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SUPPLEMENTAL GEOTECHNICAL INFORMATION
INTERSTATE 95 TRAFTON ROAD INTERCHANGE
WATERVILLE, MAINE
MAINEDOT WIN 18129.10

PREPARED FOR:

Maine Department of Transportation
Augusta, Maine

PREPARED BY:

Schonewald Engineering Associates, Inc.
Cumberland, Maine 04021

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SchonewaldEA Project No. 15-101

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SUBSURFACE EXPLORATION LOGS

200-SERIES
TRAFTON ROAD UNDERPASS

Maine Department of Transportation

Soil/Rock Exploration Log
US CUSTOMARY UNITS

Project: I-95 Trafton Road Interchange
Location: Waterville, Maine

Boring No.: HB-WAT-201
WIN: 18129.10

Driller:	MaineDOT	**Elevation (ft.)**	208.4	**Auger ID/OD:**	5" Soild Stem
Operator:	Wilder/Daggett	**Datum:**	NAVD88	**Sampler:**	Standard Split Spoon
Logged By:	B. Wilder	**Rig Type:**	CME 45C	**Hammer Wt./Fall:**	140#/30"
Date Start/Finish:	3/1/2016; 08:30-13:30	**Drilling Method:**	Cased Wash Boring	**Core Barrel:**	NQ-2"
Boring Location:	3026+45.9, 10.6 ft Rt.	**Casing ID/OD:**	NW-3"	**Water Level*:**	8.0 ft bgs.
Hammer Efficiency Factor:	0.908	**Hammer Type:**	Automatic ☒ Hydraulic ☐ Rope & Cathead ☐		

Definitions:
D = Split Spoon Sample
MD = Unsuccessful Split Spoon Sample attempt
U = Thin Wall Tube Sample
MU = Unsuccessful Thin Wall Tube Sample attempt
V = Insitu Vane Shear Test, PP = Pocket Penetrometer
MV = Unsuccessful Insitu 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 = Insitu Field Vane Shear Strength (psf)
T_v = Pocket Torvane Shear Strength (psf)
q_p = Unconfined Compressive Strength (ksf)
N-uncorrected = Raw field SPT N-value
Hammer Efficiency Factor = Annual Calibration Value
N_{60} = SPT N-uncorrected corrected for hammer efficiency
N_{60} = (Hammer Efficiency Factor/60%)*N-uncorrected
$S_{u(lab)}$ = Lab Vane 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 No.	Pen./Rec. (in.)	Sample Depth (ft.)	Blows (/6 in.) Shear Strength (psf) or RQD (%)	N-uncorrected	N_{60}	Casing Blows	Elevation (ft.)	Graphic Log	Visual Description and Remarks	Laboratory Testing Results/ AASHTO and Unified Class.
0							SSA			13" PAVEMENT.	
								207.32		1.08	
	1D	24/14	2.00 - 4.00	13/11/11/16	22	33				Brown, moist, medium dense, Gravelly, fine to coarse SAND, little silt.	
								204.40		4.00	
5	2D	24/20	5.00 - 7.00	7/7/13/16	20	30				Olive-brown, moist, very stiff, Clayey SILT, little fine sand.	
	R1	60/58	9.90 - 14.90	RQD = 87%			a50 NQ-2			Set in NW Casing. a50 50 blows for 0.9 ft.	
10								198.50		9.90 Top of Bedrock at Elev. 198.5 ft. R1:Bedrock: R1:Core Times (min:sec) 9.9-10.9 ft (3:05) 10.9-11.9 ft (3:02) 11.9-12.9 ft (3:00) 12.9-13.9 ft (3:00) 13.9-14.9 ft (3:06) 97% Recovery	
15								193.50		14.90 **Bottom of Exploration at 14.90 feet below ground surface.**	
20											
25											

Remarks:

Stratification lines represent approximate boundaries between soil types; transitions may be gradual.

* Water level readings have been made at times and under conditions stated. Groundwater fluctuations may occur due to conditions other than those present at the time measurements were made.

Maine Department of Transportation

Soil/Rock Exploration Log
US CUSTOMARY UNITS

Project: I-95 Trafton Road Interchange
Location: Waterville, Maine

Boring No.: HB-WAT-202
WIN: 18129.10

Driller:	MaineDOT	**Elevation (ft.)**	208.4	**Auger ID/OD:**	5" OD
Operator:	Wilder/Daggett	**Datum:**	NAVD88	**Sampler:**	Standard Split Spoon
Logged By:	B. Wilder	**Rig Type:**	CME 45C	**Hammer Wt./Fall:**	140#/30"
Date Start/Finish:	3/1/2016; 08:30-13:30	**Drilling Method:**	Solid Stem Auger	**Core Barrel:**	N/A
Boring Location:	3026+70.9, 10.5 ft Rt.	**Casing ID/OD:**	NW-3"	**Water Level*:**	7.5 ft bgs.
Hammer Efficiency Factor:	0.908	**Hammer Type:**	Automatic ☒ Hydraulic ☐ Rope & Cathead ☐		

Definitions:
D = Split Spoon Sample
MD = Unsuccessful Split Spoon Sample attempt
U = Thin Wall Tube Sample
MU = Unsuccessful Thin Wall Tube Sample attempt
V = Insitu Vane Shear Test, PP = Pocket Penetrometer
MV = Unsuccessful Insitu 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 = Insitu Field Vane Shear Strength (psf)
T_v = Pocket Torvane Shear Strength (psf)
q_p = Unconfined Compressive Strength (ksf)
N-uncorrected = Raw field SPT N-value
Hammer Efficiency Factor = Annual Calibration Value
N_{60} = SPT N-uncorrected corrected for hammer efficiency
N_{60} = (Hammer Efficiency Factor/60%)*N-uncorrected
$S_{u(lab)}$ = Lab Vane 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 No.	Pen./Rec. (in.)	Sample Depth (ft.)	Blows (/6 in.) Shear Strength (psf) or RQD (%)	N-uncorrected	N_{60}	Casing Blows	Elevation (ft.)	Graphic Log	Visual Description and Remarks	Laboratory Testing Results/ AASHTO and Unified Class.
0							SSA			13" PAVEMENT.	
								207.32		1.08	
	1D	24/13	2.00 - 4.00	10/12/7/12	19	29				Brown, moist, medium dense, Gravelly, fine to coarse SAND, little silt.	
								205.40		3.00	
										Olive-brown, moist, very stiff, SILT, little fine sand.	
5											
	2D	24/13	5.00 - 7.00	7/12/12/31	24	36				Olive-brown, moist, very stiff, SILT, some fine sand.	
								199.90		8.50	
										Grey, wet, medium dense, Silty, fine to coarse SAND, little gravel.	
10	3D	13.2/10	10.00 - 11.10	11/16/30(1.2")	---			197.30		11.10	
										Bottom of Exploration at 11.10 feet below ground surface. REFUSAL, very good hammer bounce.	
15											
20											
25											

Remarks:

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Maine Department of Transportation

Soil/Rock Exploration Log
US CUSTOMARY UNITS

Project: I-95 Trafton Road Interchange
Location: Waterville, Maine

Boring No.: HB-WAT-203
WIN: 18129.10

Driller:	MaineDOT	**Elevation (ft.)**	208.1	**Auger ID/OD:**	5" OD
Operator:	Wilder/Daggett	**Datum:**	NAVD88	**Sampler:**	Standard Split Spoon
Logged By:	B. Wilder	**Rig Type:**	CME 45C	**Hammer Wt./Fall:**	140#/30"
Date Start/Finish:	3/1/2016; 08:30-13:30	**Drilling Method:**	Solid Stem Auger	**Core Barrel:**	N/A
Boring Location:	3026+01.9, 10.8 ft Rt.	**Casing ID/OD:**	NW-3"	**Water Level*:**	6.5 ft bgs.
Hammer Efficiency Factor:	0.908	**Hammer Type:**	Automatic ☒ Hydraulic ☐ Rope & Cathead ☐		

