STATE OF VERMONT
AGENCY OF TRANSPORTATION
MATERIALS & RESEARCH SECTION
SUBSURFACE INFORMATION

BORING LOG

Rutland Bridge Replacement
23828.1000.32000

Boring No.: B-101
Page No.: 1 of 2
Pin No.: BRF 3000(16)
Checked By: J. MacGregor

Boring Crew: M. Blakely, D. Spielvogel
Date Started: 2/21/12 Date Finished: 2/24/12
VTSPG NAD83: N 401671.18 ft E 1509812.06 ft
Station: 100+23.00 Offset: 1.9 L
Ground Elevation: 529.8 ft

	Casing	Sampler
Type:	WB	SS
I.D.:	3 in	1.5 in
Hammer Wt:	140 lb.	140 lb.
Hammer Fall:	30 in.	30 in.
Hammer/Rod Type:	Manual/NW	
Rig:	CME 550 ATV	CE = 1

Groundwater Observations

Date	Depth (ft)	Notes
02/21/12	9.8	Estimated

Depth (ft)	Strata (1)	CLASSIFICATION OF MATERIALS (Description)	Run (Dip deg.)	Core Rec. % (RQD %)	Blows/6" (N Value)	Moisture Content %	Gravel %	Sand %	Fines %
		ASPHALT PAVEMENT							
		(FILL)							
5		(FILL), f.m.c. SAND, little silt, medium compact, brown, wet, Rec. = 0.1 ft			6-6-7-7 (13)				
		(SM)							
10		(SM), f.m.c. SAND, little silt, little f.c. gravel, medium compact, brown, wet, Rec. = 0.1 ft			14-13-9-4 (22)				
		(GM)							
15		(GM), f.c. GRAVEL, And f.m.c. SAND, Some Silt, very compact, brown, wet, Rec. = 0.6 ft			10-36-27-17 (R)				
20		(GM), f.c. GRAVEL, And f.m.c. SAND, little silt, very compact, brown, wet, Rec. = 0.0 ft			108-50/2" (R)				
25		(GM), f.c. GRAVEL, And f.m.c. SAND, little silt, very compact, brown, wet, Rec. = 1.0 ft			47-73-50/4" (R)		56.7	28.3	15.0
30		(GM), Similar Soil, Rec. = 1.4 ft			29-50-41-48 (R)				
35		(GM), Similar Soil, Rec. = 0.6 ft			73-50/3" (R)				
40		(GM), Similar Soil, Rec. = 1.0 ft			31-54-46-50/4" (R)				
		(SM-TILL)							
45		(SM-TILL), f. SAND, Some clayey Silt, very compact, gray, wet, Rec. = 0.6 ft			51-50/3"				

Notes:
1. Stratification lines represent approximate boundary between material types. Transition may be gradual.
2. N Values have not been corrected for hammer energy. CE is the hammer energy correction factor.
3. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

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STATE OF VERMONT
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SUBSURFACE INFORMATION

BORING LOG

Rutland Bridge Replacement
23828.1000.32000

Boring No.: B-101
Page No.: 2 of 2
Pin No.: BRF 3000(16)
Checked By: J. MacGregor

Boring Crew: M. Blakely, D. Spielvogel
Date Started: 2/21/12 Date Finished: 2/24/12
VTSPG NAD83: N 401671.18 ft E 1509812.06 ft
Station: 100+23.00 Offset: 1.9 L
Ground Elevation: 529.8 ft

	Casing	Sampler
Type:	WB	SS
I.D.:	3 in	1.5 in
Hammer Wt:	140 lb.	140 lb.
Hammer Fall:	30 in.	30 in.
Hammer/Rod Type:	Manual/NW	
Rig:	CME 550 ATV	CE = 1

Groundwater Observations

Date	Depth (ft)	Notes
02/21/12	9.8	Estimated

Depth (ft)	Strata (1)	CLASSIFICATION OF MATERIALS (Description)	Run (Dip deg.)	Core Rec. % (RQD %)	Blows/6" (N Value)	Moisture Content %	Gravel %	Sand %	Fines %
					(R)				
50		(SM-TILL), Cobbles/Boulders, Rec. = 0.0 ft	R-1	100 (0)	50/0" (R)				
		(SM-TILL), Cobbles/Boulders	R-2	0 (0)					
		(SM-TILL), f.m.c. SAND, Some Silt, little f.c. gravel, very compact, gray, wet, Rec. = 0.2 ft			16-100/4" (R)				
		Hole stopped @ 52.8 ft							
55									
60									
65									
70									
75									
80									
85									
90									

Remarks:
A piece of c. gravel was lodged in the shoe of sample S-2 when first driven. Soil description based upon sample recovery of second spoon driven at the same depth.

No recovery was recorded on the first spoon of sample S-4. Soil description based upon sample recovery of second spoon driven at the same depth.

Boulders and cobbles were encountered while driving and washing casing below a depth of 14 feet.

Boring was advanced open hole below a depth of 44 feet.

The description of the classification of the materials is based on USCS criteria that gravel is defined as material retained on a #4 sieve or larger. Laboratory data provided follows AASHTO classification guidelines that gravel is defined as material retained on a #10 sieve or larger.

