

**MAINE DEPARTMENT OF TRANSPORTATION
HIGHWAY PROGRAM
GEOTECHNICAL SECTION
AUGUSTA, MAINE**

GEOTECHNICAL DATA REPORT

For Retaining Wall Remediation
**U.S. ROUTE 1
CAMDEN, MAINE**

Prepared by:
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Geotechnical Engineer

Knox County
WIN 22839.00

May 24, 2022

Soils Report 2022-16
Federal No. 2283900

INTRODUCTION

The purpose of this data report is to document subsurface information collected for the downstream retaining wall remediation at Large Culvert #901304 on U.S. Route 1 in Camden as shown on the attached Location Map. The project is needed to address wall bulging and movement of the upper rows of granite blocks in the downstream retaining wall which has shown visual signs of outward (downstream) lateral displacement along the upper portion of the wall. Evidence of ground surface settlement within the sidewalk along U.S. Route 1 is also present along the top of the retaining wall and overhead utility poles are out of plumb, indicative of lateral movement of the downstream wall. The upstream retaining wall that was repaired in 2004 appears to be in relatively good condition with no signs of lateral movement, settlement behind the wall, or leakage through the wall. This report presents the results of limited geotechnical investigations performed at the project site. U.S. Route 1 is a Highway Corridor Priority 1 road.

SUBSURFACE INVESTIGATION

Four (4) borings were drilled in the roadway above the retaining wall. The 200-series boring was drilled by the MaineDOT drill crew using a trailer mounted drill rig. The 300-series borings were drilled by a New England Boring Contractors drill crew using a truck mounted drill rig. Boring locations are presented in the attached Boring Location Plans. Details on boring locations, sampling methods used, field data obtained, and soil and groundwater conditions encountered are presented in the attached Boring Logs.

The MaineDOT Geotechnical Team member or geotechnical engineering consultant selected the boring locations, drilling methods, designated type and depth of sampling, reviewed field logs for accuracy and identified field testing requirements. An experienced subsurface inspector logged the subsurface conditions encountered. The borings were located in the field by taping to site features after completion of the drilling program.

CLOSURE

This Geotechnical Data Report has been prepared for the use of the MaineDOT Highway Program for specific application to the proposed retaining wall rehabilitation at Large Culvert #901304 on U.S. Route 1 in Camden, Maine in accordance with generally accepted geotechnical and foundation engineering practices. No other intended use or warranty is expressed or implied.

MaineDOT conducted a limited number of soil explorations at discrete locations along the project and a limited number of laboratory tests. MaineDOT shall not be responsible for the Bidder's or Contractor's interpretations, estimates, or conclusions derived from the geotechnical information. Data provided may not be representative of the subsurface conditions between boring locations.

In the event that any changes in the nature, design, or location of the proposed project are planned, this report should be reviewed by a geotechnical engineer to assess the