Definitions:
D = Split Spoon Sample
MD = Unsuccessful Split Spoon Sample attempt
U = Thin Wall Tube Sample
MU = Unsuccessful Thin Wall Tube Sample attempt
V = Insitu Vane Shear Test, PP = Pocket Penetrometer
MV = Unsuccessful Insitu 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 = Insitu Field Vane Shear Strength (psf)
T_v = Pocket Torvane Shear Strength (psf)
q_p = Unconfined Compressive Strength (ksf)
N-uncorrected = Raw field SPT N-value
Hammer Efficiency Factor = Annual Calibration Value
N_{60} = SPT N-uncorrected corrected for hammer efficiency
N_{60} = (Hammer Efficiency Factor/60%)*N-uncorrected
$S_{u(lab)}$ = Lab Vane 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: Sample No.	Pen./Rec. (in.)	Sample Depth (ft.)	Blows (/6 in.) Shear Strength (psf) or RQD (%)	N-uncorrected	N_{60}	Casing Blows	Elevation (ft.)	Graphic Log	Visual Description and Remarks	Laboratory Testing Results/ AASHTO and Unified Class.
0							SSA			13" PAVEMENT.	
								207.02		1.08	
	1D	24/15	2.00 - 4.00	9/6/5/5	11	17				Brown, moist, medium dense, Gravelly, fine to coarse SAND, little silt.	
								205.30		2.80	
										Olive-brown, moist, medium dense, Silty, fine to medium SAND.	
5	2D	24/16	5.00 - 7.00	7/15/14/11	29	44		203.10		5.00	
										Olive-brown, moist, very stiff, Clayey-SILT, little fine sand.	
								199.30		8.80	
10										**Bottom of Exploration at 8.80 feet below ground surface.** REFUSAL	
15											
20											
25											

Remarks:

Stratification lines represent approximate boundaries between soil types; transitions may be gradual.

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Maine Department of Transportation

Soil/Rock Exploration Log
US CUSTOMARY UNITS

Project: I-95 Trafton Road Interchange
Location: Waterville, Maine

Boring No.: HB-WAT-204
WIN: 18129.10

Driller:	MaineDOT	**Elevation (ft.)**	207.9	**Auger ID/OD:**	5" OD
Operator:	Wilder/Daggett	**Datum:**	NAVD88	**Sampler:**	N/A
Logged By:	B. Wilder	**Rig Type:**	CME 45C	**Hammer Wt./Fall:**	N/A
Date Start/Finish:	3/14/2016; 07:30-12:00	**Drilling Method:**	Solid Stem Auger	**Core Barrel:**	N/A
Boring Location:	607+99.5, 7.9 ft Rt.	**Casing ID/OD:**	N/A	**Water Level*:**	None Observed

Definitions:
D = Split Spoon Sample S = Sample off Auger Flight
MD = Unsuccessful Split Spoon Sample attempt
U = Thin Wall Tube Sample
R = Rock Core Sample
V = Insitu Vane Shear Test
SSA = Solid Stem Auger B = Bucket Sample off Auger Flight

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 ≅ = Similar or Equal too
LL = Liquid Limit RC = Roller Cone ahead
PL = Plastic Limit
PI = Plasticity Index
G = Grain Size Analysis
C = Consolidation Test

Depth (ft.)	Sample Information: Sample No.	Pen./Rec. (in.)	Sample Depth (ft.)	Blows (/6 in.) Shear Strength (psf) or RQD (%)	N-value	Casing Blows	Elevation (ft.)	Graphic Log	Visual Description and Remarks	Laboratory Testing Results/ AASHTO and Unified Class.
0						SSA			No material descriptions given, auger probe.	
5										
10							198.40		9.50 **Bottom of Exploration at 9.50 feet below ground surface.** REFUSAL	
15										
20										
25										

Remarks:

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Maine Department of Transportation

Soil/Rock Exploration Log
US CUSTOMARY UNITS

Project: I-95 Trafton Road Interchange
Location: Waterville, Maine

Boring No.: HB-WAT-205
WIN: 18129.10

Driller:	MaineDOT	**Elevation (ft.)**	208.1	**Auger ID/OD:**	5" Solid Stem
Operator:	Wilder/Daggett	**Datum:**	NAVD88	**Sampler:**	Standard Split Spoon
Logged By:	B. Wilder	**Rig Type:**	CME 45C	**Hammer Wt./Fall:**	140#/30"
Date Start/Finish:	3/14/2016; 07:30-12:00	**Drilling Method:**	Cased Wash Boring	**Core Barrel:**	NQ-2"
Boring Location:	608+34.9, 7.5 ft Rt.	**Casing ID/OD:**	NW-3"	**Water Level*:**	None Observed
Hammer Efficiency Factor:	0.908	**Hammer Type:**	Automatic ☒ Hydraulic ☐ Rope & Cathead ☐		

Definitions:
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MD = Unsuccessful Split Spoon Sample attempt
U = Thin Wall Tube Sample
MU = Unsuccessful Thin Wall Tube Sample attempt
V = Insitu Vane Shear Test, PP = Pocket Penetrometer
MV = Unsuccessful Insitu 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 = Insitu Field Vane Shear Strength (psf)
T_v = Pocket Torvane Shear Strength (psf)
q_p = Unconfined Compressive Strength (ksf)
N-uncorrected = Raw field SPT N-value
Hammer Efficiency Factor = Annual Calibration Value
N_{60} = SPT N-uncorrected corrected for hammer efficiency
N_{60} = (Hammer Efficiency Factor/60%)*N-uncorrected
$S_{u(lab)}$ = Lab Vane 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: Sample No.	Pen./Rec. (in.)	Sample Depth (ft.)	Blows (/6 in.) Shear Strength (psf) or RQD (%)	N-uncorrected	N_{60}	Casing Blows	Elevation (ft.)	Graphic Log	Visual Description and Remarks	Laboratory Testing Results/ AASHTO and Unified Class.
0							SSA			Similar to HB-WAT-201.	
5							26				
							33				
							46				
							38				
							52				
10	R1	60/55	10.70 - 15.70	RQD = 18%			a85 NQ-2	197.40		a85 blows for 0.7 ft. 10.70	
										Top of Bedrock at Elev. 197.4 ft. R1:Bedrock: R1:Core Times (min:sec) 10.7-11.7 ft (1:00) 11.7-12.7 ft (1:20) 12.7-13.7 ft (1:00) 13.7-14.7 ft (1:38) 14.7-15.7 ft (2:00) 92% Recovery	
15								192.40		15.70 **Bottom of Exploration at 15.70 feet below ground surface.**	
20											
25											

Remarks:

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Maine Department of Transportation