Notes:
1. Stratification lines represent approximate boundary between material types. Transition may be gradual.
2. N Values have not been corrected for hammer energy. CE is the hammer energy correction factor.
3. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

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SUBSURFACE INFORMATION

BORING LOG

Rutland Bridge Replacement
23828.1000.32000

Boring No.: B-102
Page No.: 1 of 1
Pin No.: BRF 3000(16)
Checked By: J. MacGregor

Boring Crew: M. Blakely, D. Spielvogel
Date Started: 2/17/12 Date Finished: 2/17/12
VTSPG NAD83: N 401638.49 ft E 1509823.59 ft
Station: 100+35.00 Offset: 36.4 R
Ground Elevation: 530.1 ft

	Casing	Sampler
Type:	WB	SS
I.D.:	3 in	1.5 in
Hammer Wt:	140 lb.	140 lb.
Hammer Fall:	30 in.	30 in.
Hammer/Rod Type:		Manual/NW
Rig:	CME 550 ATV	CE = 1

Groundwater Observations

Date	Depth (ft)	Notes
02/17/12	10.1	Estimated

Depth (ft)	Strata (1)	CLASSIFICATION OF MATERIALS (Description)	Blows/6" (N Value)	Moisture Content %	Gravel %	Sand %	Fines %
		ASPHALT					
		(FILL), f.m.c. SAND, little f.c. gravel, trace silt, brown, moist					
5		(FILL), WOOD, medium compact, brown, moist, Rec. = 0.5 ft	16-7-5-7 (12)				
		(SM)					
10		(SM), f. SAND, Some Silt, trace organics, compact, brown, wet, Rec. = 0.6 ft	22-20-15-17 (35)				
15		No Recovery, Rec. = 0.0 ft	14-9-7-8 (16)				
		Hole stopped @ 16.0 ft					
20							
25							
30							
35							
40							
45							

Remarks:
Two spoons were driven for sample S-3 without a sample recovery.

Casing refusal was encountered at a depth of 16 feet. Boring was offset 2 feet to location B-102A.

The description of the classification of the materials is based on USCS criteria that gravel is defined as material retained on a #4 sieve or larger.

Notes:
1. Stratification lines represent approximate boundary between material types. Transition may be gradual.
2. N Values have not been corrected for hammer energy. CE is the hammer energy correction factor.
3. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

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BORING LOG

Rutland Bridge Replacement
23828.1000.32000

Boring No.: B-102A
Page No.: 1 of 2
Pin No.: BRF 3000(16)
Checked By: J. MacGregor

Boring Crew: M. Blakely, D. Spielvogel
Date Started: 2/17/12 Date Finished: 2/21/12
VTSPG NAD83: N 401635.66 ft E 1509827.60 ft
Station: 100+32.00 Offset: 33.7 R
Ground Elevation: 530.1 ft

	Casing	Sampler
Type:	WB	SS
I.D.:	3 in	1.5 in
Hammer Wt:	140 lb.	140 lb.
Hammer Fall:	30 in.	30 in.
Hammer/Rod Type:	Manual/NW	
Rig:	CME 550 ATV	CE = 1

Groundwater Observations

Date	Depth (ft)	Notes
12/17/12	10.1	Estimated

Depth (ft)	Strata (1)	CLASSIFICATION OF MATERIALS (Description)	Run (Dip deg.)	Core Rec. % (RQD %)	Blows/6" (N Value)	Moisture Content %	Gravel %	Sand %	Fines %
15		(GM), f.c. GRAVEL, Some Silt, Some f.m.c. Sand, compact, brown, wet, Rec. = 0.6 ft			22-22-19-26 (41)				
20		(GM), becomes very compact, Rec. = 0.5 ft			25-63-50/3" (R)				
		(GM), Cobbles/Boulders	R-1	100 (0)					
25		Insufficient Recovery, Rec. = 0.1 ft			100/5" (R)				
30		No Recovery, Rec. = 0.0 ft			200/2" (R)				
		(GM), f.c. GRAVEL, Some Silt, Some f.m.c. Sand, very compact, brown, wet, Rec. = 0.4 ft			100/6" (R)				
35		(ML)							
		(ML), SILT, Some f. Sand, very compact, brown, wet, Rec. = 0.7 ft			36-56-50/4" (R)				
40		(ML), SILT, Some f. Sand, trace f. gravel, very compact, brown, wet, Rec. = 1.1 ft			50-70-50/4" (R)		2.0	28.2	69.8
45		(ML-TILL)							
		(ML-TILL), SILT, Some f. Sand, little f. gravel, very compact, gray, wet, Rec. = 0.8 ft			72-50/3"		18.8	19.0	62.2

Notes:
1. Stratification lines represent approximate boundary between material types. Transition may be gradual.
2. N Values have not been corrected for hammer energy. CE is the hammer energy correction factor.
3. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

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BORING LOG

Rutland Bridge Replacement
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Boring No.: B-102A
Page No.: 2 of 2
Pin No.: BRF 3000(16)
Checked By: J. MacGregor

Boring Crew: M. Blakely, D. Spielvogel
Date Started: 2/17/12 Date Finished: 2/21/12
VTSPG NAD83: N 401635.66 ft E 1509827.60 ft
Station: 100+32.00 Offset: 33.7 R
Ground Elevation: 530.1 ft

	Casing	Sampler
Type:	WB	SS
I.D.:	3 in	1.5 in
Hammer Wt:	140 lb.	140 lb.
Hammer Fall:	30 in.	30 in.
Hammer/Rod Type:	Manual/NW	
Rig:	CME 550 ATV	CE = 1

Groundwater Observations

Date	Depth (ft)	Notes
12/17/12	10.1	Estimated

Depth (ft)	Strata (1)	CLASSIFICATION OF MATERIALS (Description)	Run (Dip deg.)	Core Rec. % (RQD %)	Blows/6" (N Value)	Moisture Content %	Gravel %	Sand %	Fines %
					(R)				
50		(ML-TILL), Similar Soil, Rec. = 0.5 ft			200/6" (R)				
		Hole stopped @ 49.5 ft							

Remarks:
Boring was offset from location B-102 and casing was advanced to a depth of 14 feet without sampling.

A piece of c. gravel was lodged in the shoe of sample S-3 when first driven. A second spoon was driven at the same depth but no sample was recovered.

Boulders and cobbles were encountered while driving and washing casing below a depth of 14 feet.

Boring was advanced open hole below a depth of 39 feet.