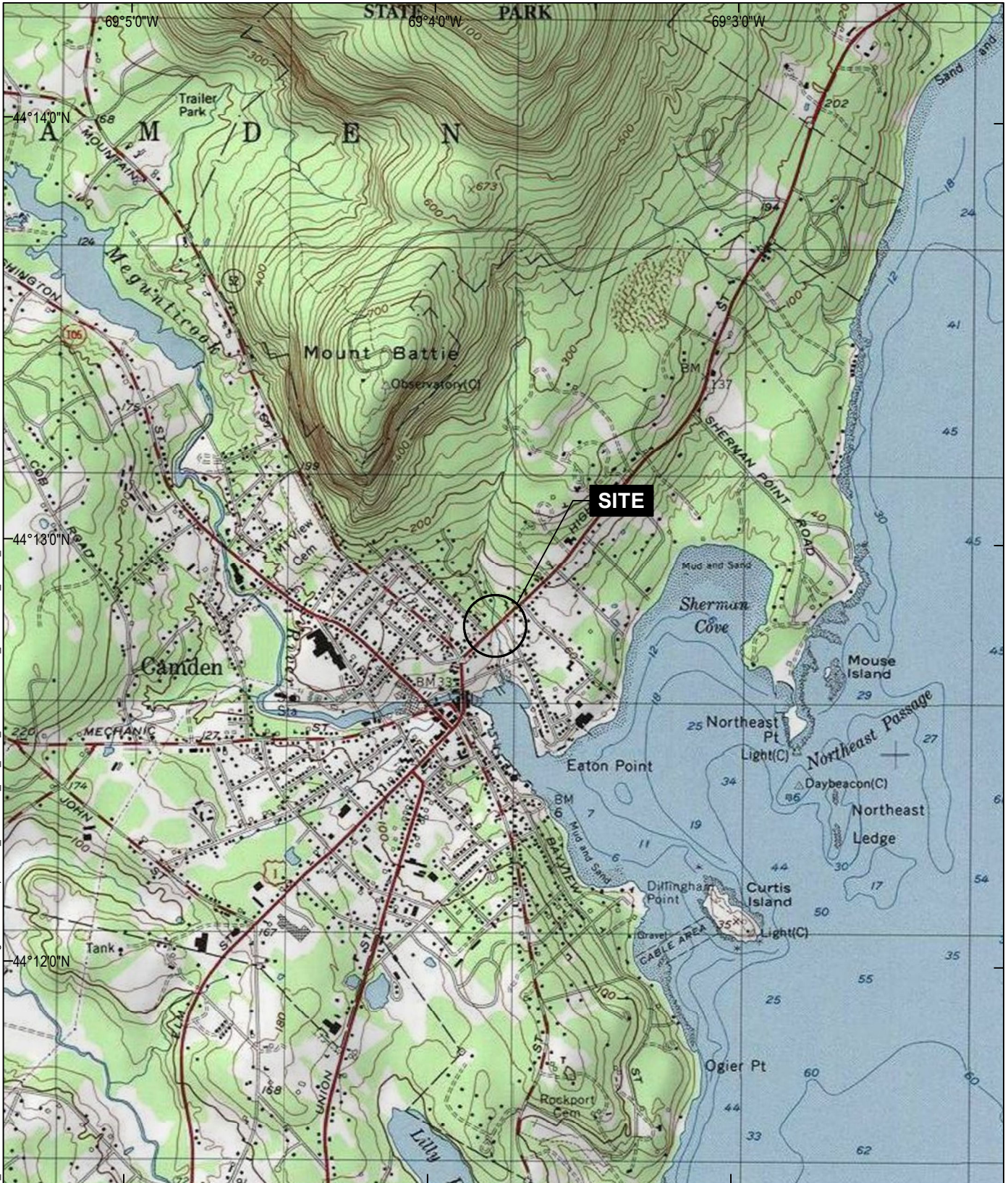
appropriateness of the information presented and to modify the information as appropriate to reflect the changes in design. The information presented is based in part upon a limited subsurface investigation at discrete exploratory locations completed at the site. If variations from the conditions encountered during the investigation appear evident during construction, it may also become necessary to re-evaluate the information presented in this report.

It is recommended that a geotechnical engineer be provided the opportunity for a review of the design and specifications in order that information presented in this report is properly interpreted and implemented in the design and specifications.

Attachments:

Location Map
Boring Location Plan
Key to Soil and Rock Descriptions and Terms
Boring Logs

GIS FILE PATH: \\haleyaldrich.com\share\proj_common\PROJECTS\131047 - camden retaining wall\GIS\Maps2019_11\131047_003_0001_DOWNSTREAM_RETAINING_WALL_REHABILITATION.mxd — USER: hwachholz — LAST SAVED: 11/11/2019 11:58:17 AM