Soil/Rock Exploration Log
US CUSTOMARY UNITS

Project: I-95 Trafton Road Interchange

Location: Waterville, Maine

Boring No.: HB-WAT-206

WIN: 18129.10

Driller:	MaineDOT	**Elevation (ft.)**	208.2	**Auger ID/OD:**	5" OD
Operator:	Wilder/Daggett	**Datum:**	NAVD88	**Sampler:**	N/A
Logged By:	B. Wilder	**Rig Type:**	CME 45C	**Hammer Wt./Fall:**	N/A
Date Start/Finish:	3/14/2016; 07:30-12:00	**Drilling Method:**	Solid Stem Auger	**Core Barrel:**	N/A
Boring Location:	608+52, 7.5 ft Rt.	**Casing ID/OD:**	N/A	**Water Level*:**	None Observed

Definitions:
D = Split Spoon Sample S = Sample off Auger Flight
MD = Unsuccessful Split Spoon Sample attempt
U = Thin Wall Tube Sample
R = Rock Core Sample
V = Insitu Vane Shear Test
SSA = Solid Stem Auger B = Bucket Sample off Auger Flight

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 ≅ = Similar or Equal too
LL = Liquid Limit RC = Roller Cone ahead
PL = Plastic Limit
PI = Plasticity Index
G = Grain Size Analysis
C = Consolidation Test

Depth (ft.)	Sample Information: Sample No.	Pen./Rec. (in.)	Sample Depth (ft.)	Blows (/6 in.) Shear Strength (psf) or RQD (%)	N-value	Casing Blows	Elevation (ft.)	Graphic Log	Visual Description and Remarks	Laboratory Testing Results/ AASHTO and Unified Class.
0						SSA			No material descriptions given, auger probe.	
5										
10										
							194.80		13.40	
									Bottom of Exploration at 13.40 feet below ground surface. REFUSAL	
15										
20										
25										

Remarks:

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SUBSURFACE EXPLORATION LOGS

300-SERIES
GUIDE SIGNS

SCHONEWALD ENGINEERING ASSOCIATES, INC.

PROJECT: I-95 Trafton Road Interchange

LOCATION: Waterville, Maine

Boring No.: HB-WAT-301

WIN: 18129.10

Driller:	New England Boring Contractors	**Elevation (ft.)**		**Auger ID/OD:**	4.5" OD
Operator:	Enos/Share	**Datum:**	NAVD88	**Sampler:**	Standard Split Spoon
Logged By:	Schonewald	**Rig Type:**	Mobile Drill B-53, track-mounted	**Hammer Wt./Fall:**	140#/30" (rope & cathead)
Date Start/Finish:	3/18/16; 0835-1015	**Drilling Method:**	Solid Stem Auger	**Core Barrel:**	N/A
Boring Location:	NB Sign 3A, 15.1 ft. off EP	**Casing ID/OD:**	N/A	**Water Level*:**	10 ft (open to 20.5 ft)

IN-SITU SAMPLING AND TESTING:
D = Split Spoon Sample
MD = Unsuccessful Split Spoon Sample attempt
U = Thin Wall Tube Sample
MU = Unsuccessful Thin Wall Tube Sample attempt
V = Insitu Vane Shear Test
MV = Unsuccessful Insitu Vane Shear Test attempt

ADDITIONAL DEFINITIONS:
S_u = Insitu Field Vane Shear Strength (psf)
R = Rock Core Sample
RQD = Rock Quality Designation (%)
WOH = weight of 140lb. hammer
WOR = weight of rods
-- = not recorded

BOREHOLE ADVANCEMENT METHOD:
SSA= solid stem auger / RC=roller cone

LABORATORY TEST RESULTS:
LL=Liquid Limit / PL=Plastic Limit / PI=Plasticity Index
WC = water content, percent
-#200 = percent fines from grain size analysis
UCT qp = peak compressive strength of rock

Sample Information

Depth (ft.)	Sample No.	Pen./Rec. (in.)	Sample Depth (ft.)	Blows (/6 in.) Shear Strength (psf) or RQD (%)	N-value	Casing Blows	Graphic Log	Visual Description and Remarks	Lab. Testing Results
0						S$A		grass-covered embankment slope	
								4.0	
5	1D	24/23	5.0 - 7.0	6-7-7-7	14			1D Olive brown, mottled, damp, stiff, Clayey SILT, little fine sand. CLAY CRUST	
10	2D	24/24	10.0 - 12.0	3-4-4-5	8			2D Olive brown grading to grey at tip of spoon, upper 12 in. slightly mottled, moist, medium stiff, Clayey SILT to SILT & CLAY, trace fine sand. CLAY CRUST	
								12.5	
								Grade to grey at approx. 12.5 ft bgs.	
15	3D	24/24	15.0 - 17.0	vane interval	---			3D Grey with occasional black mottling, moist to saturated, CLAY & SILT.	
	V1		15.6 - 16.0	Su=759 / 134 psf				raw torque rdgs: Tu=17.0/Tr=3.0 ft-lbs (55 x 110 mm vane)	
	V2		16.6 - 17.0	Su=938 / 179 psf				raw torque rdgs: Tu=21.0/Tr=4.0 ft-lbs (55 x 110 mm vane)	
	4D	24/24	17.0 - 19.0	1-1-4-6	5			Grey, saturated, (soft), CLAY & SILT;	
								18.5	
	5D	24/10	19.0 - 21.0	20-20-21-20	41			Changing at 18.5 ft to 4D: Grey, Silty fine SAND, with layers of CLAY & SILT. (TRANSITION) 5D Grey, moist (tight), dense, fine to medium Sandy GRAVEL, little to some Silt, trace coarse Sand. TILL	
20								21.0	
								Bottom of Exploration at 21.0 feet below ground surface. No refusal.	
25									

Remarks:

1. Drilled at staked location; 15.1 ft. off EP.

Stratification lines represent approximate boundaries between soil types; transitions may be gradual.

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SCHONEWALD ENGINEERING ASSOCIATES, INC.

PROJECT: I-95 Trafton Road Interchange

LOCATION: Waterville, Maine

Boring No.: HB-WAT-302

WIN: 18129.10

Driller:	New England Boring Contractors	**Elevation (ft.)**		**Auger ID/OD:**	4.5" OD
Operator:	Enos/Share	**Datum:**	NAVD88	**Sampler:**	Standard Split Spoon
Logged By:	Schonewald	**Rig Type:**	Mobile Drill B-53, track-mounted	**Hammer Wt./Fall:**	140#/30" (rope & cathead)
Date Start/Finish:	3/18/16; 1025-1145	**Drilling Method:**	Solid Stem Auger	**Core Barrel:**	N/A
Boring Location:	NB Sign 2A, 13.1 ft. off EP	**Casing ID/OD:**	N/A	**Water Level*:**	9.5 ft (open)

IN-SITU SAMPLING AND TESTING:
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MU = Unsuccessful Thin Wall Tube Sample attempt
V = Insitu Vane Shear Test
MV = Unsuccessful Insitu Vane Shear Test attempt

ADDITIONAL DEFINITIONS:
S_u = Insitu Field Vane Shear Strength (psf)
R = Rock Core Sample
RQD = Rock Quality Designation (%)
WOH = weight of 140lb. hammer
WOR = weight of rods
-- = not recorded

BOREHOLE ADVANCEMENT METHOD:
SSA= solid stem auger / RC=roller cone

LABORATORY TEST RESULTS:
LL=Liquid Limit / PL=Plastic Limit / PI=Plasticity Index
WC = water content, percent
-#200 = percent fines from grain size analysis
UCT qp = peak compressive strength of rock

