RQD (%)	N-value	Casing Blows						
0						SSA		-0.67		8" PAVEMENT. Brown, dry, fine to coarse SAND, some gravel, trace silt, occasional cobble. ≈S16		
								-3.60		Brown, moist, fine to coarse SAND, some silt, little gravel. ≈S17		
5								-5.00		Bottom of Exploration at 5.00 feet below ground surface. NO REFUSAL		
10												
15												
20												
25												

Remarks:
Route 11/202

Maine Department of Transportation Soil/Rock Exploration Log US CUSTOMARY UNITS		Project: Meadow Hill Rd., West Maine St. and Route 11/202 Location: Greene, Maine	Boring No.: HB-GREE-116 WIN: 19010.00
Driller: MaineDOT	Elevation (ft.):		Auger ID/OD: 5" Dia.
Operator: Enos/Giles/Daggett	Datum: NAVD88		Sampler: Off Flights
Logged By: B. Wilder	Rig Type: CME 45C		Hammer Wt./Fall: N/A
Date Start/Finish: 10/31/12-10/31/12	Drilling Method: Soild Stem Auger		Core Barrel: N/A
Boring Location: 36+74.5, 9.0 ft Rt.	Casing ID/OD: N/A		Water Level*: None Observed
Definitions: D = Split Spoon Sample MD = Unsuccessful Split Spoon Sample attempt U = Thin Wall Tube Sample R = Rock Core Sample V = Insitu Vane Shear Test SSA = Solid Stem Auger		Definitions: S _u = Insitu Field Vane Shear Strength (psf) T _v = Pocket Torvane Shear Strength (psf) q _p = Unconfined Compressive Strength (ksf) S _{u(lab)} = Lab Vane Shear Strength (psf) WOH = weight of 140lb. hammer WOR = weight of rods WOC = weight of casing	

Depth (ft.)	Sample Information								Elevation (ft.)	Graphic Log	Visual Description and Remarks	Laboratory Testing Results/ AASHTO and Unified Class.
	Sample No.	Pen./Rec. (in.)	Sample Depth (ft.)	Blows (/6 in.) Shear Strength (psf) or RQD (%)	N-value	Casing Blows						
0	S18		0.92 - 5.00			SSA		-0.92		11" PAVEMENT. Brown, moist, fine to coarse SAND, some gravel, little silt, (Fill Area).	G#266700 A-2-4, SM WC=10.5%	
5								-5.00		Bottom of Exploration at 5.00 feet below ground surface. NO REFUSAL		
10												
15												
20												
25												

Remarks:
Route 11/202

Maine Department of Transportation Soil/Rock Exploration Log US CUSTOMARY UNITS		Project: Meadow Hill Rd., West Maine St. and Route 11/202 Location: Greene, Maine	Boring No.: HB-GREE-117 WIN: 19010.00
Driller: MaineDOT	Elevation (ft.):		Auger ID/OD: 5" Dia.
Operator: Enos/Giles/Daggett	Datum: NAVD88		Sampler: Off Flights
Logged By: B. Wilder	Rig Type: CME 45C		Hammer Wt./Fall: N/A
Date Start/Finish: 10/31/12-10/31/12	Drilling Method: Soild Stem Auger		Core Barrel: N/A
Boring Location: 36+74.5, 15.0 ft Rt.	Casing ID/OD: N/A		Water Level*: None Observed
Definitions: D = Split Spoon Sample MD = Unsuccessful Split Spoon Sample attempt U = Thin Wall Tube Sample R = Rock Core Sample V = Insitu Vane Shear Test SSA = Solid Stem Auger		Definitions: S _u = Insitu Field Vane Shear Strength (psf) T _v = Pocket Torvane Shear Strength (psf) q _p = Unconfined Compressive Strength (ksf) S _{u(lab)} = Lab Vane Shear Strength (psf) WOH = weight of 140lb. hammer WOR = weight of rods WOC = weight of casing	