MAP SOURCE: ESRI
SITE COORDINATES: 44°12'50"N, 69°33'44"W

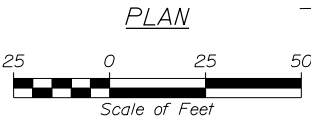
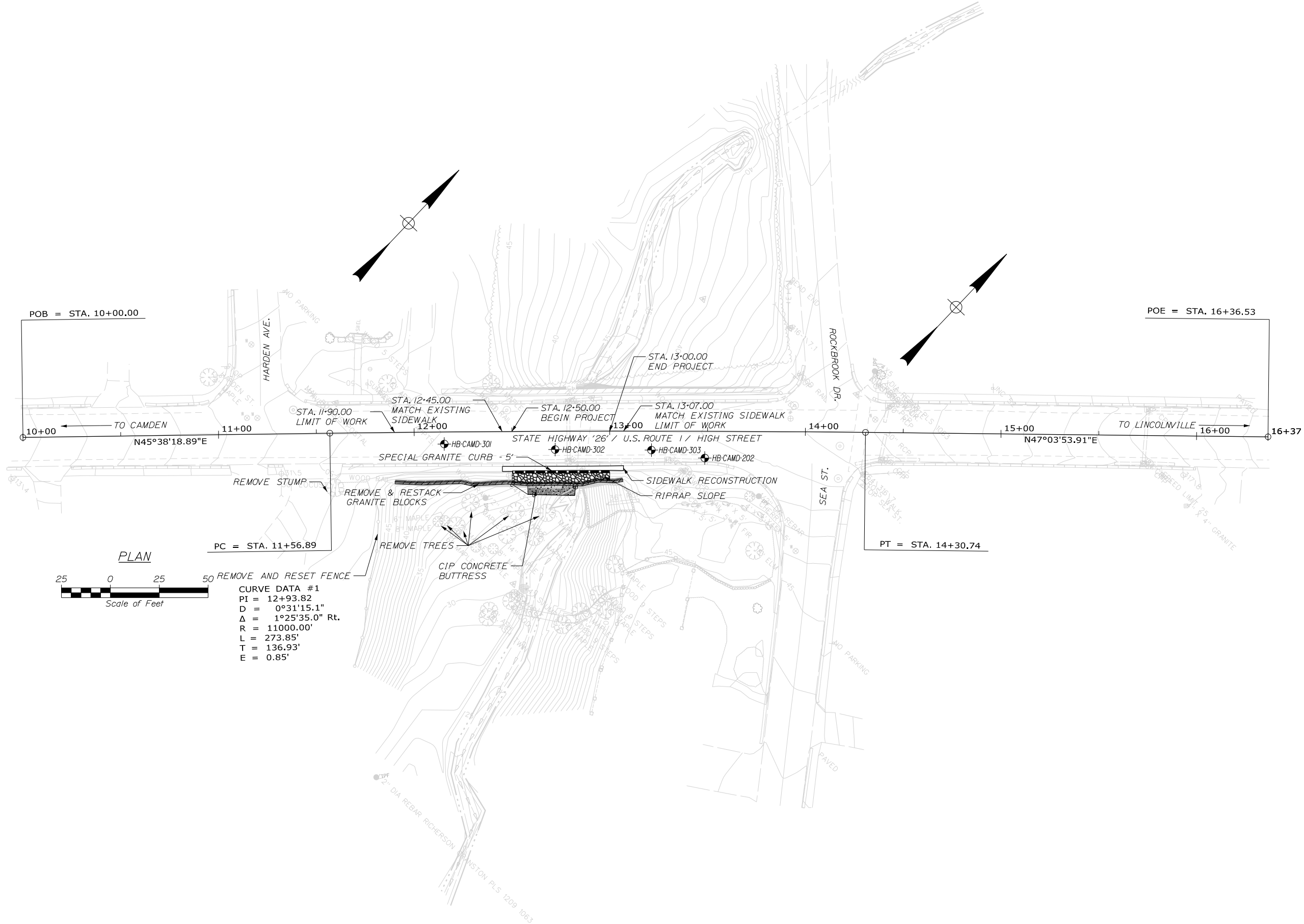
**HALEY
ALDRICH**

DOWNSTREAM RETAINING WALL REHABILITATION
MAINEDOT WIN 022839.00
U.S. ROUTE 1, CAMDEN, MAINE

PROJECT LOCUS

SCALE: 1 IN. = 2000 FT +/-
NOVEMBER 2019

FIGURE 1



CURVE DATA #1
 PI = 12+93.82
 D = 0°31'15.1"
 Δ = 1°25'35.0" Rt.
 R = 11000.00'
 L = 273.85'
 T = 136.93'
 E = 0.85'

STATE OF MAINE DEPARTMENT OF TRANSPORTATION		2283900	
WIN		22839.00	
HIGHWAY PLANS			
PROJ. MANAGER	ERNEST MARTIN	BY	DATE
DESIGN-DETAILED	N. COLLINS	CHECKED-REVIEWED	I. WHITE
DESIGNS-DETAILED		DESIGNS-DETAILED	NOV. 2017
REVISIONS 1		REVISIONS 1	P.E. NUMBER
REVISIONS 2		REVISIONS 2	DATE
REVISIONS 3		REVISIONS 3	
REVISIONS 4		REVISIONS 4	
FIELD CHANGES		FIELD CHANGES	
CAMDEN ROUTE 1 SLOPE STABILIZATION		BORING LOCATION PLAN	
SHEET NUMBER		2	
		OF 2	