The description of the classification of the materials is based on USCS criteria that gravel is defined as material retained on a #4 sieve or larger. Laboratory data provided follows AASHTO classification guidelines that gravel is defined as material retained on a #10 sieve or larger.

Notes:
1. Stratification lines represent approximate boundary between material types. Transition may be gradual.
2. N Values have not been corrected for hammer energy. CE is the hammer energy correction factor.
3. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

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BORING LOG

Rutland Bridge Replacement
23828.1000.32000

Boring No.: B-103
Page No.: 1 of 2
Pin No.: BRF 3000(16)
Checked By: J. MacGregor

Boring Crew: M. Blakely, D. Spielvogel
Date Started: 2/01/12 Date Finished: 2/03/11
VTSPG NAD83: N 401708.51 ft E 1509995.37 ft
Station: 102+09.00 Offset: 15.1 L
Ground Elevation: 525.1 ft

	Casing	Sampler
Type:	WB	SS
I.D.:	3 in	1.5 in
Hammer Wt:	140 lb.	140 lb.
Hammer Fall:	30 in.	30 in.
Hammer/Rod Type:	Manual/NW	
Rig:	CME 550 ATV	CE = 1

Groundwater Observations

Date	Depth (ft)	Notes
02/01/12	5.1	Estimated

Depth (ft)	Strata (1)	CLASSIFICATION OF MATERIALS (Description)	Blows/6" (N Value)	Moisture Content %	Gravel %	Sand %	Fines %	LL %	PI %
		(SP)							
5		(SP), f.m.c. SAND, trace silt, loose, brown, moist, Rec. = 0.6 ft	3-4-4-4 (8)						
10		(SP), f.m.c. SAND, trace silt, loose, brown, wet, Rec. = 0.5 ft	3-3-2-2 (5)						
		(OL)							
15		(OL), ORGANICS, Some Silt, little f.m.c. sand, loose, brown/black, wet, Rec. = 0.5 ft	4-3-4-4 (7)						
		(SM)							
20		(SM), f. SAND, And SILT, medium compact, brown, wet, Rec. = 0.9 ft	11-5-6-8 (11)		0.1	61.3	38.6		
25		(SM), f.m.c. SAND, Some Silt, loose, brown, wet, Rec. = 1.2 ft	3-4-5-6 (9)						
30		(ML), SILT, And f.m.c. SAND, loose, brown, wet, Rec. = 1.4 ft	6-4-5-7 (9)			48.0	52.0		
35		(ML), Similar Soil, Rec. = 1.9 ft	WR-4-4-3 (8)						
		(GM)							
40		(GM), f.c. GRAVEL, Some f.m.c. Sand, little silt, compact, brown, wet, Rec. = 0.5 ft	19-18-25-50 (43)						
45		(GM), becomes very compact, Rec. = 0.2 ft	27-41-72-						

Notes:
1. Stratification lines represent approximate boundary between material types. Transition may be gradual.
2. N Values have not been corrected for hammer energy. CE is the hammer energy correction factor.
3. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

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BORING LOG

Rutland Bridge Replacement
23828.1000.32000

Boring No.: B-103
Page No.: 2 of 2
Pin No.: BRF 3000(16)
Checked By: J. MacGregor

Boring Crew: M. Blakely, D. Spielvogel
Date Started: 2/01/12 Date Finished: 2/03/11
VTSPG NAD83: N 401708.51 ft E 1509995.37 ft
Station: 102+09.00 Offset: 15.1 L
Ground Elevation: 525.1 ft

	Casing	Sampler
Type:	WB	SS
I.D.:	3 in	1.5 in
Hammer Wt:	140 lb.	140 lb.
Hammer Fall:	30 in.	30 in.
Hammer/Rod Type:	Manual/NW	
Rig:	CME 550 ATV	CE = 1

Groundwater Observations

Date	Depth (ft)	Notes
02/01/12	5.1	Estimated

Depth (ft)	Strata (1)	CLASSIFICATION OF MATERIALS (Description)	Blows/6" (N Value)	Moisture Content %	Gravel %	Sand %	Fines %	LL %	PI %
			50/1" (R)						
50		(GM), Similar Soil, Rec. = 1.1 ft	33-81-31-54 (R)						
		(SM)							
55		(SM), f.m.c. SAND, Some Silt, trace f.c. gravel, very compact, brown, wet, Rec. = 1.0 ft	41-64-50/3" (R)						
60		No Recovery, Rec. = 0.0 ft	100/1" (R)						
		(GM-TILL)							
65		(GM-TILL), f.c. GRAVEL, Some f.m.c. Sand, little silt, very compact, gray, wet, Rec. = 0.3 ft	150/3" (R)						
		(ML-TILL)							
70		(ML-TILL), Clayey SILT, little f.m.c. sand, little f.c. gravel, very compact, gray, wet, Rec. = 0.8 ft	73-50/3" (R)			21.0	10.6	68.4	28	9
		(GM-TILL)							
75		(GM-TILL), f.c. GRAVEL, Some f.m.c. Sand, little silt, very compact, gray, wet, Rec. = 0.2 ft	150/6" (R)						

Hole stopped @ 74.5 ft

Remarks:
Boulders and cobbles were encountered while driving and washing casing below a depth of 39 feet.

Boring was advanced open hole below a depth of 59 feet.

The description of the classification of the materials is based on USCS criteria that gravel is defined as material retained on a #4 sieve or larger. Laboratory data provided follows AASHTO classification guidelines that gravel is defined as material retained on a #10 sieve or larger.