Depth (ft.)	Sample Information								Elevation (ft.)	Graphic Log	Visual Description and Remarks	Laboratory Testing Results/ AASHTO and Unified Class.
	Sample No.	Pen./Rec. (in.)	Sample Depth (ft.)	Blows (/6 in.) Shear Strength (psf) or RQD (%)	N-value	Casing Blows						
0	S19		0.42 - 5.00			SSA		-0.42		5" PAVEMENT. Brown, wet (very wet at 5.0 ft bgs), fine to coarse SAND, some gravel, little silt, (Fill Area).	G#266702 A-2-4, SM WC=15.0%	
5								-5.00		Bottom of Exploration at 5.00 feet below ground surface. NO REFUSAL		
10												
15												
20												
25												

Remarks:
Route 11/202

Maine Department of Transportation Soil/Rock Exploration Log US CUSTOMARY UNITS		Project: West Main Street & Route 11/202	Boring No.: HA-5.0
		Location: Greene, Maine	WIN: 19010.00
Driller: MaineDOT	Elevation (ft.):		Auger ID/OD: N/A
Operator: Enos/Giles	Datum: NAVD 88		Sampler: Hand Auger
Logged By: B. Wilder	Rig Type: N/A		Hammer Wt./Fall: N/A
Date Start/Finish: 10/10/12-10/10/12	Drilling Method: Hand Auger		Core Barrel: N/A
Boring Location: 4+74.4, 10.0 ft Lt.	Casing ID/OD: N/A		Water Level*: None Observed
Definitions: D = Split Spoon Sample MD = Unsuccessful Split Spoon Sample attempt U = Thin Wall Tube Sample R = Rock Core Sample V = Insitu Vane Shear Test SSA = Solid Stem Auger		Definitions: S _u = Insitu Field Vane Shear Strength (psf) T _v = Pocket Torvane Shear Strength (psf) q _p = Unconfined Compressive Strength (ksf) S _{u(lab)} = Lab Vane Shear Strength (psf) WOH = weight of 140lb. hammer WOR = weight of rods WOC = weight of casing	

Depth (ft.)	Sample Information								Elevation (ft.)	Graphic Log	Visual Description and Remarks	Laboratory Testing Results/AASHTO and Unified Class.
	Sample No.	Pen./Rec. (in.)	Sample Depth (ft.)	Blows (/6 in.) Shear Strength (psf) or RQD (%)	N-value	Casing Blows						
0	S1		0.30 - 5.00			HA			-0.30		TOPSOIL, sod. Brown, damp, fine to coarse SAND, trace silt, occasional cobbles. Very dense from 2.5-5.0 ft bgs. Bottom of Exploration at 5.00 feet below ground surface. NO REFUSAL	G#267030 A-2-4, SM WC=4.4%
5									-5.00			
10												
15												
20												
25												