UNIFIED SOIL CLASSIFICATION SYSTEM				MODIFIED BURMISTER SYSTEM						
MAJOR DIVISIONS			GROUP SYMBOLS	TYPICAL NAMES						
COARSE-GRAINED SOILS (more than half of material is larger than No. 200 sieve size)	GRAVELS (more than half of coarse fraction is larger than No. 4 sieve size)	CLEAN GRAVELS	GW	Well-graded gravels, gravel-sand mixtures, little or no fines.			<u>Descriptive Term</u> trace 0 - 10 little 11 - 20 some 21 - 35 adjective (e.g. Sandy, Clayey) 36 - 50			
		(little or no fines)	GP	Poorly-graded gravels, gravel sand mixtures, little or no fines.						
		GRAVEL WITH FINES (Appreciable amount of fines)	GM	Silty gravels, gravel-sand-silt mixtures.						
	SANDS (more than half of coarse fraction is smaller than No. 4 sieve size)	CLEAN SANDS	SW	Well-graded sands, Gravelly sands, little or no fines			<u>Standard Penetration Resistance</u> <u>N-Value (blows per foot)</u> Very loose 0 - 4 Loose 5 - 10 Medium Dense 11 - 30 Dense 31 - 50 Very Dense > 50			
		(little or no fines)	SP	Poorly-graded sands, Gravelly sand, little or no fines.						
		SANDS WITH FINES (Appreciable amount of fines)	SM	Silty sands, sand-silt mixtures						
FINE-GRAINED SOILS (more than half of material is smaller than No. 200 sieve size)	SILTS AND CLAYS (liquid limit less than 50)	ML	Inorganic silts and very fine sands, rock flour, Silty or Clayey fine sands, or Clayey silts with slight plasticity.			<u>Consistency of Cohesive soils</u> Very Soft Soft Medium Stiff Stiff Very Stiff Hard				
		CL	Inorganic clays of low to medium plasticity, Gravelly clays, Sandy clays, Silty clays, lean clays.							
		OL	Organic silts and organic Silty clays of low plasticity.							
	SILTS AND CLAYS (liquid limit greater than 50)	MH	Inorganic silts, micaceous or diatomaceous fine Sandy or Silty soils, elastic silts.			<u>Field Guidelines</u> Fist easily penetrates Thumb easily penetrates Thumb penetrates with moderate effort Indented by thumb with great effort Indented by thumbnail Indented by thumbnail with difficulty				
		CH	Inorganic clays of high plasticity, fat clays.							
		OH	Organic clays of medium to high plasticity, organic silts.							
HIGHLY ORGANIC SOILS	Pt	Peat and other highly organic soils.			<u>Rock Quality Designation (RQD):</u> RQD (%) = $\frac{\text{sum of the lengths of intact pieces of core}^* > 4 \text{ inches}}{\text{length of core advance}}$ *Minimum NQ rock core (1.88 in. OD of core)					
<u>Desired Soil Observations (in this order, if applicable):</u> Color (Munsell color chart) Moisture (dry, damp, moist, wet) Density/Consistency (from above right hand side) Texture (fine, medium, coarse, etc.) Name (Sand, Silty Sand, Clay, etc., including portions - trace, little, etc.) Gradation (well-graded, poorly-graded, uniform, etc.) Plasticity (non-plastic, slightly plastic, moderately plastic, highly plastic) Structure (layering, fractures, cracks, etc.) Bonding (well, moderately, loosely, etc.,) Cementation (weak, moderate, or strong) Geologic Origin (till, marine clay, alluvium, etc.) Groundwater level				<u>Desired Rock Observations (in this order, if applicable):</u> Color (Munsell color chart) Texture (aphanitic, fine-grained, etc.) Rock Type (granite, schist, sandstone, etc.) Hardness (very hard, hard, mod. hard, etc.) Weathering (fresh, very slight, slight, moderate, mod. severe, severe, etc.) Geologic discontinuities/jointing: -dip (horiz - 0-5 deg., low angle - 5-35 deg., mod. dipping - 35-55 deg., steep - 55-85 deg., vertical - 85-90 deg.) -spacing (very close - <2 inch, close - 2-12 inch, mod. close - 1-3 feet, wide - 3-10 feet, very wide >10 feet) -tightness (tight, open, or healed) -infilling (grain size, color, etc.) Formation (Waterville, Ellsworth, Cape Elizabeth, etc.) RQD and correlation to rock quality (very poor, poor, etc.) ref: ASTM D6032 and FHWA NHI-16-072 GEC 5 - Geotechnical Site Characterization, Table 4-12 Recovery (inch/inch and percentage) Rock Core Rate (X.X ft - Y.Y ft (min:sec))						
Maine Department of Transportation Geotechnical Section Key to Soil and Rock Descriptions and Terms Field Identification Information				<u>Sample Container Labeling Requirements:</u> WIN Bridge Name / Town Boring Number Sample Number Sample Depth Blow Counts Sample Recovery Date Personnel Initials						

Maine Department of Transportation Soil/Rock Exploration Log US CUSTOMARY UNITS	Project: Retaining Wall and Culvert Rehab. Location: Camden, Maine	Boring No.: HB-CAMD-301 WIN: 22839.00
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Driller: New England Boring Contractors	Elevation (ft.): 49.3	Auger ID/OD: --
Operator: M. Porter	Datum: NAVD 88	Sampler: Split Spoon 1.375 in. ID
Logged By: K. Russ	Rig Type: Mobile B59 Truck	Hammer Wt./Fall: SS-140#/30;HW-NW-300#
Date Start/Finish: 11-30-17/11-30-17	Drilling Method: SSA/HW-NW Drive	Core Barrel: NQ-2.0 in.
Boring Location: 1656604E; 259965N	Casing ID/OD: HW-4.0 in.ID/NW-3.0 in.ID	Water Level*: 8.4 ft
Hammer Efficiency Factor: 0.869	Hammer Type: Automatic <input checked="" type="checkbox"/> Hydraulic <input type="checkbox"/> Rope & Cathead <input type="checkbox"/>	