Sample Information

Depth (ft.)	Sample No.	Pen./Rec. (in.)	Sample Depth (ft.)	Blows (/6 in.) Shear Strength (psf) or RQD (%)	N-value	Casing Blows	Graphic Log	Visual Description and Remarks	Lab. Testing Results
0						S$A		grass-covered embankment slope	
								4.5	
5	1D	24/24	5.0 - 7.0	3-4-3-4	7			1D Olive brown, moist, m. stiff, Clayey SILT, trace fine sand, trace fine Gravel. CLAY CRUST	
10	2D	24/24	10.0 - 12.0	2-2-2-3	4			2D Olive brown, saturated, soft, Clayey SILT to SILT & CLAY, with six seams rust-stained fine Sandy SILT, trace fine Gravel. Grey SILT & CLAY, little fine Sand in tip of spoon.	
								12.2	
								Grade to grey at approx. 12.2 ft bgs.	
								14.0	
15	3D	24/7	15.0 - 17.0	12-38-39-39	77			Boney material at 14.0 ft bgs 3D Brown grey, moist (tight), v. dense, fine to coarse Sandy GRAVEL, little Silt. TILL	
20	4D	22/10	20.5 - 22.3	4-10-13-50/4"	23			4D: Grey, wet, m. dense, fine to coarse Sandy GRAVEL, little Silt. TILL	
								22.3	
25								**Bottom of Exploration at 22.3 feet below ground surface.** Split-spoon refusal.	

Remarks:

1. Drilled at staked location; 13.1 ft. off EP.

Stratification lines represent approximate boundaries between soil types; transitions may be gradual.

* Water level readings have been made at times and under conditions stated. Groundwater fluctuations may occur due to conditions other than those present at the time measurements were made.

SCHONEWALD ENGINEERING ASSOCIATES, INC.

PROJECT: I-95 Trafton Road Interchange

LOCATION: Waterville, Maine

Boring No.: HB-WAT-303

WIN: 18129.10

Driller:	New England Boring Contractors	**Elevation (ft.)**		**Auger ID/OD:**	4.5" OD
Operator:	Enos/Share	**Datum:**	NAVD88	**Sampler:**	Standard Split Spoon
Logged By:	Schonewald	**Rig Type:**	Mobile Drill B-53, track-mounted	**Hammer Wt./Fall:**	140#/30" (rope & cathead)
Date Start/Finish:	3/18/16; 1200-1305	**Drilling Method:**	Solid Stem Auger	**Core Barrel:**	N/A
Boring Location:	NB Sign 1A (N609553.1752, E1159496.4306)	**Casing ID/OD:**	N/A	**Water Level*:**	5.8 ft (open to 14.6 ft)

IN-SITU SAMPLING AND TESTING:
D = Split Spoon Sample
MD = Unsuccessful Split Spoon Sample attempt
U = Thin Wall Tube Sample
MU = Unsuccessful Thin Wall Tube Sample attempt
V = Insitu Vane Shear Test
MV = Unsuccessful Insitu Vane Shear Test attempt

ADDITIONAL DEFINITIONS:
S_u = Insitu Field Vane Shear Strength (psf)
R = Rock Core Sample
RQD = Rock Quality Designation (%)
WOH = weight of 140lb. hammer
WOR = weight of rods
-- = not recorded

BOREHOLE ADVANCEMENT METHOD:
SSA= solid stem auger / RC=roller cone

LABORATORY TEST RESULTS:
LL=Liquid Limit / PL=Plastic Limit / PI=Plasticity Index
WC = water content, percent
-#200 = percent fines from grain size analysis
UCT qp = peak compressive strength of rock

Sample Information

Depth (ft.)	Sample No.	Pen./Rec. (in.)	Sample Depth (ft.)	Blows (/6 in.) Shear Strength (psf) or RQD (%)	N-value	Casing Blows	Graphic Log	Visual Description and Remarks	Lab. Testing Results
0						S|A		grass-covered embankment slope	
5	1D	24/16	5.0 - 7.0	3-7-6-8	13			Grey-brown, wet, m. dense, MISCELLANEOUS SANDY FILL with organics;	
								6.4	
								Changing at 6.4 ft to 1D: Red-brown, damp, Clayey SILT, some fine sand. CLAY CRUST	
								8.5	
10	2D	24/12	10.0 - 12.0	26-24-36-22	60			2D Dark grey, wet, v. dense, GRAVEL, some fine to coarse Sand, trace to little Silt. Gravel appears to be weathered rock. TILL	
15	3D	8/5	15.0 - 15.7	53-50/2"	-			3D Grey-brown, wet, GRAVEL, some fine to coarse Sand, trace to little Silt. TILL	
								18.0	
								Bottom of Exploration at 18.0 feet below ground surface. Auger refusal.	
20									
25									

Remarks:

1. Drilled at staked location; 13.6 ft. off EP.

Stratification lines represent approximate boundaries between soil types; transitions may be gradual.

* Water level readings have been made at times and under conditions stated. Groundwater fluctuations may occur due to conditions other than those present at the time measurements were made.

SCHONEWALD ENGINEERING ASSOCIATES, INC.

PROJECT: I-95 Trafton Road Interchange

LOCATION: Waterville, Maine

Boring No.: HB-WAT-304

WIN: 18129.10

Driller:	New England Boring Contractors	**Elevation (ft.)**		**Auger ID/OD:**	SSA to 4 ft
Operator:	Enos/Share	**Datum:**	NAVD88	**Sampler:**	Standard Split Spoon
Logged By:	Schonewald	**Rig Type:**	Mobile Drill B-53, track-mounted	**Hammer Wt./Fall:**	140#/30" (rope & cathead)
Date Start/Finish:	3/18/16; 1310-1420	**Drilling Method:**	Cased Wash Boring	**Core Barrel:**	N/A
Boring Location:	NB Sign E5-1a (N610409.9803, E1159564.7531)	**Casing ID/OD:**	3" (NW) spun	**Water Level*:**	--

IN-SITU SAMPLING AND TESTING:
D = Split Spoon Sample
MD = Unsuccessful Split Spoon Sample attempt
U = Thin Wall Tube Sample
MU = Unsuccessful Thin Wall Tube Sample attempt
V = Insitu Vane Shear Test
MV = Unsuccessful Insitu Vane Shear Test attempt

ADDITIONAL DEFINITIONS:
S_u = Insitu Field Vane Shear Strength (psf)
R = Rock Core Sample
RQD = Rock Quality Designation (%)
WOH = weight of 140lb. hammer
WOR = weight of rods
-- = not recorded

BOREHOLE ADVANCEMENT METHOD:
SSA= solid stem auger / RC=roller cone

LABORATORY TEST RESULTS:
LL=Liquid Limit / PL=Plastic Limit / PI=Plasticity Index
WC = water content, percent
-#200 = percent fines from grain size analysis
UCT qp = peak compressive strength of rock

Sample Information

Depth (ft.)	Sample No.	Pen./Rec. (in.)	Sample Depth (ft.)	Blows (/6 in.) Shear Strength (psf) or RQD (%)	N-value	Casing Blows	Graphic Log	Visual Description and Remarks	Lab. Testing Results
0						SSA		grass-covered embankment slope	
								1.0	
								TILL based on cuttings and drilling behavior.	
								3.5 ft BGS: top of weathered rock based on drilling behavior.	
								4.0	
	R1	53/52	4.0 - 8.4	RQD: 23" = 43%				4.0 ft BGS: auger refusal; seat casing. R1: Hard, typically fresh, aphanitic to fine grained, medium grey PHYLLITE, with high angle calcite veins and quartzite intrusions; high angle relic bedding visible. Close to moderately spaced, typically moderately dipping to high angle breaks; undulating, rough, typically discolored, typically open with occasional clay infilling.	
5									
								8.4	
								Bottom of Exploration at 8.4 feet below ground surface.	
10									
15									
20									
25									

Remarks:

1. Drilled at staked location; 13.2 ft. off EP.

Stratification lines represent approximate boundaries between soil types; transitions may be gradual.