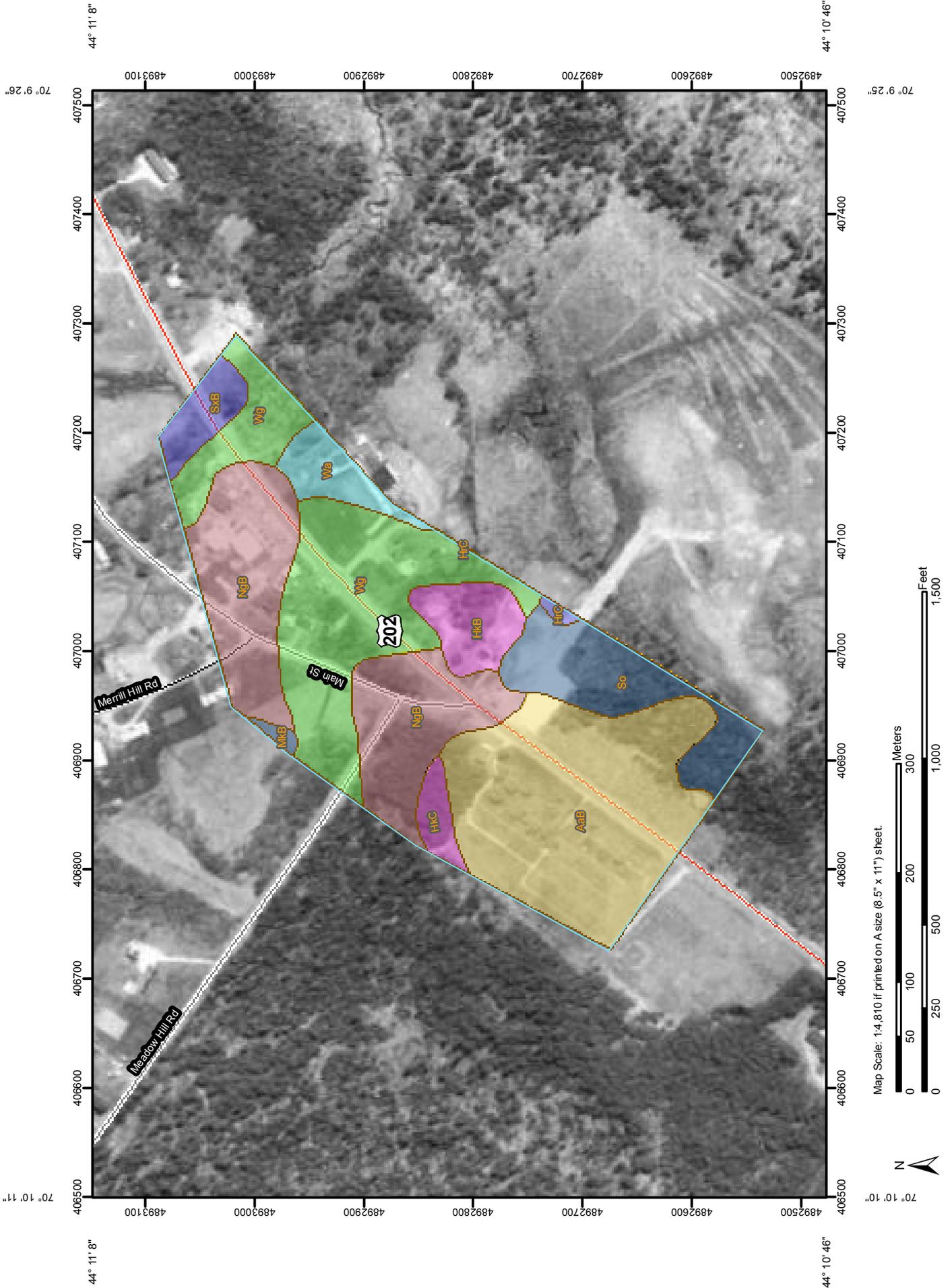
Remarks:

Maine Department of Transportation Soil/Rock Exploration Log US CUSTOMARY UNITS		Project: West Main Street & Route 11/202	Boring No.: RS-8.0NR
		Location: Greene, Maine	WIN: 19010.00
Driller: MaineDOT	Elevation (ft.):		Auger ID/OD: 5/8" Dia.
Operator: Enos/Giles	Datum: NAVD 88		Sampler: N/A
Logged By: B. Wilder	Rig Type: N/A		Hammer Wt./Fall: N/A
Date Start/Finish: 10/10/12-10/10/12	Drilling Method: Rod Sounding		Core Barrel: N/A
Boring Location: 4+64.1, 5.0 ft Rt.	Casing ID/OD: N/A		Water Level*: N/A
Definitions: D = Split Spoon Sample MD = Unsuccessful Split Spoon Sample attempt U = Thin Wall Tube Sample R = Rock Core Sample V = Insitu Vane Shear Test SSA = Solid Stem Auger		Definitions: S _u = Insitu Field Vane Shear Strength (psf) T _v = Pocket Torvane Shear Strength (psf) q _p = Unconfined Compressive Strength (ksf) S _{u(lab)} = Lab Vane Shear Strength (psf) WOH = weight of 140lb. hammer WOR = weight of rods WOC = weight of casing	