Definitions: R = Rock Core Sample S_u = Peak/Remolded Field Vane Undrained Shear Strength (psf) T_v = Pocket Torvane Shear Strength (psf)
 D = Split Spoon Sample SSA = Solid Stem Auger S_u(lab) = Lab Vane Undrained Shear Strength (psf) WC = Water Content, percent
 MD = Unsuccessful Split Spoon Sample Attempt HSA = Hollow Stem Auger q_u = Unconfined Compressive Strength (ksf) LL = Liquid Limit
 U = Thin Wall Tube Sample RC = Roller Cone N-uncorrected = Raw Field SPT N-value PL = Plastic Limit
 MU = Unsuccessful Thin Wall Tube Sample Attempt WOH = Weight of 140 lb. Hammer Hammer Efficiency Factor = Rig Specific Annual Calibration Value PI = Plasticity Index
 V = Field Vane Shear Test, PP = Pocket Penetrometer WOR/C = Weight of Rods or Casing N₆₀ = SPT N-uncorrected Corrected for Hammer Efficiency G = Grain Size Analysis
 MV = Unsuccessful Field Vane Shear Test Attempt WO1P = Weight of One Person N₆₀ = (Hammer Efficiency Factor/60%)*N-uncorrected 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-uncorrected	N ₆₀	Casing Blows					
25									24.3	moderately weathered zones from 21.7 to 22.2 ft and 24.1 to 24.3 ft. Joints dipping moderately, parallel to foliation, tight to open, planar to stepped, rough to smooth, oxidized joint surfaces. Occasional 1/8-in. to 1/2-in. thick clay laminae infilling. Rock Quality=Fair Recovery=93% -PENOBSCOT FORMATION- R2 Core Times (min:sec): 21.7-22.7' (1:40); 22.7-23.7' (1:18); 23.7-24.7' (1:42); 24.7-25.0' (0:50) -----25.0' Bottom of Exploration at 25.0 feet below ground surface.		
30												
35												
40												
45												
50												

Remarks:

Maine Department of Transportation Soil/Rock Exploration Log US CUSTOMARY UNITS		Project: Retaining Wall and Culvert Rehab.	Boring No.: HB-CAMD-302
		Location: Camden, Maine	WIN: 22839.00
Driller: New England Boring Contractors	Elevation (ft.): 47.8	Auger ID/OD: --	
Operator: M. Porter	Datum: NAVD 88	Sampler: Split Spoon 1.375 in. ID	
Logged By: K. Russ	Rig Type: Mobile B59 Truck	Hammer Wt./Fall: SS-140#/30;HW-NW-300#	
Date Start/Finish: 11-28-17/11-29-17	Drilling Method: SSA/HW-NW Drive	Core Barrel: NQ-2.0 in.	
Boring Location: 1656647E; 260002N	Casing ID/OD: HW-4.0 in.ID/NW-3.0 in.ID	Water Level*: 16.0 ft	