Notes:
1. Stratification lines represent approximate boundary between material types. Transition may be gradual.
2. N Values have not been corrected for hammer energy. CE is the hammer energy correction factor.
3. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

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BORING LOG

Rutland Bridge Replacement
23828.1000.32000

Boring No.: B-104
Page No.: 1 of 2
Pin No.: BRF 3000(16)
Checked By: J. MacGregor

Boring Crew: M. Blakely, D. Spielvogel
Date Started: 2/14/12 Date Finished: 2/16/12
VTSPG NAD83: N 401676.59 ft E 1510024.93 ft
Station: 102+35.00 Offset: 17.0 R
Ground Elevation: 525.8 ft

	Casing	Sampler
Type:	WB	SS
I.D.:	3 in	1.5 in
Hammer Wt:	140 lb.	140 lb.
Hammer Fall:	30 in.	30 in.
Hammer/Rod Type:		Manual/NW
Rig:	CME 550 ATV	CE = 1

Groundwater Observations

Date	Depth (ft)	Notes
02/14/12	5.8	Estimated

Depth (ft)	Strata (1)	CLASSIFICATION OF MATERIALS (Description)	Blows/6" (N Value)	Moisture Content %	Gravel %	Sand %	Fines %
0		(SP)					
5		(SP), f.m.c. SAND, trace silt, loose, brown, wet, Rec. = 0.9 ft	4-4-3-4 (7)				
10		(SP), becomes dark brown, Rec. = 0.7 ft	2-2-3-3 (5)				
15		(SP), f.m.c. SAND, Some Wood/Organics, loose, brown, wet, Rec. = 0.8 ft	2-3-2-3 (5)				
20		(SP), f.m.c. SAND, little f.c. gravel, trace silt, loose, brown, wet, Rec. = 0.7 ft	5-4-4-5 (8)				
25		(SM)					
		(SM), f. SAND, Some Silt, medium compact, brown, wet, Rec. = 0.5 ft	3-7-5-5 (12)				
30		(SP)					
		(SP), f.m.c. SAND, trace silt, medium compact, brown, wet, Rec. = 1.0 ft	8-8-11-9 (19)		1.0	91.5	7.5
35		(SM)					
		(SM), f. SAND, And SILT, loose, brown, wet, Rec. = 1.4 ft	5-4-5-4 (9)		0.8	59.9	39.3
40		(SM), Similar Soil, Rec. = 1.8 ft	3-3-7-15 (10)				
45		(SM), f.m.c. SAND, Some Silt, trace f.c. gravel, medium compact, brown, wet, Rec. = 0.2 ft	14-8-9-13				

Notes:
1. Stratification lines represent approximate boundary between material types. Transition may be gradual.
2. N Values have not been corrected for hammer energy. CE is the hammer energy correction factor.
3. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

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Rutland Bridge Replacement
23828.1000.32000

Boring No.: B-104
Page No.: 2 of 2
Pin No.: BRF 3000(16)
Checked By: J. MacGregor

Boring Crew: M. Blakely, D. Spielvogel
Date Started: 2/14/12 Date Finished: 2/16/12
VTSPG NAD83: N 401676.59 ft E 1510024.93 ft
Station: 102+35.00 Offset: 17.0 R
Ground Elevation: 525.8 ft

	Casing	Sampler
Type:	WB	SS
I.D.:	3 in	1.5 in
Hammer Wt:	140 lb.	140 lb.
Hammer Fall:	30 in.	30 in.
Hammer/Rod Type:		Manual/NW
Rig:	CME 550 ATV	CE = 1

Groundwater Observations

Date	Depth (ft)	Notes
02/14/12	5.8	Estimated

Depth (ft)	Strata (1)	CLASSIFICATION OF MATERIALS (Description)	Blows/6" (N Value)	Moisture Content %	Gravel %	Sand %	Fines %
50		(SM), f.m.c. SAND, Some f.c. Gravel, little silt, very compact, brown, wet, Rec. = 0.5 ft	(17) 80-50/3" (R)				
55		(GP)					
		(GP), f.c. GRAVEL, Some f.m.c. Sand, trace silt, very compact, brown, wet, Rec. = 0.5 ft	24-36-50/3" (R)				
60		(SM)					
		(SM), f.m.c. SAND, little silt, trace f. gravel, very compact, brown, wet, Rec. = 1.7 ft	22-43-50-50/3" (R)				
65		(SM-TILL)					
		(SM-TILL), f.m.c. SAND, Some f.c. Gravel, little silt, very compact, gray, wet, Rec. = 0.1 ft	100/4" (R)				
70		(SM-TILL), f.m.c. SAND, Some Silt, Some f.c. Gravel, very compact, gray, wet, Rec. = 0.5 ft	150/6" (R)		49.0	24.3	26.7
75		(SM-TILL), Similar Soil, Rec. = 0.2 ft	100/4" (R)				
80		(SM-TILL), Similar Soil, Rec. = 0.3 ft	200/3" (R)				
		Hole stopped @ 79.3 ft					
85							
90							

Remarks:
Boulders and cobbles were encountered while driving and washing casing below a depth of 49 feet.

Boring was advanced open hole below a depth of 69 feet.

The description of the classification of the materials is based on USCS criteria that gravel is defined as material retained on a #4 sieve or larger. Laboratory data provided follows AASHTO classification guidelines that gravel is defined as material retained on a #10 sieve or larger.