Depth (ft.)	Sample Information								Visual Description and Remarks	Laboratory Testing Results/AASHTO and Unified Class.
	Sample No.	Pen./Rec. (in.)	Sample Depth (ft.)	Blows (/6 in.) Shear Strength (psf) or RQD (%)	N-value	Casing Blows	Elevation (ft.)	Graphic Log		
0						RS			ROD SOUNDING	
5										
									8.00	
									Bottom of Exploration at 8.00 feet below ground surface. NO REFUSAL	
10										
15										
20										
25										

Remarks:

Parent Material Name—Androscoggin and Sagadahoc Counties, Maine
 (19010.00 Greene Route 202)



MAP LEGEND

 Area of Interest (AOI)	 Cities
 Soil Map Units	 Water Features
 coarse-loamy glaciofluvial deposits derived from slate	 Streams and Canals
 coarse-loamy glaciocustrine deposits	 Transportation
 coarse-loamy supraglacial meltout till derived from mica schist	 Rails
 sandy glaciofluvial deposits	 Interstate Highways
 sandy glaciofluvial deposits derived from crystallin rock	 US Routes
 sandy glaciofluvial deposits derived from granite and gneiss	 Major Roads
 sandy-skeletal glaciofluvial deposits derived from granite and gneiss	 Local Roads
 Not rated or not available	
Political Features	

MAP INFORMATION

Map Scale: 1:4,810 if printed on A size (8.5" x 11") sheet.
The soil surveys that comprise your AOI were mapped at 1:15,840.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for accurate map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: <http://websoilsurvey.nrcs.usda.gov>
Coordinate System: UTM Zone 19N NAD83

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Androscoggin and Sagadahoc Counties, Maine
Survey Area Data: Version 13, Jul 27, 2009

Date(s) aerial images were photographed: Data not available.

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Parent Material Name

Parent Material Name— Summary by Map Unit — Androscoggin and Sagadahoc Counties, Maine (ME606)				
Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
AaB	Adams loamy sand, 0 to 8 percent slopes	sandy glaciofluvial deposits derived from crystallin rock	9.7	28.6%
HkB	Hinckley gravelly sandy loam, 0 to 8 percent slopes	sandy-skeletal glaciofluvial deposits derived from granite and gneiss	1.5	4.6%
HkC	Hinckley gravelly sandy loam, 8 to 15 percent slopes	sandy-skeletal glaciofluvial deposits derived from granite and gneiss	0.6	1.8%
HrC	Hollis fine sandy loam, 8 to 15 percent slopes	coarse-loamy supraglacial meltout till derived from mica schist	0.1	0.4%
MkB	Merrimac fine sandy loam, 0 to 8 percent slopes	sandy glaciofluvial deposits derived from granite and gneiss	0.2	0.5%
NgB	Ninigret fine sandy loam, 0 to 8 percent slopes	coarse-loamy glaciofluvial deposits derived from slate	7.7	22.8%
So	Scarboro fine sandy loam	sandy glaciofluvial deposits derived from granite and gneiss	3.4	9.9%
SxB	Sutton loam, 0 to 8 percent slopes	coarse-loamy supraglacial meltout till derived from mica schist	1.0	3.1%
Wa	Walpole fine sandy loam	sandy glaciofluvial deposits	1.2	3.5%
Wg	Whately fine sandy loam	coarse-loamy glaciolacustrine deposits	8.5	24.9%
Totals for Area of Interest			34.0	100.0%

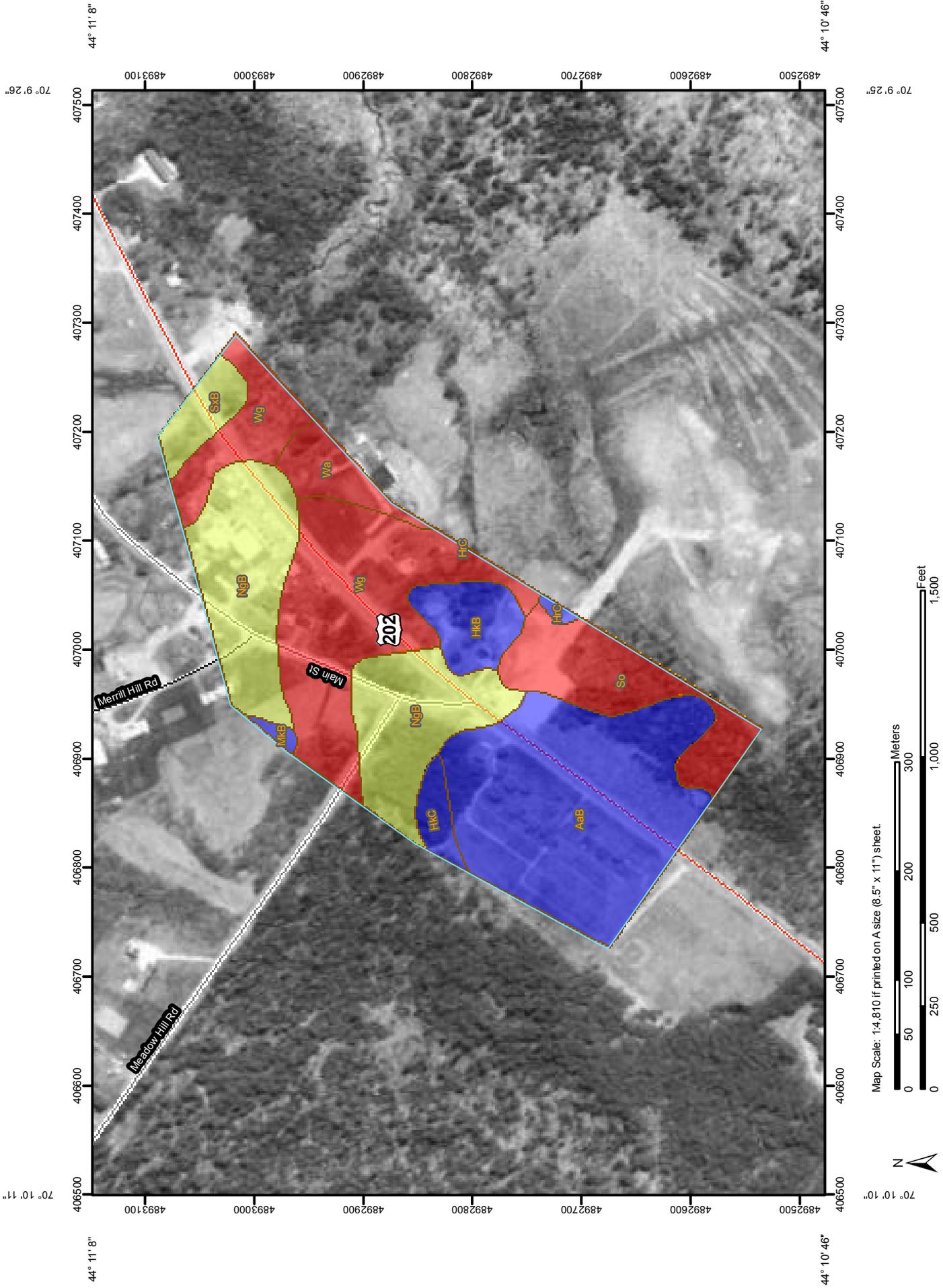
Description

Parent material name is a term for the general physical, chemical, and mineralogical composition of the unconsolidated material, mineral or organic, in which the soil forms. Mode of deposition and/or weathering may be implied by the name.

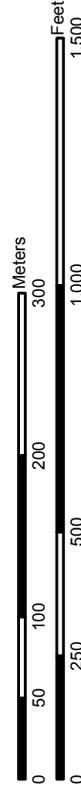
The soil surveyor uses parent material to develop a model used for soil mapping. Soil scientists and specialists in other disciplines use parent material to help interpret soil boundaries and project performance of the material below the soil. Many soil properties relate to parent material. Among these properties are proportions of sand, silt, and clay; chemical content; bulk density; structure; and the kinds and amounts of rock fragments. These properties affect interpretations and may be criteria used to separate soil series. Soil properties and landscape information may imply the kind of parent material.

For each soil in the database, one or more parent materials may be identified. One is marked as the representative or most commonly occurring. The representative parent material name is presented here.

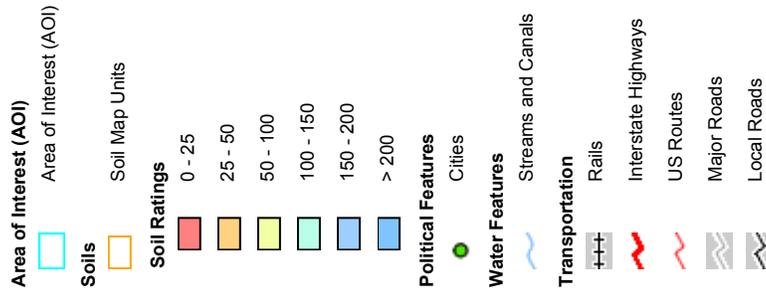
Depth to Water Table—Androscoggin and Sagadahoc Counties, Maine
(19010.00 Greene Route 202)



Map Scale: 1:4,810 if printed on A size (8.5" x 11") sheet.



MAP LEGEND



MAP INFORMATION

Map Scale: 1:4,810 if printed on A size (8.5" x 11") sheet.

The soil surveys that comprise your AOI were mapped at 1:15,840.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for accurate map measurements.

Source of Map: Natural Resources Conservation Service
 Web Soil Survey URL: <http://websoilsurvey.nrcs.usda.gov>
 Coordinate System: UTM Zone 19N NAD83

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Androscoggin and Sagadahoc Counties, Maine
 Survey Area Data: Version 13, Jul 27, 2009

Date(s) aerial images were photographed: Data not available.

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Depth to Water Table

Depth to Water Table— Summary by Map Unit — Androscoggin and Sagadahoc Counties, Maine (ME606)				
Map unit symbol	Map unit name	Rating (centimeters)	Acres in AOI	Percent of AOI
AaB	Adams loamy sand, 0 to 8 percent slopes	>200	9.7	28.6%
HkB	Hinckley gravelly sandy loam, 0 to 8 percent slopes	>200	1.5	4.6%
HkC	Hinckley gravelly sandy loam, 8 to 15 percent slopes	>200	0.6	1.8%
HrC	Hollis fine sandy loam, 8 to 15 percent slopes	>200	0.1	0.4%
MkB	Merrimac fine sandy loam, 0 to 8 percent slopes	>200	0.2	0.5%
NgB	Ninigret fine sandy loam, 0 to 8 percent slopes	69	7.7	22.8%
So	Scarboro fine sandy loam	0	3.4	9.9%
SxB	Sutton loam, 0 to 8 percent slopes	61	1.0	3.1%
Wa	Walpole fine sandy loam	15	1.2	3.5%
Wg	Whately fine sandy loam	7	8.5	24.9%
Totals for Area of Interest			34.0	100.0%

Description

"Water table" refers to a saturated zone in the soil. It occurs during specified months. Estimates of the upper limit are based mainly on observations of the water table at selected sites and on evidence of a saturated zone, namely grayish colors (redoximorphic features) in the soil. A saturated zone that lasts for less than a month is not considered a water table.

This attribute is actually recorded as three separate values in the database. A low value and a high value indicate the range of this attribute for the soil component. A "representative" value indicates the expected value of this attribute for the component. For this soil property, only the representative value is used.

Rating Options

Units of Measure: centimeters

Aggregation Method: Dominant Component

Component Percent Cutoff: None Specified

Tie-break Rule: Lower

SHEET NUMBER

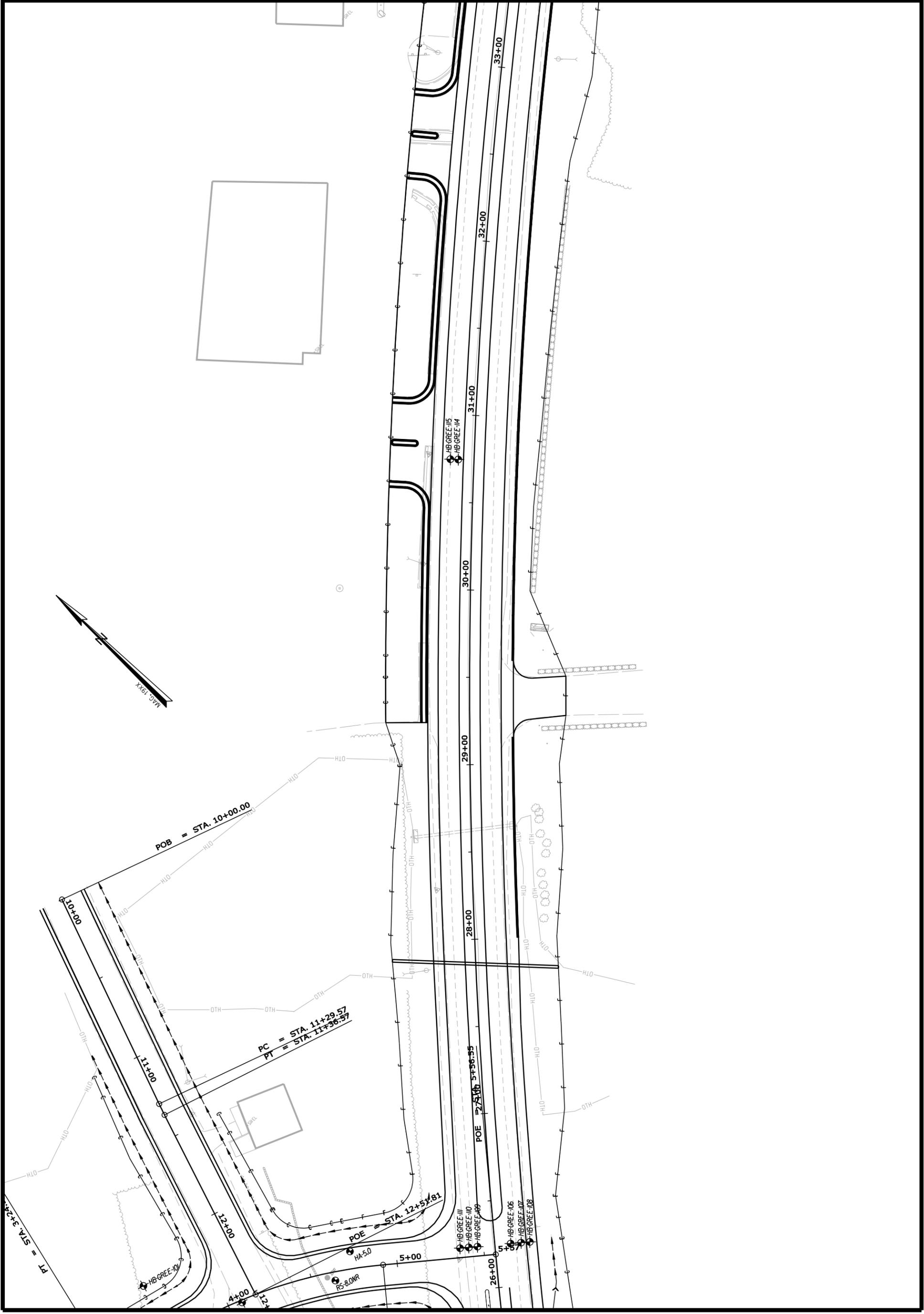
GEOPLOANS

GREENE
WEST MAIN ST. & ROUTE 202/11

PROJ. MANAGER	DATE
DESIGN-REVIEWED	JUN 2012
CHECKED-REVIEWED	T. WHITE
DESIGN-DET. ALD3	S. HAYDEN
DESIGN-DET. ALD2	
DESIGN-DET. ALD1	
REVISIONS 1	
REVISIONS 2	
REVISIONS 3	
REVISIONS 4	
FIELD CHANGES	

SIGNATURE	DATE
P. B. NUMBER	
DATE	

STATE OF MAINE	WIN
DEPARTMENT OF TRANSPORTATION	19010.00
AC-STP-1901(00)X	HIGHWAY PLANS



SHEET NUMBER

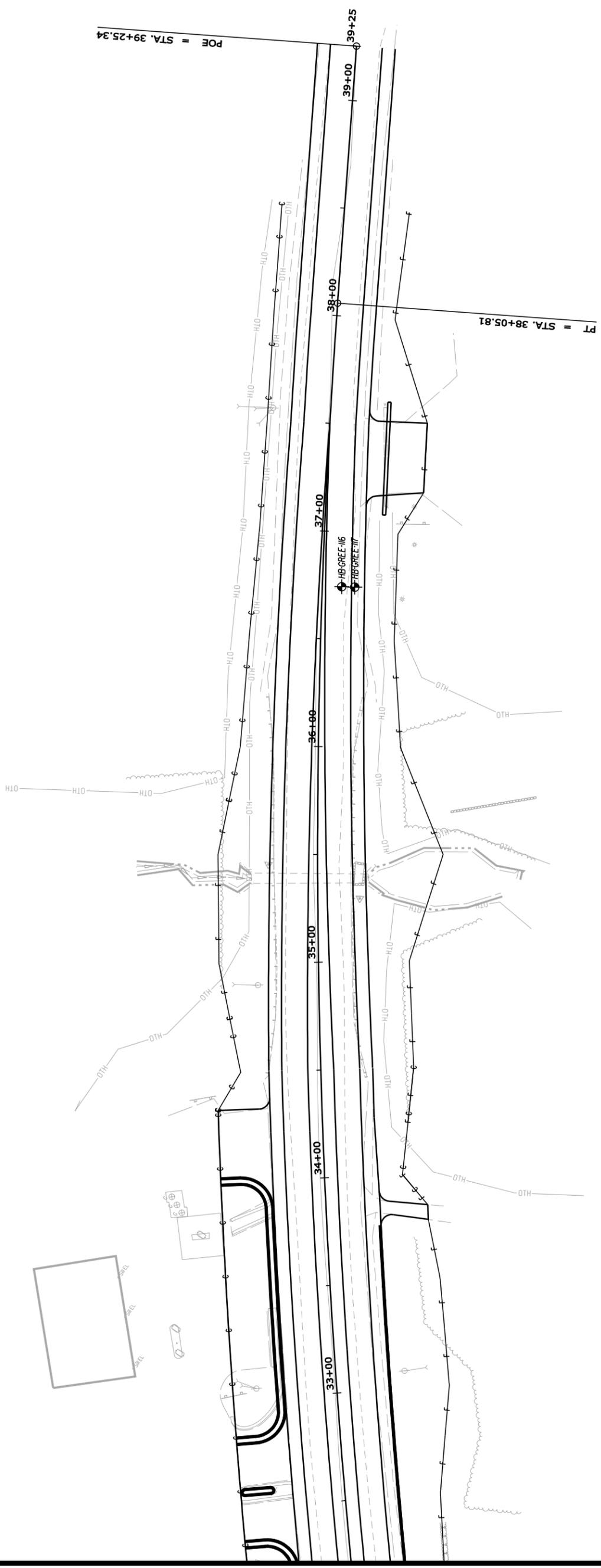
GEOPLOANS

GREENE
WEST MAIN ST. & ROUTE 202/11

PROJ. MANAGER	DATE
DESIGN-DETAILD	BY
CHECKED-REVIEWED	T. WHITE
DESIGN-DETAILD	JUN 2012
S. HAYDEN	
DATE	

SIGNATURE	DATE
P. R. NUMBER	
DATE	

STATE OF MAINE	DEPARTMENT OF TRANSPORTATION
AC-STP-1901(00)X	WIN
19010.00	HIGHWAY PLANS



GREENE WEST MAIN ST. & ROUTE 202/11 GEOPLANS

PROJ. MANAGER	DATE
BY	DATE
DESIGN-DETAILER	JUN 2012
DESIGN-REVIEWER	T. WHITE
DESIGN-DEVELOPER	S. HAYDEN
REVISIONS 1	
REVISIONS 2	
REVISIONS 3	
REVISIONS 4	
FIELD CHANGES	

SIGNATURE	DATE
P.R. NUMBER	

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION
AC-STP-1901(00)X
WIN
19010.00
HIGHWAY PLANS