Hammer Efficiency Factor: 0.869	Hammer Type: Automatic <input checked="" type="checkbox"/> Hydraulic <input type="checkbox"/> Rope & Cathead <input type="checkbox"/>
Definitions: D = Split Spoon Sample MD = Unsuccessful Split Spoon Sample Attempt U = Thin Wall Tube Sample MU = Unsuccessful Thin Wall Tube Sample Attempt V = Field Vane Shear Test, PP = Pocket Penetrometer MV = Unsuccessful Field Vane Shear Test Attempt	R = Rock Core Sample SSA = Solid Stem Auger HSA = Hollow Stem Auger RC = Roller Cone WOH = Weight of 140lb. Hammer WOR/C = Weight of Rods or Casing WO1P = Weight of One Person
S_u = Peak/Remolded Field Vane Undrained Shear Strength (psf) $S_{u(lab)}$ = Lab Vane Undrained Shear Strength (psf) q_p = Unconfined Compressive Strength (ksf) N-uncorrected = Raw Field SPT N-value Hammer Efficiency Factor = Rig Specific Annual Calibration Value N_{60} = SPT N-uncorrected Corrected for Hammer Efficiency N_{60} = (Hammer Efficiency Factor/60%)*N-uncorrected	T_v = Pocket Torvane Shear Strength (psf) 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-uncorrected	N ₆₀	Casing Blows					
0	1D	24/15	0.5 - 2.5	14/28/17/16	45	65	SSA	47.3		-BITUMINOUS CONCRETE-		
										Brown, dry, very dense, fine to coarse SAND, little gravel, trace silt, well graded, contains asphalt pieces (reclaim)		
	2D/A	24/14	2.5 - 4.5	15/16/14/10	30	43				-FILL-(SW)		
										Brown, dry, dense, fine to coarse SAND, some gravel, trace silt, well graded		
5	3D	24/11	4.5 - 6.5	5/19/15/14	34	49	HW Spun	43.8		-FILL-(SW)		
										Brown, dry, dense, Gravelly SAND, little silt, well graded		
	MD	0/0	6.5 - 6.5	50(0.0")				41.3		-FILL-(SW-SM)		
										Brown, dry, dense, fine to coarse SAND, little gravel and silt, well graded, contains concrete piece		
										Note: Advance rollerbit into granite block to 7.3 ft, spun HW to 8 ft, broke through obstruction at 7.9 ft.		
	4D	24/4	8.0 - 10.0	4/3/4/3	7	10		39.9		-GRANITE BLOCK-		
										Brown, wet, loose, fine to coarse SAND, some gravel, trace silt, well graded, rock in spoon tip		
10	5D	24/5	10.0 - 12.0	4/6/52/21	58	84		36.7		-FILL-(SW)		
										Brown, wet, very dense, fine to coarse SAND, some gravel, trace silt, well graded		
										Note: Spin HW through granite block from 11.1 to 13.5 ft.		
	6D	24/4	13.5 - 15.5	3/3/1/1	4	6		34.3		-GRANITE BLOCK-		
										Brown, wet, very loose, Sandy GRAVEL, little silt, well graded, contains gravel pieces		
15	7D	24/8	15.5 - 17.5	5/19/32/8	51	74				-FILL-(GW-GM)		
										Brown, wet, very dense, Sandy GRAVEL, little silt, well graded		
										Note: HW spun to 13.5 ft, advance rollerbit to 17.5 ft, very gravelly, no drill wash returning.		
	8D	12/5	17.5 - 18.5	5/50(6.0")				29.3		-FILL-(GW-GM)		
										Brown, wet, very dense, Sandy GRAVEL, little silt, well graded		
20								28.4		-BOULDER-		
										Note: Spun HW to 20 ft, advance rollerbit to 21 ft - wash water contains brown fine sand and gray silt.		
										-MARINE DEPOSIT-		
	9D	20/8	22.0 - 23.7	21/25/45/50(2.0)	70	101		26.8				
										Olive-grey, wet, very dense, Sandy GRAVEL, trace silt, well graded, well bonded		
										-GLACIAL TILL-(GW)		
25	R1	40/28	24.3 - 27.6	RQD = 54%				24.1				
								23.5		-WEATHERED BEDROCK-		

Remarks:

Maine Department of Transportation Soil/Rock Exploration Log US CUSTOMARY UNITS	Project: Retaining Wall and Culvert Rehab.	Boring No.: HB-CAMD-302
	Location: Camden, Maine	WIN: 22839.00

Driller: New England Boring Contractors	Elevation (ft.): 47.8	Auger ID/OD: --
Operator: M. Porter	Datum: NAVD 88	Sampler: Split Spoon 1.375 in. ID
Logged By: K. Russ	Rig Type: Mobile B59 Truck	Hammer Wt./Fall: SS-140#/30;HW-NW-300#
Date Start/Finish: 11-28-17/11-29-17	Drilling Method: SSA/HW-NW Drive	Core Barrel: NQ-2.0 in.
Boring Location: 1656647E; 260002N	Casing ID/OD: HW-4.0 in.ID/NW-3.0 in.ID	Water Level*: 16.0 ft
Hammer Efficiency Factor: 0.869	Hammer Type: Automatic <input checked="" type="checkbox"/> Hydraulic <input type="checkbox"/> Rope & Cathead <input type="checkbox"/>	

Definitions:
 D = Split Spoon Sample
 MD = Unsuccessful Split Spoon Sample Attempt
 U = Thin Wall Tube Sample
 MU = Unsuccessful Thin Wall Tube Sample Attempt
 V = Field Vane Shear Test, PP = Pocket Penetrometer
 MV = Unsuccessful Field Vane Shear Test Attempt

R = Rock Core Sample
 SSA = Solid Stem Auger
 HSA = Hollow Stem Auger
 RC = Roller Cone
 WOH = Weight of 140 lb. Hammer
 WOR/C = Weight of Rods or Casing
 WO1P = Weight of One Person