* Water level readings have been made at times and under conditions stated. Groundwater fluctuations may occur due to conditions other than those present at the time measurements were made.

SCHONEWALD ENGINEERING ASSOCIATES, INC.

PROJECT: I-95 Trafton Road Interchange

LOCATION: Waterville, Maine

Boring No.: HB-WAT-311

WIN: 18129.10

Driller:	New England Boring Contractors	**Elevation (ft.)**		**Auger ID/OD:**	4.5" OD
Operator:	Enos/Share	**Datum:**	NAVD88	**Sampler:**	Standard Split Spoon
Logged By:	Schonewald	**Rig Type:**	Mobile Drill B-53, track-mounted	**Hammer Wt./Fall:**	140#/30" (rope & cathead)
Date Start/Finish:	3/22/16; 1340-1425	**Drilling Method:**	Solid Stem Auger	**Core Barrel:**	N/A
Boring Location:	SB Sign E5-1a (N610955.3027, E1159351.5425)	**Casing ID/OD:**		**Water Level*:**	3.7 ft (open to 6.8 ft)

IN-SITU SAMPLING AND TESTING:
D = Split Spoon Sample
MD = Unsuccessful Split Spoon Sample attempt
U = Thin Wall Tube Sample
MU = Unsuccessful Thin Wall Tube Sample attempt
V = Insitu Vane Shear Test
MV = Unsuccessful Insitu Vane Shear Test attempt

ADDITIONAL DEFINITIONS:
S_u = Insitu Field Vane Shear Strength (psf)
R = Rock Core Sample
RQD = Rock Quality Designation (%)
WOH = weight of 140lb. hammer
WOR = weight of rods
-- = not recorded

BOREHOLE ADVANCEMENT METHOD:
SSA= solid stem auger / RC=roller cone

LABORATORY TEST RESULTS:
LL=Liquid Limit / PL=Plastic Limit / PI=Plasticity Index
WC = water content, percent
-#200 = percent fines from grain size analysis
UCT qp = peak compressive strength of rock

Depth (ft.)	Sample Information: Sample No.	Pen./Rec. (in.)	Sample Depth (ft.)	Blows (/6 in.) Shear Strength (psf) or RQD (%)	N-value	Casing Blows	Graphic Log	Visual Description and Remarks	Lab. Testing Results
0						SSA		grass-lined ditch	
								FILL based on cuttings and drilling behavior.	
								3.5 — 3.5 ft BGS: top of native material (Brown, fine Sandy SILT).	
5								4.8 to 6.0 ft BGS: boulder; able to penetrate with augers	
								6.8 ft BGS: top of weathered rock based on drilling behavior.	
								7.0 — **Bottom of Exploration at 7.0 feet below ground surface.** 7.0 ft BGS auger refusal	
10									
15									
20									
25									

Remarks:

1. Drilled at staked location; ditchline.

Stratification lines represent approximate boundaries between soil types; transitions may be gradual.

* Water level readings have been made at times and under conditions stated. Groundwater fluctuations may occur due to conditions other than those present at the time measurements were made.

SCHONEWALD ENGINEERING ASSOCIATES, INC.

PROJECT: I-95 Trafton Road Interchange

LOCATION: Waterville, Maine

Boring No.: HB-WAT-312

WIN: 18129.10

Driller:	New England Boring Contractors	**Elevation (ft.)**		**Auger ID/OD:**	SSA to 9 ft
Operator:	Enos/Share	**Datum:**	NAVD88	**Sampler:**	Standard Split Spoon
Logged By:	Schonewald	**Rig Type:**	Mobile Drill B-53, track-mounted	**Hammer Wt./Fall:**	140#/30" (rope & cathead)
Date Start/Finish:	3/23/16; 1235-1400	**Drilling Method:**	Cased Wash Boring	**Core Barrel:**	N/A
Boring Location:	SB Sign 1B (N611813.3109, E1159411.3273)	**Casing ID/OD:**	3" (NW) spun	**Water Level*:**	2.6 ft (open)

IN-SITU SAMPLING AND TESTING:
D = Split Spoon Sample
MD = Unsuccessful Split Spoon Sample attempt
U = Thin Wall Tube Sample
MU = Unsuccessful Thin Wall Tube Sample attempt
V = Insitu Vane Shear Test
MV = Unsuccessful Insitu Vane Shear Test attempt

ADDITIONAL DEFINITIONS:
S_u = Insitu Field Vane Shear Strength (psf)
R = Rock Core Sample
RQD = Rock Quality Designation (%)
WOH = weight of 140lb. hammer
WOR = weight of rods
-- = not recorded

BOREHOLE ADVANCEMENT METHOD:
SSA= solid stem auger / RC=roller cone

LABORATORY TEST RESULTS:
LL=Liquid Limit / PL=Plastic Limit / PI=Plasticity Index
WC = water content, percent
-#200 = percent fines from grain size analysis
UCT qp = peak compressive strength of rock

Sample Information

Depth (ft.)	Sample No.	Pen./Rec. (in.)	Sample Depth (ft.)	Blows (/6 in.) Shear Strength (psf) or RQD (%)	N-value	Casing Blows	Graphic Log	Visual Description and Remarks	Lab. Testing Results
0						SSA		grass-lined ditch	
								2.0	
5	1D	24/13	5.0 - 7.0	14-13-14-28	27			1D: Brown, wet, m. dense, Gravelly fine to medium SAND, little to some Silt, trace coarse Sand. TILL	
								8.4 ft BGS: top of weathered rock based on drilling behavior.	
								9.0	
10	R1	41/35	9.0 - 12.4	RQD: 13" = 32%				9.0 ft BGS: auger refusal; seat casing. R1: Hard, typically fresh, aphanitic to fine grained, medium grey PHYLLITE, with high angle calcite veins and quartzite intrusions; high angle relic bedding visible. Close to moderately spaced, typically moderately dipping to high angle breaks; undulating, rough, typically discolored, typically open with occasional clay infilling. Open fracture from 10.3 to 11.5 ft; vertical fracture from 11.5 to 12.4 ft.	
								12.4	
15								**Bottom of Exploration at 12.4 feet below ground surface.**	
20									
25									

Remarks:

1. Drilled at staked location.

Stratification lines represent approximate boundaries between soil types; transitions may be gradual.

* Water level readings have been made at times and under conditions stated. Groundwater fluctuations may occur due to conditions other than those present at the time measurements were made.

SCHONEWALD ENGINEERING ASSOCIATES, INC.

PROJECT: I-95 Trafton Road Interchange

LOCATION: Waterville, Maine

Boring No.: HB-WAT-313

WIN: 18129.10

Driller:	New England Boring Contractors	**Elevation (ft.)**		**Auger ID/OD:**	4.5" OD
Operator:	Enos/Share	**Datum:**	NAVD88	**Sampler:**	Standard Split Spoon
Logged By:	Schonewald	**Rig Type:**	Mobile Drill B-53, track-mounted	**Hammer Wt./Fall:**	140#/30" (rope & cathead)
Date Start/Finish:	3/23/16; 1110-1225	**Drilling Method:**	Solid Stem Auger	**Core Barrel:**	N/A
Boring Location:	SB Sign 2B, 14.0 ft. off EP	**Casing ID/OD:**	N/A	**Water Level*:**	12.3 ft (open to 14.5 ft)

IN-SITU SAMPLING AND TESTING:
D = Split Spoon Sample
MD = Unsuccessful Split Spoon Sample attempt
U = Thin Wall Tube Sample
MU = Unsuccessful Thin Wall Tube Sample attempt
V = Insitu Vane Shear Test
MV = Unsuccessful Insitu Vane Shear Test attempt

ADDITIONAL DEFINITIONS:
S_u = Insitu Field Vane Shear Strength (psf)
R = Rock Core Sample
RQD = Rock Quality Designation (%)
WOH = weight of 140lb. hammer
WOR = weight of rods
-- = not recorded

BOREHOLE ADVANCEMENT METHOD:
SSA= solid stem auger / RC=roller cone

LABORATORY TEST RESULTS:
LL=Liquid Limit / PL=Plastic Limit / PI=Plasticity Index
WC = water content, percent
-#200 = percent fines from grain size analysis
UCT qp = peak compressive strength of rock

Sample Information

Depth (ft.)	Sample No.	Pen./Rec. (in.)	Sample Depth (ft.)	Blows (/6 in.) Shear Strength (psf) or RQD (%)	N-value	Casing Blows	Graphic Log	Visual Description and Remarks	Lab. Testing Results
0						S$A		grass-covered embankment slope	
5	1D	24/20	5.0 - 7.0	3-3-3-3	6			1D Olive brown, moist, loose FILL consisting of mixture of fine to medium SAND, trace Silt and Clayey SILT, little fine Sand.	
10	2D	24/20	10.0 - 12.0	3-2-2-2	4			2D Olive brown, moist to wet, loose FILL consisting predominately of Clayey SILT, little fine Sand with one 6 inch layer fine to medium SAND, trace Silt and three 1/4 inch layers of organics.	
15	3D	24/16	15.0 - 17.0	4-16-29-28	45			Brown, wet, Sandy FILL;	
								15.7	
								Changing at approx. 15.7 ft to 3D: Brown, moist, dense, Gravelly fine to coarse SAND, little to some Silt. TILL	
								17.5 ft Possible top of weathered rock based on drilling behavior.	
								18.5	
								Bottom of Exploration at 18.5 feet below ground surface. 18.5 ft auger refusal	
20									
25									

Remarks:

1. Drilled at staked location; 14.0 ft. off EP.

Stratification lines represent approximate boundaries between soil types; transitions may be gradual.

* Water level readings have been made at times and under conditions stated. Groundwater fluctuations may occur due to conditions other than those present at the time measurements were made.

SCHONEWALD ENGINEERING ASSOCIATES, INC.

PROJECT: I-95 Trafton Road Interchange

LOCATION: Waterville, Maine

Boring No.: HB-WAT-314

WIN: 18129.10

Driller:	New England Boring Contractors	**Elevation (ft.)**		**Auger ID/OD:**	
Operator:	Enos/Share	**Datum:**	NAVD88	**Sampler:**	Standard Split Spoon
Logged By:	Schonewald	**Rig Type:**	Mobile Drill B-53, track-mounted	**Hammer Wt./Fall:**	140#/30" (rope & cathead)
Date Start/Finish:	3/23/16; 0820-1045	**Drilling Method:**	Cased Wash Boring	**Core Barrel:**	N/A
Boring Location:	SB Sign 3B; 18.8 ft off EP	**Casing ID/OD:**	3" (NW) spun	**Water Level*:**	

IN-SITU SAMPLING AND TESTING:
D = Split Spoon Sample
MD = Unsuccessful Split Spoon Sample attempt
U = Thin Wall Tube Sample
MU = Unsuccessful Thin Wall Tube Sample attempt
V = Insitu Vane Shear Test
MV = Unsuccessful Insitu Vane Shear Test attempt

ADDITIONAL DEFINITIONS:
S_u = Insitu Field Vane Shear Strength (psf)
R = Rock Core Sample
RQD = Rock Quality Designation (%)
WOH = weight of 140lb. hammer
WOR = weight of rods
-- = not recorded

BOREHOLE ADVANCEMENT METHOD:
SSA= solid stem auger / RC=roller cone

LABORATORY TEST RESULTS:
LL=Liquid Limit / PL=Plastic Limit / PI=Plasticity Index
WC = water content, percent
-#200 = percent fines from grain size analysis
UCT qp = peak compressive strength of rock

Sample Information

Depth (ft.)	Sample No.	Pen./Rec. (in.)	Sample Depth (ft.)	Blows (/6 in.) Shear Strength (psf) or RQD (%)	N-value	Casing Blows	Graphic Log	Visual Description and Remarks	Lab. Testing Results
0						RC		grass-lined ditch	
								1.0	
								1 to 5 ft: multiple gravel layers	
5	1D	24/16	5.0 - 7.0	17-26-31-33	57			1D: Olive brown, damp (tight), v. dense, Gravelly fine to medium SAND, some Silt, trace coarse Sand. TILL	
								5 to 10 ft: boney; difficult advancement	
10	2D R1	5/2 60/29	10.0 - 10.4 10.5 - 15.5	50/5"				2D: same as 1D TILL R1: Cored through boulder; till at 11.5 ft based on wash water and advancement rate; till very dense; able to obtain core of till. TILL	
15	3D	24/20	15.5 - 17.5	37-39-42-54	81			3D: Grey, damp (tight), v. dense, Gravelly fine to medium SAND, some Silt, trace coarse Sand. TILL	
20								20.0	
								Bottom of Exploration at 20.0 feet below ground surface. No refusal	
25									

Remarks:

1. Drilled at staked location; 18.8 ft off EP.

Stratification lines represent approximate boundaries between soil types; transitions may be gradual.

* Water level readings have been made at times and under conditions stated. Groundwater fluctuations may occur due to conditions other than those present at the time measurements were made.

SCHONEWALD
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SUBSURFACE EXPLORATION LOGS

300-SERIES
NB OFF RAMP / SB ON RAMP

SCHONEWALD ENGINEERING ASSOCIATES, INC.

PROJECT: I-95 Trafton Road Interchange

LOCATION: Waterville, Maine

Boring No.: HB-WAT-305

WIN: 18129.10

Driller:	New England Boring Contractors	**Elevation (ft.)**		**Auger ID/OD:**	4.5" OD
Operator:	Enos/Share	**Datum:**	NAVD88	**Sampler:**	Standard Split Spoon
Logged By:	Schonewald	**Rig Type:**	Mobile Drill B-53, track-mounted	**Hammer Wt./Fall:**	140#/30" (rope & cathead)
Date Start/Finish:	3/22/16; 0920-1015	**Drilling Method:**	Solid Stem Auger	**Core Barrel:**	N/A
Boring Location:	NB off ramp Station 209+00 CL	**Casing ID/OD:**		**Water Level*:**	dry

IN-SITU SAMPLING AND TESTING:
D = Split Spoon Sample
MD = Unsuccessful Split Spoon Sample attempt
U = Thin Wall Tube Sample
MU = Unsuccessful Thin Wall Tube Sample attempt
V = Insitu Vane Shear Test
MV = Unsuccessful Insitu Vane Shear Test attempt

ADDITIONAL DEFINITIONS:
S_u = Insitu Field Vane Shear Strength (psf)
R = Rock Core Sample
RQD = Rock Quality Designation (%)
WOH = weight of 140lb. hammer
WOR = weight of rods
-- = not recorded

BOREHOLE ADVANCEMENT METHOD:
SSA= solid stem auger / RC=roller cone

LABORATORY TEST RESULTS:
LL=Liquid Limit / PL=Plastic Limit / PI=Plasticity Index
WC = water content, percent
-#200 = percent fines from grain size analysis
UCT qp = peak compressive strength of rock

Sample Information

Depth (ft.)	Sample No.	Pen./Rec. (in.)	Sample Depth (ft.)	Blows (/6 in.) Shear Strength (psf) or RQD (%)	N-value	Casing Blows	Graphic Log	Visual Description and Remarks	Lab. Testing Results
0						SSA		forest mat	
								0.3	
	1D	24/15	2.0 - 4.0	3-10-12-18	22			1D: Olive brown, damp, medium dense, SILT, some fine Sand.	
								4.2	
								Bottom of Exploration at 4.2 feet below ground surface. 4.2 ft BGS auger refusal	
5									
10									
15									
20									
25									

Remarks:

Second borehole 2 feet northbound; confirm auger refusal at 4.0 ft BGS

Stratification lines represent approximate boundaries between soil types; transitions may be gradual.

* Water level readings have been made at times and under conditions stated. Groundwater fluctuations may occur due to conditions other than those present at the time measurements were made.

SCHONEWALD ENGINEERING ASSOCIATES, INC.

PROJECT: I-95 Trafton Road Interchange

LOCATION: Waterville, Maine

Boring No.: HB-WAT-306

WIN: 18129.10

Driller:	New England Boring Contractors	**Elevation (ft.)**		**Auger ID/OD:**	4.5" OD
Operator:	Enos/Share	**Datum:**	NAVD88	**Sampler:**	Standard Split Spoon
Logged By:	Schonewald	**Rig Type:**	Mobile Drill B-53, track-mounted	**Hammer Wt./Fall:**	140#/30" (rope & cathead)
Date Start/Finish:	3/22/16; 1020-1035	**Drilling Method:**	Solid Stem Auger	**Core Barrel:**	N/A
Boring Location:	NB off ramp Station 210+00 CL	**Casing ID/OD:**		**Water Level*:**	dry

IN-SITU SAMPLING AND TESTING:
D = Split Spoon Sample
MD = Unsuccessful Split Spoon Sample attempt
U = Thin Wall Tube Sample
MU = Unsuccessful Thin Wall Tube Sample attempt
V = Insitu Vane Shear Test
MV = Unsuccessful Insitu Vane Shear Test attempt

ADDITIONAL DEFINITIONS:
S_u = Insitu Field Vane Shear Strength (psf)
R = Rock Core Sample
RQD = Rock Quality Designation (%)
WOH = weight of 140lb. hammer
WOR = weight of rods
-- = not recorded

BOREHOLE ADVANCEMENT METHOD:
SSA= solid stem auger / RC=roller cone

LABORATORY TEST RESULTS:
LL=Liquid Limit / PL=Plastic Limit / PI=Plasticity Index
WC = water content, percent
-#200 = percent fines from grain size analysis
UCT qp = peak compressive strength of rock

Depth (ft.)	Sample No.	Pen./Rec. (in.)	Sample Depth (ft.)	Blows (/6 in.) Shear Strength (psf) or RQD (%)	N-value	Casing Blows	Graphic Log	Visual Description and Remarks	Lab. Testing Results
0						SSA		forest mat	
								0.3	
	1D	24/6	2.0 - 4.0	4-5-6-11	11			1D: Olive brown, damp, medium dense, SILT, some fine Sand, trace Gravel; piece of stone in tip of spoon.	
5								4.8	
								Bottom of Exploration at 4.8 feet below ground surface. 4.8 ft BGS auger refusal	
10									
15									
20									
25									

Remarks:

Stratification lines represent approximate boundaries between soil types; transitions may be gradual.

* Water level readings have been made at times and under conditions stated. Groundwater fluctuations may occur due to conditions other than those present at the time measurements were made.

SCHONEWALD ENGINEERING ASSOCIATES, INC.

PROJECT: I-95 Trafton Road Interchange

LOCATION: Waterville, Maine

Boring No.: HB-WAT-307

WIN: 18129.10

Driller:	New England Boring Contractors	**Elevation (ft.)**		**Auger ID/OD:**	4.5" OD
Operator:	Enos/Share	**Datum:**	NAVD88	**Sampler:**	Standard Split Spoon
Logged By:	Schonewald	**Rig Type:**	Mobile Drill B-53, track-mounted	**Hammer Wt./Fall:**	140#/30" (rope & cathead)
Date Start/Finish:	3/22/16; 1040-1055	**Drilling Method:**	Solid Stem Auger	**Core Barrel:**	N/A
Boring Location:	NB off ramp Station 211+00, 5' RT	**Casing ID/OD:**		**Water Level*:**	dry

IN-SITU SAMPLING AND TESTING:
D = Split Spoon Sample
MD = Unsuccessful Split Spoon Sample attempt
U = Thin Wall Tube Sample
MU = Unsuccessful Thin Wall Tube Sample attempt
V = Insitu Vane Shear Test
MV = Unsuccessful Insitu Vane Shear Test attempt

ADDITIONAL DEFINITIONS:
S_u = Insitu Field Vane Shear Strength (psf)
R = Rock Core Sample
RQD = Rock Quality Designation (%)
WOH = weight of 140lb. hammer
WOR = weight of rods
-- = not recorded

BOREHOLE ADVANCEMENT METHOD:
SSA= solid stem auger / RC=roller cone

LABORATORY TEST RESULTS:
LL=Liquid Limit / PL=Plastic Limit / PI=Plasticity Index
WC = water content, percent
-#200 = percent fines from grain size analysis
UCT qp = peak compressive strength of rock

Depth (ft.)	Sample No.	Pen./Rec. (in.)	Sample Depth (ft.)	Blows (/6 in.) Shear Strength (psf) or RQD (%)	N-value	Casing Blows	Graphic Log	Visual Description and Remarks	Lab. Testing Results
0						SSA		forest mat	
								0.3	
	MD	0/-	2.0 - 2.0	bounce				No recovery 2.1 ft BGS: possible top of weathered rock based on drilling behavior.	
								2.5	
								Bottom of Exploration at 2.5 feet below ground surface. 2.5 ft BGS auger refusal	
5									
10									
15									
20									
25									

Remarks:

Second borehole 8 feet northbound; confirm auger refusal at 2.4 ft BGS

Stratification lines represent approximate boundaries between soil types; transitions may be gradual.

* Water level readings have been made at times and under conditions stated. Groundwater fluctuations may occur due to conditions other than those present at the time measurements were made.

SCHONEWALD ENGINEERING ASSOCIATES, INC.

PROJECT: I-95 Trafton Road Interchange

LOCATION: Waterville, Maine

Boring No.: HB-WAT-308

WIN: 18129.10

Driller:	New England Boring Contractors	**Elevation (ft.)**		**Auger ID/OD:**	4.5" OD
Operator:	Enos/Share	**Datum:**	NAVD88	**Sampler:**	Standard Split Spoon
Logged By:	Schonewald	**Rig Type:**	Mobile Drill B-53, track-mounted	**Hammer Wt./Fall:**	140#/30" (rope & cathead)
Date Start/Finish:	3/22/16; 1105-1150	**Drilling Method:**	Solid Stem Auger	**Core Barrel:**	N/A
Boring Location:	NB off ramp Station 212+00, 25' RT	**Casing ID/OD:**		**Water Level*:**	9.5 ft (open to 11.4 ft)

IN-SITU SAMPLING AND TESTING:
D = Split Spoon Sample
MD = Unsuccessful Split Spoon Sample attempt
U = Thin Wall Tube Sample
MU = Unsuccessful Thin Wall Tube Sample attempt
V = Insitu Vane Shear Test
MV = Unsuccessful Insitu Vane Shear Test attempt

ADDITIONAL DEFINITIONS:
S_u = Insitu Field Vane Shear Strength (psf)
R = Rock Core Sample
RQD = Rock Quality Designation (%)
WOH = weight of 140lb. hammer
WOR = weight of rods
-- = not recorded

BOREHOLE ADVANCEMENT METHOD:
SSA= solid stem auger / RC=roller cone

LABORATORY TEST RESULTS:
LL=Liquid Limit / PL=Plastic Limit / PI=Plasticity Index
WC = water content, percent
-#200 = percent fines from grain size analysis
UCT qp = peak compressive strength of rock

Sample Information

Depth (ft.)	Sample No.	Pen./Rec. (in.)	Sample Depth (ft.)	Blows (/6 in.) Shear Strength (psf) or RQD (%)	N-value	Casing Blows	Graphic Log	Visual Description and Remarks	Lab. Testing Results
0						SSA		forest mat	
								0.3	
	1D	24/8	2.0 - 4.0	3-3-4-4	7			1D: Olive brown, slightly mottled, damp to moist, medium stiff, Clayey SILT, little fine Sand.	
5	2D	24/12	5.0 - 7.0	2-3-3-4	6			2D: Olive brown, moist, medium stiff, mottled Clayey SILT, little fine Sand grading to olive brown, SILT & CLAY at 6.5 ft.	
								7.0	
								Apparent stratum change at 7.0 ft BGS to reddish-brown, Silty fine SAND.	
								8.5 ft BGS: Material becomes gravelly based on drilling behavior.	
10	3D	24/14	10.0 - 12.0	7-6-7-13	13			3D: Brown, moist, medium dense, Silty fine to medium SAND, trace Gravel, trace coarse Sand; gravel appears to be subangular pieces of bedrock.	
								12.0 ft BGS Material becomes boney based on drilling behavior.	
								13.5 ft BGS: possible top of weathered rock based on drilling behavior.	
								14.6	
15								**Bottom of Exploration at 14.6 feet below ground surface.** 14.6 ft BGS auger refusal	
20									
25									

Remarks:

Stratification lines represent approximate boundaries between soil types; transitions may be gradual.

* Water level readings have been made at times and under conditions stated. Groundwater fluctuations may occur due to conditions other than those present at the time measurements were made.

SCHONEWALD ENGINEERING ASSOCIATES, INC.

PROJECT: I-95 Trafton Road Interchange

LOCATION: Waterville, Maine

Boring No.: HB-WAT-309

WIN: 18129.10

Driller:	New England Boring Contractors	**Elevation (ft.)**		**Auger ID/OD:**	4.5" OD
Operator:	Enos/Share	**Datum:**	NAVD88	**Sampler:**	Standard Split Spoon
Logged By:	Schonewald	**Rig Type:**	Mobile Drill B-53, track-mounted	**Hammer Wt./Fall:**	140#/30" (rope & cathead)
Date Start/Finish:	3/22/16; 1500-1525	**Drilling Method:**	Solid Stem Auger	**Core Barrel:**	N/A
Boring Location:	SB on ramp Station 514+00, 35' LT	**Casing ID/OD:**		**Water Level*:**	dry

IN-SITU SAMPLING AND TESTING:
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MU = Unsuccessful Thin Wall Tube Sample attempt
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MV = Unsuccessful Insitu Vane Shear Test attempt

ADDITIONAL DEFINITIONS:
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BOREHOLE ADVANCEMENT METHOD:
SSA= solid stem auger / RC=roller cone

LABORATORY TEST RESULTS:
LL=Liquid Limit / PL=Plastic Limit / PI=Plasticity Index
WC = water content, percent
-#200 = percent fines from grain size analysis
UCT qp = peak compressive strength of rock

Depth (ft.)	Sample No.	Pen./Rec. (in.)	Sample Depth (ft.)	Blows (/6 in.) Shear Strength (psf) or RQD (%)	N-value	Casing Blows	Graphic Log	Visual Description and Remarks	Lab. Testing Results
0						SSA		forest mat	
								0.3	
5								7.5 ft BGS: possible top of weathered rock based on drilling behavior.	
								8.5	
								Bottom of Exploration at 8.5 feet below ground surface. 8.5 ft BGS auger refusal	
10									
15									
20									
25									

Sample Information

Remarks:

Stratification lines represent approximate boundaries between soil types; transitions may be gradual.

* Water level readings have been made at times and under conditions stated. Groundwater fluctuations may occur due to conditions other than those present at the time measurements were made.

SCHONEWALD ENGINEERING ASSOCIATES, INC.

PROJECT: I-95 Trafton Road Interchange

LOCATION: Waterville, Maine

Boring No.: HB-WAT-310

WIN: 18129.10

Driller:	New England Boring Contractors	**Elevation (ft.)**		**Auger ID/OD:**	4.5" OD
Operator:	Enos/Share	**Datum:**	NAVD88	**Sampler:**	Standard Split Spoon
Logged By:	Schonewald	**Rig Type:**	Mobile Drill B-53, track-mounted	**Hammer Wt./Fall:**	140#/30" (rope & cathead)
Date Start/Finish:	3/22/16; 1440-1450	**Drilling Method:**	Solid Stem Auger	**Core Barrel:**	N/A
Boring Location:	SB on ramp Station 514+50, 11' LT	**Casing ID/OD:**		**Water Level*:**	dry

IN-SITU SAMPLING AND TESTING:
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MD = Unsuccessful Split Spoon Sample attempt
U = Thin Wall Tube Sample
MU = Unsuccessful Thin Wall Tube Sample attempt
V = Insitu Vane Shear Test
MV = Unsuccessful Insitu Vane Shear Test attempt

ADDITIONAL DEFINITIONS:
S_u = Insitu Field Vane Shear Strength (psf)
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BOREHOLE ADVANCEMENT METHOD:
SSA= solid stem auger / RC=roller cone

LABORATORY TEST RESULTS:
LL=Liquid Limit / PL=Plastic Limit / PI=Plasticity Index
WC = water content, percent
-#200 = percent fines from grain size analysis
UCT qp = peak compressive strength of rock

Depth (ft.)	Sample No.	Pen./Rec. (in.)	Sample Depth (ft.)	Blows (/6 in.) Shear Strength (psf) or RQD (%)	N-value	Casing Blows	Graphic Log	Visual Description and Remarks	Lab. Testing Results
0						SSA		grass-lined ditch	
								0.3	
								2.0 ft BGS: blast rock / riprap encountered	
								2.8 ft BGS: possible top of weathered rock based on drilling behavior.	
								3.0	
								Bottom of Exploration at 3.0 feet below ground surface.	
								3.0 ft BGS auger refusal	
5									
10									
15									
20									
25									

Remarks:

Rock exposed in backslope cut.

Stratification lines represent approximate boundaries between soil types; transitions may be gradual.

* Water level readings have been made at times and under conditions stated. Groundwater fluctuations may occur due to conditions other than those present at the time measurements were made.