Notes:
1. Stratification lines represent approximate boundary between material types. Transition may be gradual.
2. N Values have not been corrected for hammer energy. CE is the hammer energy correction factor.
3. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

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BORING LOG

Rutland Bridge Replacement
23828.1000.32000

Boring No.: B-105
Page No.: 1 of 2
Pin No.: BRF 3000(16)
Checked By: J. MacGregor

Boring Crew: M. Blakely, D. Spielvogel
Date Started: 2/03/12 Date Finished: 2/14/12
VTSPG NAD83: N 401726.87 ft E 1510068.42 ft
Station: 102+85.00 Offset: 25.5 L
Ground Elevation: 528.6 ft

	Casing	Sampler
Type:	WB	SS
I.D.:	3 in	1.5 in
Hammer Wt:	140 lb.	140 lb.
Hammer Fall:	30 in.	30 in.
Hammer/Rod Type:	Manual/NW	
Rig:	CME 550 ATV	CE = 1

Groundwater Observations

Date	Depth (ft)	Notes
02/03/12	8.6	Estimated

Depth (ft)	Strata (1)	CLASSIFICATION OF MATERIALS (Description)	Blows/6" (N Value)	Moisture Content %	Gravel %	Sand %	Fines %
0		(SP)					
5		(SP), f.m.c. SAND, trace silt, trace f. gravel, loose, brown, moist, Rec. = 0.5 ft	4-3-4-7 (7)				
		(SM)					
10		(SM), f.m.c. SAND, little silt, trace f. gravel, loose, brown, wet, Rec. = 0.8 ft	3-3-3-3 (6)				
		(GM)					
15		(GM), f.c. GRAVEL, Some Silt, Some f.m.c. Sand, medium compact, brown, wet, Rec. = 0.3 ft	3-7-17-6 (24)				
		(SM)					
20		(SM), f.m.c. SAND, Some Silt, little f.c. gravel, loose, brown, wet, Rec. = 0.0 ft	3-4-5-5 (9)				
25		(SM), f.m.c. SAND, little silt, trace f.c. gravel, medium compact, brown, wet, Rec. = 1.0 ft	8-12-17-11 (29)				
30		(SM), becomes loose, wet, Rec. = 1.1 ft	8-10-9-10 (19)				
35		(SM), f. SAND, Some Silt, medium compact, brown, wet, Rec. = 0.5 ft	9-6-7-5 (11)				
40		(SM), f.m.c. SAND, Some Silt, trace f. gravel, medium compact, brown, wet, Rec. = 1.8 ft	7-9-9-14 (18)		1.1	76.5	22.4
45		(SM), f.m.c. SAND, little silt, trace f.c. gravel, compact, brown, wet, Rec. = 0.5 ft	14-18-15-9				

Notes:
1. Stratification lines represent approximate boundary between material types. Transition may be gradual.
2. N Values have not been corrected for hammer energy. CE is the hammer energy correction factor.
3. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

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STATE OF VERMONT
AGENCY OF TRANSPORTATION
MATERIALS & RESEARCH SECTION
SUBSURFACE INFORMATION

BORING LOG

Rutland Bridge Replacement
23828.1000.32000

Boring No.: B-105
Page No.: 2 of 2
Pin No.: BRF 3000(16)
Checked By: J. MacGregor

Boring Crew: M. Blakely, D. Spielvogel
Date Started: 2/03/12 Date Finished: 2/14/12
VTSPG NAD83: N 401726.87 ft E 1510068.42 ft
Station: 102+85.00 Offset: 25.5 L
Ground Elevation: 528.6 ft

	Casing	Sampler
Type:	WB	SS
I.D.:	3 in	1.5 in
Hammer Wt:	140 lb.	140 lb.
Hammer Fall:	30 in.	30 in.
Hammer/Rod Type:	Manual/NW	
Rig:	CME 550 ATV	CE = 1

Groundwater Observations

Date	Depth (ft)	Notes
02/03/12	8.6	Estimated

Depth (ft)	Strata (1)	CLASSIFICATION OF MATERIALS (Description)	Blows/6" (N Value)	Moisture Content %	Gravel %	Sand %	Fines %
50		(SM), f.m.c. SAND, little silt, little f.c. gravel, very compact, brown, wet, Rec. = 0.2 ft	(33) 69-50/3" (R)				
		(SP)					
55		(SP), f.m.c. SAND, little f. gravel, trace silt, very compact, brown, wet, Rec. = 1.0 ft	10-40-40-43 (R)				
60		(SP), f.m.c. SAND, Some f.c. Gravel, trace silt, very compact, brown, wet, Rec. = 1.5 ft	80-44-55-50/5" (R)				
		(SM-TILL)					
65		(SM-TILL), f.m.c. SAND, little silt, trace f.c. gravel, very compact, gray, wet, Rec. = 0.2 ft	150/3" (R)				
70		(SM-TILL), Similar Soil, Rec. = 0.3 ft	100/5" (R)				
		(SM-TILL), Similar Soil, Rec. = 0.05 ft	130/2" (R)				
		Hole stopped @ 72.6 ft					
75							
80							
85							
90							

Remarks:
A piece of c. gravel was lodged in the shoe of sample S-4 when first driven. Soil description based upon sample recovery of second spoon driven at the same depth.

The description of the classification of the materials is based on USCS criteria that gravel is defined as material retained on a #4 sieve or larger. Laboratory data provided follows AASHTO classification guidelines that gravel is defined as material retained on a #10 sieve or larger.

Notes:
1. Stratification lines represent approximate boundary between material types. Transition may be gradual.
2. N Values have not been corrected for hammer energy. CE is the hammer energy correction factor.
3. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

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STATE OF VERMONT
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SUBSURFACE INFORMATION

BORING LOG

Rutland Bridge Replacement
23828.1000.32000

Boring No.: B-106
Page No.: 1 of 2
Pin No.: BRF 3000(16)
Checked By: J. MacGregor

Boring Crew: M. Blakely, D. Spielvogel
Date Started: 1/30/12 Date Finished: 2/01/12
VTSPG NAD83: N 401678.54 ft E 1510083.41 ft
Station: 102+93.00 Offset: 17.2 R
Ground Elevation: 526.5 ft

	Casing	Sampler
Type:	WB	SS
I.D.:	3 in	1.5 in
Hammer Wt:	140 lb.	140 lb.
Hammer Fall:	30 in.	30 in.
Hammer/Rod Type:		Manual/NW
Rig:	CME 550 ATV	CE = 1

Groundwater Observations

Date	Depth (ft)	Notes
01/30/12	6.5	Estimated

Depth (ft)	Strata (1)	CLASSIFICATION OF MATERIALS (Description)	Run (Dip deg.)	Core Rec. % (RQD %)	Blows/6" (N Value)	Moisture Content %	Gravel %	Sand %	Fines %
		(SM), f.m.c. SAND, Some Silt, trace silt, trace organics, loose, brown, moist, Rec. = 1.1 ft			8-4-2-4 (6)				
		(SP), f.m.c. SAND, Some f.c. Gravel, little silt, medium compact, brown, moist, Rec. = 0.9 ft			4-8-8-7 (16)				
5		(SP), Similar Soil, Rec. = 0.3 ft			5-10-10-9 (20)				
		(SP), becomes wet, Rec. = 0.5 ft			8-8-4-12 (12)				
		(GM), f.c. GRAVEL, Some f.m.c. Sand, little silt, trace organics, medium compact,, brown, wet, Rec. = 0.1 ft			10-16-9-5 (25)				
10		(SM), f.m.c. SAND, Some Silt, trace f. gravel, trace organics, very loose, brown, wet, Rec. = 1.3 ft			2-2-2-5 (4)		16.0	54.7	29.3
		(SM), becomes very loose							
15		(SM), Similar Soil, Rec. = 1.3 ft			2-1-3-1 (4)				
		No Recovery, Rec. = 0.0 ft			7-4-4-4 (8)				
20									
25		(SM), f.m.c. SAND, Some f.c. Gravel, little silt, medium compact, light brown, wet, Rec. = 0.4 ft			7-15-7-7 (24)				
30		(SM), f.m.c. SAND, little silt, medium compact, light brown, wet, Rec. = 0.4 ft			19-8-8-12 (16)				
		(ML)							
35		(ML), SILT, Some f. Sand, loose, light brown, wet, Rec. = 1.6 ft			WH-5-4-5 (9)				
40		(ML), SILT, Some f.m.c. Sand, little f.c. gravel, medium compact, brown, wet, Rec. = 0.5 ft			WR-11-14-15 (25)				
		(SM)							
45		(SM), f.m.c. SAND, Some f.c. Gravel, little silt, compact, brown, wet, Rec. = 0.6 ft			24-24-7-12				

Notes:
1. Stratification lines represent approximate boundary between material types. Transition may be gradual.
2. N Values have not been corrected for hammer energy. CE is the hammer energy correction factor.
3. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

STATE OF VERMONT
AGENCY OF TRANSPORTATION
MATERIALS & RESEARCH SECTION
SUBSURFACE INFORMATION

BORING LOG

Rutland Bridge Replacement
23828.1000.32000

Boring No.: B-106
Page No.: 2 of 2
Pin No.: BRF 3000(16)
Checked By: J. MacGregor

Boring Crew: M. Blakely, D. Spielvogel
Date Started: 1/30/12 Date Finished: 2/01/12
VTSPG NAD83: N 401678.54 ft E 1510083.41 ft
Station: 102+93.00 Offset: 17.2 R
Ground Elevation: 526.5 ft

Casing / Sampler
Type: WB / SS
I.D.: 3 in / 1.5 in
Hammer Wt: 140 lb. / 140 lb.
Hammer Fall: 30 in. / 30 in.
Hammer/Rod Type: Manual/NW
Rig: CME 550 ATV / CE = 1

Groundwater Observations

Date	Depth (ft)	Notes
01/30/12	6.5	Estimated

Depth (ft)	Strata (1)	CLASSIFICATION OF MATERIALS (Description)	Run (Dip deg.)	Core Rec. % (RQD %)	Blows/6" (N Value)	Moisture Content %	Gravel %	Sand %	Fines %
					(31)				
		(SM), Cobbles/Boulders	R-1	60 (0)					
50		(SM), Cobbles/Boulders	R-2	40 (0)					
55		(SM), f.m.c. SAND, little silt, little f.c. gravel, very compact, brown, wet, Rec. = 0.3 ft			100/3" (R)				
60		(SM), f. SAND, Some Silt, very compact, brown, wet, Rec. = 0.4 ft			37-50/4" (R)				
		(SM-TILL)							
65		(SM-TILL), f. SAND, Some Silt, little f.c. gravel, very compact, gray, wet, Rec. = 0.3 ft			100/3" (R)				
70		(SM-TILL), f.m.c. SAND, Some Silt, Some f.c. Gravel, very compact, gray, wet, Rec. = 0.1 ft			100/4" (R)		37.3	39.3	23.4
75		(SM-TILL), Similar Soil, Rec. = 0.5 ft			83-50/1" (R)				
		(SM-TILL), Similar Soil, Rec. = 0.5 ft			74-50/1" (R)				
80		Hole stopped @ 77.6 ft							
85									
90									

Remarks:
Running sand occured prior to sampling S-8.

The description of the classification of the materials is based on USCS criteria that gravel is defined as material retained on a #4 sieve or larger. Laboratory data provided follows AASHTO classification guidelines that gravel is defined as material retained on a #10 sieve or larger.

Notes:
1. Stratification lines represent approximate boundary between material types. Transition may be gradual.
2. N Values have not been corrected for hammer energy. CE is the hammer energy correction factor.
3. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

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STATE OF VERMONT
AGENCY OF TRANSPORTATION
MATERIALS & RESEARCH SECTION
SUBSURFACE INFORMATION

BORING LOG

Rutland Bridge Replacement
23828.1000.32000

Boring No.: HA-101
Page No.: 1 of 1
Pin No.: BRF 3000(16)
Checked By: J. MacGregor

Boring Crew: M. Blakely, D. Spielvogel
Date Started: 2/22/12 Date Finished: 2/22/12
VTSPG NAD83: N 401742.53 ft E 1509757.14 ft
Station: Offset:
Ground Elevation: 532.5 ft

	Casing	Sampler
Type:	HA	
I.D.:		3 in
Hammer Wt:	N.A.	N.A.
Hammer Fall:	N.A.	N.A.
Hammer/Rod Type:		
Rig:	Hand Auger	CE =

Groundwater Observations

Date	Depth (ft)	Notes
02/22/12		Not Encountered

Depth (ft)	Strata (1)	CLASSIFICATION OF MATERIALS (Description)	Blows/6" (N Value)	Moisture Content %	Gravel %	Sand %	Fines %
		TOPSOIL					
		(SM), f.m.c. SAND, Some Silt, Some f.c. Gravel, brown, moist					
		Hole stopped @ 4.0 ft					

Remarks:
Hand Auger HA-101 was attempted two times with 1 foot offset between the two locations. Refusal on cobbles/ c. gravel were encountered at depths of 3.5 feet and at 4.0 feet. Boring log is based upon the deeper attempt.

The description of the classification of the materials is based on USCS criteria that gravel is defined as material retained on a #4 sieve or larger.

Notes:
1. Stratification lines represent approximate boundary between material types. Transition may be gradual.
2. N Values have not been corrected for hammer energy. CE is the hammer energy correction factor.
3. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

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BORING LOG

Rutland Bridge Replacement
23828.1000.32000

Boring No.: HA-102
Page No.: 1 of 1
Pin No.: BRF 3000(16)
Checked By: J. MacGregor

Boring Crew: M. Blakely, D. Spielvogel
Date Started: 2/22/12 Date Finished: 2/22/12
VTSPG NAD83: N 401669.21 ft E 1509773.76 ft
Station: Offset:
Ground Elevation: 531.4 ft

	Casing	Sampler
Type:	HA	
I.D.:		3 in
Hammer Wt:	N.A.	N.A.
Hammer Fall:	N.A.	N.A.
Hammer/Rod Type:		
Rig: Hand Auger		CE =

Groundwater Observations

Date	Depth (ft)	Notes
02/22/12		Not Encountered

Depth (ft)	Strata (1)	CLASSIFICATION OF MATERIALS (Description)	Blows/6" (N Value)	Moisture Content %	Gravel %	Sand %	Fines %
		TOPSOIL					
		(SM), f.m.c. SAND, Some Silt, Some f.c. Gravel, brown, moist					
5		Hole stopped @ 5.0 ft					

Remarks:
Hand Auger HA-102 was attempted two times with 1 foot offset between the two locations. Refusal on cobbles/ c. gravel were encountered at depths of 3.5 feet and at 5.0 feet. Boring log is based upon the deeper attempt.

The description of the classification of the materials is based on USCS criteria that gravel is defined as material retained on a #4 sieve or larger.

Notes:
1. Stratification lines represent approximate boundary between material types. Transition may be gradual.
2. N Values have not been corrected for hammer energy. CE is the hammer energy correction factor.
3. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

STATE OF VERMONT
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BORING LOG

Rutland Bridge Replacement
23828.1000.32000

Boring No.: HA-103
Page No.: 1 of 1
Pin No.: BRF 3000(16)
Checked By: J. MacGregor

Boring Crew: M. Blakely, D. Spielvogel
Date Started: 2/22/12 Date Finished: 2/22/12
VTSPG NAD83: N 401560.76 ft E 1509768.43 ft
Station: Offset:
Ground Elevation: 533.1 ft

	Casing	Sampler
Type:	HA	
I.D.:		3 in
Hammer Wt:	N.A.	N.A.
Hammer Fall:	N.A.	N.A.
Hammer/Rod Type:		
Rig:	Hand Auger	CE =

Groundwater Observations

Date	Depth (ft)	Notes
02/22/12		Not Encountered

Depth (ft)	Strata (1)	CLASSIFICATION OF MATERIALS (Description)	Blows/6" (N Value)	Moisture Content %	Gravel %	Sand %	Fines %
		TOPSOIL					
		(SM), f.m.c. SAND, Some Silt, Some f.c. Gravel, brown, moist					
5		Hole stopped @ 4.5 ft					

Remarks:
Hand Auger HA-103 was attempted two times with 1 foot offset between the two locations. Refusal on cobbles/ c. gravel were encountered at depths of 3.0 feet and at 4.5 feet. Boring log is based upon the deeper attempt.

The description of the classification of the materials is based on USCS criteria that gravel is defined as material retained on a #4 sieve or larger.

Notes:
1. Stratification lines represent approximate boundary between material types. Transition may be gradual.
2. N Values have not been corrected for hammer energy. CE is the hammer energy correction factor.
3. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

STATE OF VERMONT
AGENCY OF TRANSPORTATION
MATERIALS & RESEARCH SECTION
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BORING LOG

RUTLAND CITY
BRF 3000(16)
TH- 8 & 10 BR-2

Boring No.: **B-201**
Page No.: 1 of 2
Pin No.: 94J092
Checked By: MLM

Boring Crew: DAIGNEAULT, HOOK, JUDKINS
Date Started: 4/14/14 Date Finished: 4/28/14
VTSPG NAD83: N 401700.29 ft E 1510015.17 ft
Station: 102+28 Offset: -7.40
Ground Elevation: 526.3 ft

	Casing	Sampler
Type:	WB	SS
I.D.:	4 in	1.5 in
Hammer Wt:	N.A.	140 lb.
Hammer Fall:	N.A.	30 in.
Hammer/Rod Type:	Auto/AWJ	
Rig:	CME 55 TRACK	C_e = 1.46

Groundwater Observations

Date	Depth (ft)	Notes
04/18/14	0.9	While drilling.
04/28/14	0.4	AM
04/29/14	2.5	After drilling.

Depth (ft)	Strata (1)	CLASSIFICATION OF MATERIALS (Description)	Run (Dip deg.)	Core Rec. % (RQD %)	Drill Rate minutes/ft	Blows/6" (N Value)	Moisture Content %	Gravel %	Sand %	Fines %
		Field Note:, Drilled down to 65 feet and began sampling.								
60		A-4, SaSi, Lt/brn, Moist, Rec. = 0.5 ft, Lab Note: A small layer of clay was noticeable. Broken Rock was within sample.				R@6.0" (R)	11.1	19.6	37.0	43.4
70		Field Note:, NXDC, Cleaned out casing.								
		Visual Description:, Mostly Broken Rock with silty sand, Lt/gry, Moist, Rec. = 0.3 ft				R@5.0" (R)	7.1			
		Field Note:, NXDC, Cleaned out casing.								

Notes:
1. Stratification lines represent approximate boundary between material types. Transition may be gradual.
2. N Values have not been corrected for hammer energy. C_e is the hammer energy correction factor.
3. Water level readings have been made at times and under conditions stated. Fluctuations may occur due to other factors than those present at the time measurements were made.

BORING LOG 2 RUTLAND CITY BRF 3000(16).GPJ VERMONT AOT.GDT 5/6/14

STATE OF VERMONT
AGENCY OF TRANSPORTATION
MATERIALS & RESEARCH SECTION
SUBSURFACE INFORMATION

BORING LOG

RUTLAND CITY
BRF 3000(16)
TH- 8 & 10 BR-2

Boring No.: **B-201**
Page No.: 2 of 2
Pin No.: 94J092
Checked By: MLM

Boring Crew: DAIGNEAULT, HOOK, JUDKINS
Date Started: 4/14/14 Date Finished: 4/28/14
VTSPG NAD83: N 401700.29 ft E 1510015.17 ft
Station: 102+28 Offset: -7.40
Ground Elevation: 526.3 ft

Type: WB SS
I.D.: 4 in 1.5 in
Hammer Wt: N.A. 140 lb.
Hammer Fall: N.A. 30 in.
Hammer/Rod Type: Auto/AWJ
Rig: CME 55 TRACK C_e = 1.46

Groundwater Observations
04/18/14 0.9 While drilling.
04/28/14 0.4 AM
04/29/14 2.5 After drilling.

Depth (ft)	Strata (1)	CLASSIFICATION OF MATERIALS (Description)	Run (Dip deg.)	Core Rec. % (RQD %)	Drill Rate minutes/ft	Blows/6" (N Value)	Moisture Content %	Gravel %	Sand %	Fines %
		Field Note:, No Recovery, Artesian condition was present.				R@5.0" (R)				
80		Field Note:, NXDC, Cleaned out casing.								
		A-1-b, SiSaGr, Lt/brn, Moist, Rec. = 0.3 ft, Lab Note: Broken Rock was within sample.				R@3.5" (R)	7.5	40.4	38.4	21.2
		Field Note:, NXDC, Boulder								
90		Field Note:, NXDC, Cleaned out casing.								
		A-1-b, SaGr, Lt/brn, MTW, Rec. = 0.3 ft, Lab Note: Broken Rock was within sample.				R@5.0" (R)	8.0	50.6	29.7	19.7
		Field Note:, NXDC, Cleaned out casing.								
		A-4, SaSl, Lt/brn, Molst, Rec. = 0.2 ft				49-R@1.0" (R)	13.0	18.1	27.7	54.2
100		A-4, GrSaSi, yel-gry, Moist, Rec. = 0.4 ft								
		Field Note:, NXMDC, Boulder				49-R@1.0" (R)	15.5	21.9	29.8	48.3
		Field Note:, NXMDC, Boulder, with a seam from 108.2' to 110.2'								
110		Field Note:, NXMDC, Boulder, Broke through boulder and started sampling.								
		Visual Description:, Mostly Broken Rock with sand, tan, Moist								
		A-4, GrSl, tan, Moist, Rec. = 0.5 ft				41-32-27-R@0.0" (59)	11.1	36.9	18.6	44.5
		Field Note:, NXDC, Cleaned out casing.								
120		A-2-4, SiGrSa, tan, Moist, Rec. = 1.5 ft, Lab Note: Broken Rock was within sample.				27-49-24-R@0.0" (73)	18.1	34.2	36.0	29.8
		A-1-b, SaGr, tan, Moist, Rec. = 0.9 ft, Lab Note: Broken Rock was within sample.				32-R@3.5"	13.2	41.2	40.0	18.8
130						R@3.5"	11.8	40.5	25.7	33.8
		A-2-4, SaSiGr, tan, Moist, Rec. = 0.3 ft, Mostly Broken Rock w/Sa Si	1 (?)	72 (0)						
		Top of Bedrock @ 130.3 ft								
		130.3 ft - 132.1 ft, Light gray, And buff colored, massive Dolomite, with numerous closley spaced jointing. Joint surfaces exhibit iron staining. Hard to medium hard, Slightly to moderately weathered, Poor rock, NXMDC, RMR = 24	2 (?)	91 (8)	3 3 3 1 12					
		132.1 ft - 136.7 ft, Same as Run #1. NXMDC, RMR = 24	3 (?)	50 (0)	2 3 2 23 12					
140		136.7 ft - 141.1 ft, Same as Run #1. NXMDC, RMR = 24								
		Hole stopped @ 141.1 ft								

Remarks:
1. Hole collapsed at 16.2 ft.

Notes:
1. Stratification lines represent approximate boundary between material types. Transition may be gradual.
2. N Values have not been corrected for hammer energy. C_e is the hammer energy correction factor.
3. Water level readings have been made at times and under conditions stated. Fluctuations may occur due to other factors than those present at the time measurements were made.

BORING LOG 2 RUTLAND CITY BRF 3000(16).GPJ VERMONT AOT.GDT 5/6/14