S_u = Peak/Remolded Field Vane Undrained Shear Strength (psf)
 S_u(lab) = Lab Vane Undrained Shear Strength (psf)
 q_u = Unconfined Compressive Strength (ksf)
 N-uncorrected = Raw Field SPT N-value
 Hammer Efficiency Factor = Rig Specific Annual Calibration Value
 N₆₀ = SPT N-uncorrected Corrected for Hammer Efficiency
 N₆₀ = (Hammer Efficiency Factor/60%)*N-uncorrected

T_v = Pocket Torvane Shear Strength (psf)
 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-uncorrected	N ₆₀	Casing Blows				
25										Top of Sound Bedrock at El. 23.3 R1: Grey, fine grained SCHIST, moderately hard, moderately weathered to fresh. Primary joints moderately dipping, parallel to foliation. Secondary joints moderately dipping, perpendicular to foliation, moderately close, tight, planar, rough, oxidized joint surfaces, no infilling. Rock Quality=Fair Recovery=76% -PENOBSCOT FORMATION- R1 Core Times (min:sec): 24.5-25.5' (2:58); 25.5-26.5' (2:11); 26.5-27.6' (2:15) R2: Grey, fine-grained SCHIST, hard, fresh. Single horizontal joint perpendicular to foliation, moderately close, tight, undulating, rough, oxidized joint surface. Rock Quality=Excellent Recovery=100% -PENOBSCOT FORMATION- R2 Core Times (min:sec): 27.6-28.6' (1:30); 28.6-29.6' (1:40); 29.6-30.9' (1:53)	
	R2	40/40	27.6 - 30.9	RQD = 100%				16.9			
30											
35											
40											
45											
50											

Remarks:

Maine Department of Transportation Soil/Rock Exploration Log US CUSTOMARY UNITS		Project: Retaining Wall and Culvert Rehab.	Boring No.: HB-CAMD-303
		Location: Camden, Maine	WIN: 22839.00
Driller: New England Boring Contractors	Elevation (ft.): 48.4	Auger ID/OD: --	
Operator: M. Porter	Datum: NAVD 88	Sampler: Split Spoon 1.375 in. ID	
Logged By: K. Russ	Rig Type: Mobile B59 Truck	Hammer Wt./Fall: SS-140#/30;HW-NW-300#	
Date Start/Finish: 11-27-17/11-28-17	Drilling Method: SSA/HW-NW Drive	Core Barrel: NQ-2.0 in.	
Boring Location: 1656683E; 260036N	Casing ID/OD: HW-4.0 in.ID/NW-3.0 in.ID	Water Level*: 18.4 ft	

Hammer Efficiency Factor: 0.869	Hammer Type: Automatic <input checked="" type="checkbox"/> Hydraulic <input type="checkbox"/> Rope & Cathead <input type="checkbox"/>
Definitions: D = Split Spoon Sample MD = Unsuccessful Split Spoon Sample Attempt U = Thin Wall Tube Sample MU = Unsuccessful Thin Wall Tube Sample Attempt V = Field Vane Shear Test, PP = Pocket Penetrometer MV = Unsuccessful Field Vane Shear Test Attempt	R = Rock Core Sample SSA = Solid Stem Auger HSA = Hollow Stem Auger RC = Roller Cone WOH = Weight of 140lb. Hammer WOR/C = Weight of Rods or Casing WO1P = Weight of One Person
S_u = Peak/Remolded Field Vane Undrained Shear Strength (psf) $S_{u(lab)}$ = Lab Vane Undrained Shear Strength (psf) q_p = Unconfined Compressive Strength (ksf) N-uncorrected = Raw Field SPT N-value Hammer Efficiency Factor = Rig Specific Annual Calibration Value N_{60} = SPT N-uncorrected Corrected for Hammer Efficiency N_{60} = (Hammer Efficiency Factor/60%)*N-uncorrected	T_v = Pocket Torvane Shear Strength (psf) 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-uncorrected	N ₆₀	Casing Blows				
0	1D	24/14	0.5 - 2.5	46/75/57/32	132	191	SSA	47.8	-BITUMINOUS CONCRETE-		
									Brown, dry, very dense, fine to coarse SAND, some gravel, trace silt, well graded, contains asphalt -FILL-(SW)		
	2D	24/6	2.5 - 4.5	27/41/32/22	73	106	2		Brown, dry, very dense, fine to coarse SAND, some gravel, trace silt, well graded -FILL-(SW)		
								44.1			
5	3D	20/10	5.0 - 6.7	8/12/6/50(2.0")	18	26	25	41.7	Olive-brown, moist, medium dense, fine to coarse SAND, little gravel and silt, well graded, steel shards in spoon tip, possible trace ash, reworked natural soil -FILL-(SW-SM)		
								41.5	Note: Drove casing to 6.4 ft, advanced rollerbit through obstruction from 6.7 to 6.9 ft, steel pieces in drill wash water.		
									Olive-brown to rust brown, moist, medium dense, fine to medium SAND, some silt, little gravel, trace coarse sand, loosely bonded -FILL-(SM)		
10	5D	24/15	10.0 - 12.0	3/2/3/4	5	7	11		Olive-brown, moist, loose, Silty fine to medium SAND, trace coarse sand, trace gravel, trace clay, reworked natural soils -FILL-(SM)		
15	6D/A	24/24	15.0 - 17.0	WOH/WOH/WOH/4			10	33.9	Note: Attempted field vane at 15 ft, refusal. Olive-brown, wet, very soft, Silty CLAY, frequent 1/8-in. thick fine sand partings, silt nodules throughout -MARINE DEPOSIT-(CL)		
								31.9	Olive-brown, wet, loose, Silty fine to coarse SAND, trace clay and gravel, loosely bonded -GLACIAL TILL-(SM)		
								31.0	Note: Becomes more granular at 17.4 ft based on drill action.		
									Olive-brown, wet, medium dense, fine to coarse SAND, little silt and gravel, well graded, moderately bonded -GLACIAL TILL-(SW-SM)		
20	7D	24/9	20.0 - 22.0	13/8/8/8	16	23	21		Note: Drill wash water contains sand and gravel, olive-brown to grey at 22.8 ft. Drove HW casing to 24.2 ft. Advanced rollerbit to 24.4 ft, set NW casing and begin coring at 24.4 ft.		
25	R1	60/52	24.4 - 29.4	RQD = 77%			50(2.0")	24.2	Top of Bedrock El. 24.2		

Remarks:

Maine Department of Transportation Soil/Rock Exploration Log METRIC UNITS		Project: CAMDEN Location: ROUTE 1	Boring No.: HB-CAMD-202 PIN: 1869.10
Driller: MDOT	Elevation (m):	Auger ID/OD: 69 mm/150 mm	
Operator: C.MANN	Datum:	Sampler: SPLIT SPOON	
Logged By: G.LIDSTONE	Rig Type: CME-45C	Hammer Wt./Fall: 63.5 kg/760 mm	
Date Start/Finish: 11/16/01-11/16/01	Drilling Method: HOLLOW STEM AUGER	Core Barrel: N/A	
Boring Location: 1+270, 2.3 LT.	Casing ID/OD: N/A	Water Level*: WATER @ 5.1 m.	
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 (kPa) T _v = Pocket Torvane Shear Strength (kPa) q _u = Unconfined Compressive Strength (Pa) S _u (lab) = Lab Vane Shear Strength (kPa) WOH = weight of 64 kg hammer WOR = weight of rods	
Definitions: WC = water content, percent LL = Liquid Limit PL = Plastic Limit PI = Plasticity Index G = Grain Size Analysis C = Consolidation Test			

Depth (m)	Sample Information							Elevation (m)	Graphic Log	Visual Description and Remarks	Laboratory Testing Results/AASHTO and Unified Class.
	Sample No.	Pen/Rec (cm)	Sample Depth (m)	Blows (150 mm) Shear Strength (kPa) or RQD (%)	N-value	Casing Blows					
0							H&A			Brown, damp, sandy GRAVEL, trace silt, (Fill).	
-0.85										Brown, wet, silty fine to coarse SAND, some gravel, (Fill).	
-1.2											
-1.52	1DA/B	61.0/12.7	1.52 - 2.13	5/17/6/10	23					Brown, dry, sandy GRAVEL, trace silt, (Fill). (A) 1.52-2.07 m (B) 2.07-2.13 m	
-2.07											
-2.44										Brown, moist clayey SILT, (Fill).	
-2.44										Brown, damp, soft sandy SILT, trace clay, trace organics, (Fill).	
-3.6											
-3.6	2D	61.0/15.2	3.05 - 3.66	1/1/1/1	2						
-4.11											
-4.11	3D	15.2/10.2	3.96 - 4.11	3/47-0 mm	50+					COBBLES, (Fill).	
-4.42											
-4.42	4D/AB	61.0/38.1	4.57 - 5.18	2/2/3/3	5					Brown, damp, soft sandy SILT, trace clay. (A) 4.57-5.09 m (B) 5.09-5.18 m	
-5.09										Gray, moist, soft sandy SILT, trace clay, trace organics.	
-6.71											
-6.71										Gray, sandy SILT, cobbles, some gravel.	
-7.13											
-7.13										Bottom of Exploration at 7.13 m below ground surface. REFUSAL	
-8.4											
-9.6											

Remarks: