



STATE OF VERMONT
AGENCY OF TRANSPORTATION
CONSTRUCTION AND MATERIALS
BUREAU CENTRAL LABORATORY

BORING LOG

Springfield
SIP CULV(47)
US-5

Boring No.: 0-101
Page No.: 1 of 2
Pin No.: 13C346
Checked By: JFW

Boring Crew: T. Farrell (SAB), B. Hoxey (GeoDesign)
Date Started: 2/12/15 Date Finished: 2/12/15
VTSPG NOES: N 304582.00 N E 1084195.00 N
Station: 472+00 Offset: 0' L
Ground Elevation: 345 N

Coiling Sampler
Type: RIDER SS
I.D.: 4.25 in 1.38 in
Hammer Mt: H.A. 140 lb.
Hammer Fall: H.A. 30 in.
Hammer/Rod Type: Auto
Rq: ONE SOBE ATV CE = 1.35

Groundwater Observations (G)		
Date	Depth (ft)	Notes
02/12/15	48.0	Not sample.
02/12/15	48.0	In augers.

Depth (ft)	Strat (ft)	CLASSIFICATION OF MATERIALS (Description)	Moisture Content (%)	Gravel %	Sand %	Fines %	LL %	PL %	
									Notes
0-0.5	0.5	0.6" Asphalt	50/50 (6)	0.5	48.8	35.9	15.5	16	16
0.5-1.0	1.0	S1 (0.5 - 0.7'): Refusal, brown fine to coarse SAND and fine GRNCL, little SH, frozen. Res. = 0.2 N (ANSIMO W145 Classification: A-1-b.)	4.2	38.0	25.3	15.7	16	16	
1.0-1.5	1.5	S2 (1' - 2' upper cuttings): Light brown fine to coarse SAND and fine to coarse GRNCL, little SH, moist. Res. = 1.0 N (ANSIMO W145 Classification: A-1-b.)	13-16-22-15 (38)	10.8	35.2	35.8	28.2	16	16
1.5-2.0	2.0	S3 (2' - 7'): Dense, gray-brown SILT and fine to coarse SAND, little fine to coarse Gravel, moist. Res. = 1.2 N (ANSIMO W145 Classification: A-2-4.)	0-8-8-16 (16)	10.8	25.4	38.3	35.3	16	16
2.0-2.5	2.5	S4 (10' - 12'): Medium dense, gray-brown SILT and fine to coarse SAND, little fine to coarse Gravel, moist. Res. = 1.1 N (ANSIMO W145 Classification: A-2-4.)	11-19-28-14 (38)	8.2	37.3	42.3	28.4	16	16
2.5-3.0	3.0	S5 (15' - 17'): Dense, gray-brown fine to coarse SAND, some SH, little fine to coarse Gravel, moist. Res. = 1.3 N (ANSIMO W145 Classification: A-1-b.)	14-28/5 (8)	10.8	28.5	48.8	24.7	16	16
3.0-3.5	3.5	S6 (20' - 22'): Refusal, brown fine to coarse SAND and SILT, little fine to coarse Gravel, moist. Res. = 0.4 N (ANSIMO W145 Classification: A-1-b.)	15-11-11-15 (22)	8.6	37.8	48.8	22.1	16	16
3.5-4.0	4.0	S7 (25' - 27'): Medium dense, brown fine to coarse SAND, some SH, little fine to coarse Gravel, moist. Res. = 0.7 N (ANSIMO W145 Classification: A-1-b.)	18-18-8 (18)	12.8	15.3	45.5	38.2	16	16
4.0-4.5	4.5	S8 (30' - 31'): Medium dense, gray-brown SILT and fine to coarse SAND, little fine to coarse Gravel, moist. Res. = 1.0 N (ANSIMO W145 Classification: A-4.)	13-8-3 (17)	13.8	18.8	45.1	36.1	16	16
4.5-5.0	5.0	S9 (32' - 34'): Medium dense, gray-brown SILT and fine to coarse SAND, trace fine to coarse Gravel, trace Wood/Organics, moist. Res. = 0.8 N (ANSIMO W145 Classification: A-4.)	18-28/4 (8)	10.8	32.4	38.2	28.4	16	16
5.0-5.5	5.5	S10 (35' - 35.8'): Refusal, gray-brown SILT and fine to coarse SAND, little fine to coarse Gravel, moist. Res. = 0.7 N (ANSIMO W145 Classification: A-2-4.)	5-7-7-5 (14)	22.8	11.8	58.4	37.8	16	16
5.5-6.0	6.0	S11 (38' - 40'): Medium dense, brown/gray SILT and fine to coarse SAND, trace fine to coarse Gravel, trace Organics, moist. Res. = 1.0 N (ANSIMO W145 Classification: A-4.)	8-18-8 (18)	18.2	28.5	58.8	13.7	16	16
6.0-6.5	6.5	S12 (40' - 42'): Medium dense, brown fine to coarse SAND, trace (s) SH (pebbles), trace fine Gravel, wet. Res. = 1.2 N (ANSIMO W145 Classification: A-1-b.)	22-38-22-14 (38)	53.5				16	16
6.5-7.0	7.0	S13 (45' - 45'): Very dense, brown SILT, little fine Sand, wet. Bottom 3" of sample wood pieces, inferred by blow counts that sampler was driven through timber. Res. = 0.5 N	8-11-12 (12)						
7.0-7.5	7.5	S14 (45' - 47'): Medium dense, no recovery. Res. = 0.8 N	8-11-12 (12)						
7.5-8.0	8.0	S15 (47' - 48'): Medium dense, gray layered SILT, trace Clayey SH, trace fine Sand, wet. Res. = 1.3 N (ANSIMO W145 Classification: A-4.)	4-12 (12)	27.4	11.1	88.8		16	16

Notes: 1. Stratification lines represent approximate boundary between material types. Transition may be gradual.
2. If values have not been corrected for hammer drop, CE is the hammer energy correction factor.
3. Water content readings have been made of fines and water 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
CONSTRUCTION AND MATERIALS
BUREAU CENTRAL LABORATORY

BORING LOG

Springfield
SIP CULV(47)
US-5

Boring No.: 0-101
Page No.: 2 of 2
Pin No.: 13C346
Checked By: JFW

Boring Crew: T. Farrell (SAB), B. Hoxey (GeoDesign)
Date Started: 2/12/15 Date Finished: 2/12/15
VTSPG NOES: N 304582.00 N E 1084195.00 N
Station: 472+00 Offset: 0' L
Ground Elevation: 345 N

Coiling Sampler
Type: RIDER SS
I.D.: 4.25 in 1.38 in
Hammer Mt: H.A. 140 lb.
Hammer Fall: H.A. 30 in.
Hammer/Rod Type: Auto
Rq: ONE SOBE ATV CE = 1.35

Groundwater Observations (G)		
Date	Depth (ft)	Notes
02/12/15	48.0	Not sample.
02/12/15	48.0	In augers.

Depth (ft)	Strat (ft)	CLASSIFICATION OF MATERIALS (Description)	Moisture Content (%)	Gravel %	Sand %	Fines %	LL %	PL %	
									Notes
51.0	51' - 52'	S16 (50' - 52'): Medium dense, gray layered SILT to Clayey SILT, trace fine Sand (occasional seams less than 1/16" thick), moist. Res. = 1.0 N (ANSIMO W145 Classification: A-4.)	3-3-6-7 (3)	28.8	1.7	15.8	82.7	16	16
52.0	52' - 53'	S17 (53' - 55'): Loose, gray SILT to Clayey SILT, trace fine Sand, wet. Res. = 1.2 N (ANSIMO W145 Classification: A-4.)	1-1-5-6 (8)	28.5	2.5	16.5	87.8	16	16
Note stopped @ 55.0 N									
Remarks: 1) U.S. Route 5 stationing, ground elevation, and coordinates shown are estimated from electronic files provided by VTrans via email on 2/25/15 and taped measurements to existing features by GeoDesign personnel. All measurements are rounded to the nearest foot. 2) Auger cuttings changed from light brown to darker brown of approximately 2 feet deep. 3) Grinding intermittently from 10 to 15 feet deep with wood pieces noted in cuttings at 15 feet deep. 4) Grinding noted from approximately 33 to 40 feet deep on inferred cuttings and/or boulders. 5) Sample was backfilled with gravel/cuttings and cold patched upon completion. 6) Hammer energy correction factor is assumed based on hammer type. 7) Visual sample descriptions are per Surimater classification system. Laboratory testing results shown are based on testing performed by VTrans with the Gravel/Sand/SH breakdown shown per ANSIMO W145.									

Notes: 1. Stratification lines represent approximate boundary between material types. Transition may be gradual.
2. If values have not been corrected for hammer drop, CE is the hammer energy correction factor.
3. Water content readings have been made of fines and water 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
CONSTRUCTION AND MATERIALS
BORING CENTRAL LABORATORY

BORING LOG

Springfield
SIP CULM(47)
US-5

Boring No.: 0-102

Page No.: 1 of 2

File No.: 13C340

Checked By: JFW

Boring Crew: T. Farrell (S.M.), B. Honey (GeoDesign)
Date Started: 2/11/15 Date Finished: 2/11/15
VDPS MARKS: N 304541.00 N E 1004187.00 N
Station: 471+62 Offset: 0' R
Ground Elevation: 345 N

Coring Sampler
Type: ANOGR SS
I.D.: 4.25 in 1.38 in
Hammer Mt: N.A. 140 lb.
Hammer Fall: N.A. 30 in.
Hammer/Rod Type: Auto
Rig: CME SSN ATV CE = 1.35

Groundwater Observations (3)

Date	Depth (ft)	Notes
02/11/15	43.0	Wet sample.
02/11/15	43.0	in augers.

Depth (ft)	Sheet(s)	CLASSIFICATION OF MATERIALS (Description)	Number of Tests (at depth)	Moisture Content (%)	Gravel (%)	Sand (%)	Fines (%)	LL (%)	PI (%)
0		0.4" Asphalt							
5		S1 (0.5' - 1'): Refused, brown fine to coarse SAND, some fine Gravel, little SILT, trace.	50/5 ^c (6)	5.7	34.7	30.5	14.8	NP	NP
		Res. = 0.2 N (ANSI/D 1145 Classification: A-1-b.)							
5		S2 (5' - 7'): Medium dense;	10-10-7 (17)	4.5	58.8	32.8	10.4	NP	NP
		S2A (Upper 4"): Brown fine to coarse SAND, some fine to coarse Gravel, little SILT, metal (granite slough).		10.2	44.9	34.5	20.8	NP	NP
		S2B (Lower 3"): Brown fine to coarse SAND and fine to coarse GRITTL, some SILT, metal. Res. = 1.2 N (ANSI/D 1145 Classification: A-1-a.)							
10		(ANSI/D 1145 Classification: A-1-b.)							
10		S3 (10' - 12'): Dense, gray-brown SILT and fine to coarse SAND, little fine to coarse Gravel, metal. Res. = 0.5 N (ANSI/D 1145 Classification: A-4.)	4-0-20- (34)	12.0	27.5	38.1	38.4	NP	NP
15		S4 (15' - 17'): Medium dense, brown fine to coarse SAND and SILT, little fine to coarse Gravel, metal. Res. = 1.4 N (ANSI/D 1145 Classification: A-2-4.)	3-0-15- (21)	10.0	29.3	41.7	29.0	NP	NP
20		S5 (20' - 22'): Medium dense, brown SILT and fine to coarse SAND, little fine to coarse Gravel, metal. Res. = 1.5 N (ANSI/D 1145 Classification: A-4.)	3-0-15- (21)	13.3	27.7	36.8	35.7	NP	NP
25		S6 (25' - 27'): Medium dense, brown fine to coarse SAND and SILT, little fine to coarse Gravel, metal. Res. = 1.0 N (ANSI/D 1145 Classification: A-2-4.)	0-14-14- (26)	8.0	31.8	42.3	26.1	NP	NP
30		S7 (30' - 32'): Medium dense, brown fine to coarse SAND, some SILT, little fine to coarse Gravel, metal. Res. = 1.2 N (ANSI/D 1145 Classification: A-1-b.)	0-0-7-12 (10)	10.3	37.5	40.3	22.2	NP	NP
35		S8 (35' - 37'): Dense, brown fine to coarse SAND, some SILT, some fine to coarse Gravel, metal. Res. = 1.3 N (ANSI/D 1145 Classification: A-1-b.)	7-13-35- (28)	11.3	48.6	35.1	16.3	NP	NP
40		S9 (40' - 42'): Medium dense, brown SILT, some fine Sand, little Wood/Organics, metal. (Possible Old Subsoil) Res. = 1.7 N (ANSI/D 1145 Classification: A-4.)	4-4-0-0 (10)	32.7	0.0	46.3	53.1	NP	NP
45		S10 (45' - 47'): Medium dense;	4-5-0-7 (13)	15.6	34.5	57.7	7.8	NP	NP
		S10A (Upper 12") brown fine to coarse SAND, little fine to coarse Gravel, trace SILT, metal. Res. = 1.3 N (ANSI/D 1145 Classification: A-1-b.)		20.1		13.0	85.0	NP	NP
		S10B (Lower 4") gray layered SILT, metal.							

Notes: 1. Stratification lines represent approximate boundary between material types. Smooth lines may be graded. 2. U values have not been corrected for hammer energy. CE is the hammer energy correction factor. 3. Water level readings have been made of flow and water conditions noted. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.



STATE OF VERMONT
AGENCY OF TRANSPORTATION
CONSTRUCTION AND MATERIALS
BORING CENTRAL LABORATORY

BORING LOG

Springfield
SIP CULM(47)
US-5

Boring No.: 0-102

Page No.: 2 of 2

File No.: 13C340

Checked By: JFW

Boring Crew: T. Farrell (S.M.), B. Honey (GeoDesign)
Date Started: 2/11/15 Date Finished: 2/11/15
VDPS MARKS: N 304541.00 N E 1004187.00 N
Station: 471+62 Offset: 0' R
Ground Elevation: 345 N

Coring Sampler
Type: ANOGR SS
I.D.: 4.25 in 1.38 in
Hammer Mt: N.A. 140 lb.
Hammer Fall: N.A. 30 in.
Hammer/Rod Type: Auto
Rig: CME SSN ATV CE = 1.35

Groundwater Observations (3)

Date	Depth (ft)	Notes
02/11/15	43.0	Wet sample.
02/11/15	43.0	in augers.

Depth (ft)	Sheet(s)	CLASSIFICATION OF MATERIALS (Description)	Number of Tests (at depth)	Moisture Content (%)	Gravel (%)	Sand (%)	Fines (%)	LL (%)	PI (%)	
										Notes
55		S11 (50' - 52'): Medium dense, gray layered SILT, metal. Res. = 0.0 N (ANSI/D 1145 Classification: A-4.)	5-0-0-7 (14)	25.7		0.2	90.8	NP	NP	
55		S12 (55' - 57'): Medium dense, gray layered SILT, metal. Res. = 0.0 N (ANSI/D 1145 Classification: A-4.)	0-0-0-7 (10)	20.2		0.3	90.7	NP	NP	
60		Hole stopped @ 57.0 N								
65		Remarks: 1) U.S. Route 5 stationing, ground elevation, and coordinates shown are estimated from electronic files provided by VTrans via email on 2/25/15 and taped measurements to existing features by GeoDesign personnel. All measurements are rounded to the nearest foot. 2) Inlet SPT N-value for sample S3 (10-12') is likely elevated due to driving a cobble/boulder with the spoon. 3) Borohole was backfilled with gravel/ouffings and cold patched upon completion. 4) Hammer energy correction factor is assumed based on hammer type. 5) Visual sample descriptions are per Burmister classification system. Laboratory testing results shown are based on testing performed by VTrans with the Gravel/Sand/SILT breakdown shown per ANSI/D 1145.								

Notes: 1. Stratification lines represent approximate boundary between material types. Smooth lines may be graded. 2. U values have not been corrected for hammer energy. CE is the hammer energy correction factor. 3. Water level readings have been made of flow and water conditions noted. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.



STATE OF VERMONT
AGENCY OF TRANSPORTATION
CONSTRUCTION AND MATERIALS
BUREAU CENTRAL LABORATORY

BORING LOG

Springfield
STP CUL(47)
US-5

Boring No.: 0-103
Page No.: 1 of 2
Pin No.: 13C340
Checked By: JFW

Boring Crew: T. Farrell (SAB), G. Hovey (GeoDesign)
Date Started: 2/10/15 Date Finished: 2/10/15
VTSFG INR03: N 304306.00 N E 1084084.00 N
Station: 480+04 Offset: 10' R
Ground Elevation: 340 N

Coring Sampler
Type: AUGER SS
I.D.: 4.25 in 1.30 in
Hammer Mt: N.A. 140 lb.
Hammer Fall: N.A. 30 in.
Hammer/Rod Type: Auto
Rig: CME 500K ATV CE = 1.35

Groundwater Observations (3)		
Date	Depth (ft)	Notes
02/10/15	45.0	Wet sample.
02/11/15	50.0	~1' must in auger.

Depth (ft)	Sheet (f)	CLASSIFICATION OF MATERIALS (Description)	Moisture Content (%)	Void Ratio	Groundwater Observations (3)						
					Gravel %	Sand %	Fines %	U	OC		
0		0.4' Asphalt.									
0		0.3' Possible Concrete	50/6 ¹	5.2	47.3	30.2	13.5	NP	NP		
5		S1 (0.7' - 1.2'): Refusal, brown fine to coarse SAND and fine to coarse GRAVEL, little SIL, moist. Res. = 0.3 N (ASTM D145 Classification: A-1-b.)	11-7-7 ¹	5.3	32.3	37.5	10.2	NP	NP		
10		S2 (5' - 7'): Medium dense, brown fine to coarse SAND, some fine to coarse Gravel, little SIL, moist (possible slough). Res. = 0.4 N (ASTM D145 Classification: A-1-a.)	6-9-9 ¹	14.8	31.8	37.0	30.3	NP	NP		
15		S3 (10' - 12'): Medium dense, gray SILT and fine to coarse SAND, little fine to coarse Gravel, trace Wood Chips at bottom of sample, moist. Res. = 1.0 N (ASTM D145 Classification: A-2-a.)	4-9-9 ¹	10.3	7.3	38.5	54.2	NP	NP		
20		S4 (15' - 17'): Medium dense, gray-brown fine to medium SAND and SILT, moist. Res. = 1.7 N (ASTM D145 Classification: A-4.)	14-10-9 ¹	8.9	38.2	42.1	21.7	NP	NP		
25		S5 (20' - 22'): Medium dense, brown fine to coarse SAND, some SIL, little fine to coarse Gravel, moist. Res. = 1.8 N (ASTM D145 Classification: A-1-b.)	17-19-20 ¹	8.0	40.7	32.3	18.0	NP	NP		
30		S6 (25' - 27'): Dense, brown fine to coarse SAND, some fine to coarse Gravel, some SIL, moist. Res. = 1.8 N (ASTM D145 Classification: A-1-b.)	24-28/4 ¹	7.7	48.8	35.7	15.7	NP	NP		
35		S7 (30' - 32'): Refusal, brown fine to coarse SAND, some fine to coarse Gravel, little SIL, moist. Stone fragments from cobbles/boulders observed in spoon shoe. Res. = 0.7 N (ASTM D145 Classification: A-1-b.)	21-22-23 ¹	5.9	41.8	37.7	20.5	NP	NP		
40		S8 (35' - 37'): Refusal, brown fine to coarse SAND, some fine to coarse Gravel, some SIL, moist. Res. = 1.8 N (ASTM D145 Classification: A-1-b.)	8-9-7-12 ¹								
45		S9 (40' - 42'): Medium dense, gray-brown SILT, some fine to medium Sand, moist. Res. = 0.1 N									
45		S10 (45' - 47'): Medium dense, gray layered SILT, trace Clayey SIL, sat. Res. = 1.5 N (ASTM D145 Classification: A-4.)	2-9-9-9 ¹	25.0	0.3	12.5	87.2	NP	NP		

1. Stratification lines represent approximate boundary between material types. Transition may be gradual.
2. U values have not been corrected for hammer energy. CE is the hammer energy correction factor.
3. Water level readings have been made of fines 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
CONSTRUCTION AND MATERIALS
BUREAU CENTRAL LABORATORY

BORING LOG

Springfield
STP CUL(47)
US-5

Boring No.: 0-103
Page No.: 2 of 2
Pin No.: 13C340
Checked By: JFW

Boring Crew: T. Farrell (SAB), G. Hovey (GeoDesign)
Date Started: 2/10/15 Date Finished: 2/10/15
VTSFG INR03: N 304306.00 N E 1084084.00 N
Station: 480+04 Offset: 10' R
Ground Elevation: 340 N

Coring Sampler
Type: AUGER SS
I.D.: 4.25 in 1.30 in
Hammer Mt: N.A. 140 lb.
Hammer Fall: N.A. 30 in.
Hammer/Rod Type: Auto
Rig: CME 500K ATV CE = 1.35

Groundwater Observations (3)		
Date	Depth (ft)	Notes
02/10/15	45.0	Wet sample.
02/11/15	50.0	~1' must in auger.

Depth (ft)	Sheet (f)	CLASSIFICATION OF MATERIALS (Description)	Moisture Content (%)	Void Ratio	Groundwater Observations (3)						
					Gravel %	Sand %	Fines %	U	OC		
5		S11 (50' - 52'): Medium dense, gray layered SILT, trace fine Sand, sat. Res. = 1.2 N (ASTM D145 Classification: A-4.) Note stopped @ 52.0 N	5-9-9-9 ¹	25.0	0.4	14.5	85.1	NP	NP		
55		Remarks: 1) U.S. Route 5 stationing, ground elevation, and coordinates shown are estimated from electronic files provided by VTrans via email on 2/25/15 and taped measurements to existing features by GeoDesign personnel. All measurements are rounded to the nearest foot. 2) Hard grinding of NSA during advance from approximately 30 to 38 feet deep on inferred cobbles and/or boulders. 3) Borehole was backfilled with gravel/cuttings and cased patched on 2/11/15. 4) Hammer energy correction factor is assumed based on hammer type. 5) Visual sample descriptions are per Burmister classification system. Laboratory testing results shown are based on testing performed by VTrans with the Gravel/Sand/SILT breakdown shown per ASTM D145.									

1. Stratification lines represent approximate boundary between material types. Transition may be gradual.
2. U values have not been corrected for hammer energy. CE is the hammer energy correction factor.
3. Water level readings have been made of fines 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
CONSTRUCTION AND MATERIALS
BUREAU CENTRAL LABORATORY

BORING LOG

Springfield
STP COLU(47)
US-5

Boring No.: 0-104
Page No.: 1 of 2
File No.: 13C346
Checked By: JFW

Boring Crew: T. Farrell (SLS), B. Honey (GeoDesign)
Date Started: 2/13/15 Date Finished: 2/13/15
VTPS NAD83: N 304422.00 N E 1004081.00 N
Station: 470+63 Offset: 8' L
Ground Elevation: 340 N

Coring Sampler
Type: AUGER SS
I.B.: 4.25 in 1.30 in
Hammer Mt: N.A. 149 lb.
Hammer Fall: N.A. 30 in.
Hammer/Red Type: Auto
Rq: CMT 550K ATV CE = 1.35

Groundwater Observations (3)

Date	Depth (ft)	Notes
02/13/15	30.0	Wat sample.
02/13/15		See Remark 2.

Depth (ft)	Interval (ft)	CLASSIFICATION OF INTERVALS (Description)	Moisture Content (%)	Moisture Content (%)	Gravel %	Sand %	Fines %	LL %	PL %
0	0-4	4" Asphalt							
4	4-8	S1 (1' - 1.5'): Refused, brown fine to coarse SAND and fine to coarse GRAVEL, little SILT, frozen. Res. = 0.2 N (ASTM D145 Classification: A-1-b.)	50/4*	4.0	40.0	33.0	10.0	NP	NP
8	8-11	S2 (1.5' - 2' cuttings): Light brown fine to coarse SAND, little SILT, little fine to coarse Gravel, metal. (ASTM D145 Classification: A-2-4.) Res. = 0.1 N	5-0-11-18 (17)	0.2	41.0	36.0	23.0	NP	NP
11	11-17	S3 (5' - 7'): Medium dense, brown fine to coarse SAND and SILT, little fine to coarse Gravel, metal. Res. = 0.8 N (ASTM D145 Classification: A-1-b.)							
17	17-18	S4 (10' - 12'): Medium dense, brown fine to coarse SAND and fine to coarse GRAVEL, some SILT, metal. Res. = 1.0 N (ASTM D145 Classification: A-1-b.)	17-18-15-16 (20)	0.6	45.0	33.5	21.5	NP	NP
18	18-22	S5 (15' - 17'): Medium dense, brown SILT and fine to coarse SAND, some fine to coarse Gravel, metal. Res. = 1.2 N	0-0-14-22 (22)						
22	22-27	S6 (20' - 22'): Medium dense, brown SILT and fine to coarse SAND, little fine to coarse Gravel, metal. Res. = 1.0 N (ASTM D145 Classification: A-2-4.)	0-10-15-22 (25)	10.2	33.2	30.4	27.4	NP	NP
27	27-37	S7 (25' - 27'): Medium dense, brown fine to coarse SAND and SILT, little fine to coarse Gravel, metal. Res. = 1.1 N (ASTM D145 Classification: A-2-4.)	0-0-0-7 (17)	11.5	33.0	40.0	26.2	NP	NP
37	37-39	S8 (30' - 32'): Loose, brown layered SILT, vol. Res. = 0.8 N (ASTM D145 Classification: A-4.)	2-3-3-3 (6)	33.5	0.4	10.4	88.2	NP	NP
39	39-40	S9 (32' - 34'): Loose, brown layered SILT, vol. Res. = 0.8 N (ASTM D145 Classification: A-4.)	1-3-3-0 (6)	30.0	0.3	7.7	92.0	NP	NP
40	40-42	S10 (35' - 37'): Medium dense, brown layered SILT, trace fine to medium Sand (in occasional seams ~1/16" thick), vol. Res. = 1.2 N (ASTM D145 Classification: A-4.)	3-5-0-0 (11)	27.0	1.2	10.0	88.2	NP	NP
42	42-43	S11 (37' - 39'): Medium dense, brown layered SILT, vol. Res. = 1.2 N (ASTM D145 Classification: A-4.)	5-5-7-0 (12)	20.4		11.7	88.3	NP	NP
43	43-44	S12 (40' - 42'): Medium dense, gray layered SILT, trace fine to medium Sand (in occasional seams ~1/16" thick), vol. Res. = 1.1 N (ASTM D145 Classification: A-4.)	3-0-0-0 (12)	27.4	0.8	12.0	88.6	NP	NP
44	44-45	S13 (42' - 44'): Medium dense, gray layered SILT, trace fine Sand, vol. Res. = 0.8 N (ASTM D145 Classification: A-4.)	5-5-0-0 (10)	20.0		13.0	85.0	NP	NP

Notes: 1. Stratification lines represent approximate boundary between material types. Stratification may be greater.
2. If fines have not been corrected for hammer energy, CE is the hammer energy correction factor.
3. Water level readings here have not been corrected for temperature. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.



STATE OF VERMONT
AGENCY OF TRANSPORTATION
CONSTRUCTION AND MATERIALS
BUREAU CENTRAL LABORATORY

BORING LOG

Springfield
STP COLU(47)
US-5

Boring No.: 0-104
Page No.: 2 of 2
File No.: 13C346
Checked By: JFW

Boring Crew: T. Farrell (SLS), B. Honey (GeoDesign)
Date Started: 2/13/15 Date Finished: 2/13/15
VTPS NAD83: N 304422.00 N E 1004081.00 N
Station: 470+63 Offset: 8' L
Ground Elevation: 340 N

Coring Sampler
Type: AUGER SS
I.B.: 4.25 in 1.30 in
Hammer Mt: N.A. 149 lb.
Hammer Fall: N.A. 30 in.
Hammer/Red Type: Auto
Rq: CMT 550K ATV CE = 1.35

Groundwater Observations (3)

Date	Depth (ft)	Notes
02/13/15	30.0	Wat sample.
02/13/15		See Remark 2.

Depth (ft)	Interval (ft)	CLASSIFICATION OF INTERVALS (Description)	Moisture Content (%)	Moisture Content (%)	Gravel %	Sand %	Fines %	LL %	PL %
45	45-47	S14 (45' - 47'): Medium dense, gray layered SILT, vol. Res. = 1.1 N (ASTM D145 Classification: A-4.)	0-0-0-0 (12)	25.3	0.0	0.5	99.7	NP	NP
47	47-50	S15 (47' - 50'): Medium dense, gray layered SILT, vol. (ASTM D145 Classification: A-4.)	5-0-7-0 (13)	25.0		0.5	99.7	NP	NP
50	50-55	Hole stopped @ 50.0 N							
55	55-60	Remarks: 1) U.S. Route 5 stationing, ground elevation, and coordinates shown are estimated from electronic files provided by VTrans via email on 2/25/15 and taped measurements to existing features by GeoDesign personnel. All measurements are rounded to the nearest foot. 2) At 43 feet deep, water level indicator was lowered to 43 feet and returned with wet spoils on the probe. Inferred not representative of true water level in boring. 3) Borings were backfilled with gravel/cuttings and cold patched upon completion. 4) Hammer energy correction factor is assumed based on hammer type. 5) Visual sample descriptions are per Identifier classification system. Laboratory testing results shown are based on testing performed by VTrans with the Gravel/Sand/SILT breakdown shown per ASTM D145.							
60	60-65								
65	65-70								
70	70-75								
75	75-80								
80	80-85								
85	85-90								

Notes: 1. Stratification lines represent approximate boundary between material types. Stratification may be greater.
2. If fines have not been corrected for hammer energy, CE is the hammer energy correction factor.
3. Water level readings here have not been corrected for temperature. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.



STATE OF VERMONT
AGENCY OF TRANSPORTATION
CONSTRUCTION AND MATERIALS
BUREAU CENTRAL LABORATORY

BORING LOG

Springfield
STP CULV(47)
US-5

Boring No.: B-105

Page No.: 1 of 1

Pin No.: 13C346

Checked By: JFW

Boring Crew: T. Farrell (SJB), D. Howey (GeoDesign)
Date Started: 2/16/15 Date Finished: 2/16/15
VTSPG NAD83: N 304391.00 ft E 1664176.00 ft
Station: 470+34 Offset: 88' R
Ground Elevation: 319 ft

Casing: AUGER
Sampler: SS
Type: I.D.: 4.25 in 1.38 in
Hammer Wt: N.A. 140 lb.
Hammer Fall: N.A. 30 in.
Hammer/Rod Type: Auto
Rig: CME 550X ATV CE = 1.35

Groundwater Observations (3)

Date	Depth (ft)	Notes
02/16/15	6.0	Wet sample.
02/16/15		See Remark 2.

Depth (ft)	Strata(1)	CLASSIFICATION OF MATERIALS (Description)	Blows/6" (N Value)(2)	Moisture Content %	Gravel %	Sand %	Fines %	LL %	PI %
5		S1 (0' - 0.9'): Refusal, brown SILT, little fine to coarse Sand, trace Wood and Roots, frozen. Rec. = 0.4 ft (AASHTO M145 Classification: A-4.)	5-50/5 ⁿ	31.9		7.1	92.9	NP	NP
		S2 (2' - 4'): Medium dense, brown fine to coarse SAND and fine to coarse GRAVEL, little Silt, moist/frozen. Rec. = 0.4 ft (AASHTO M145 Classification: A-1-a.)	15-17-12-9 (29)	7.8	61.0	28.2	10.8	NP	NP
		S3 (4' - 6'): Medium dense, brown fine to coarse SAND and SILT, trace Wood and Root fibers, moist/frozen. Rec. = 0.2 ft (AASHTO M145 Classification: A-2-4.)	6-8-8-7 (16)	22.9	22.2	45.7	32.1	NP	NP
		S4 (6' - 8'): Medium dense, brown layered SILT, little fine to coarse Sand, little Wood, wet. Rec. = 1.3 ft	5-7-7-6 (14)	76.0				NP	NP
		S5 (8' - 10'): Medium dense, brown layered SILT, little fine Sand, wet. Rec. = 1.6 ft (AASHTO M145 Classification: A-4.)	6-7-6-6 (13)	27.8	4.5	21.1	74.4	NP	NP
		S6 (10' - 12'): Loose, brown layered SILT, trace fine Sand, wet. Rec. = 1.2 ft (AASHTO M145 Classification: A-4.)	4-3-4-6 (7)	29.4		11.0	89.0	NP	NP
		S7 (12' - 14'): Medium dense, gray layered SILT, trace fine Sand, wet. Rec. = 1.2 ft (AASHTO M145 Classification: A-4.)	5-5-6-7 (11)	29.4		10.5	89.5	NP	NP
		S8 (14' - 16'): Medium dense, no recovery. Rec. = 0.0 ft	9-8-8-8 (17)						
		S9 (16' - 18'): Loose, gray layered SILT, trace fine Sand, wet. Rec. = 1.2 ft (AASHTO M145 Classification: A-4.)	4-4-5-6 (9)	27.1		11.7	88.3	NP	NP
		S10 (18' - 20'): Medium dense, gray layered SILT, trace fine Sand, wet. Rec. = 1.4 ft (AASHTO M145 Classification: A-4.)	3-5-6-6 (11)	27.7	0.1	12.6	87.3	NP	NP
		S11 (20' - 22'): Loose, gray layered SILT, wet. Rec. = 1.2 ft (AASHTO M145 Classification: A-4.)	4-4-4-5 (8)	27.7		8.9	91.1	NP	NP
		25		S12 (25' - 27'): Medium dense, gray layered SILT, trace Clayey Silt (occasional ~1/8" seams), wet. Rec. = 1.7 ft (AASHTO M145 Classification: A-4.)	5-5-5-6 (10)	29.4		6.3	93.7
30		Hole stopped @ 27.0 ft							
35		Remarks: 1) U.S. Route 5 stationing, ground elevation, and coordinates shown are estimated from electronic files provided by VTTrans via email on 2/25/15 and taped measurements to existing features by GeoDesign personnel. All measurements are rounded to the nearest foot. 2) A water level reading was attempted following completion of boring, but it was inferred that readings were not representative due to wet spoils on sides of auger causing the water level indicator to trigger erratically. 3) Borehole was backfilled with auger cuttings. 4) Hammer energy correction factor is assumed based on hammer type. 5) Visual sample descriptions are per Burmister classification system. Laboratory testing results shown are based on testing performed by VTTrans with the Gravel/Sand/Silt breakdown shown per AASHTO M145.							

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.

GEODESIGN BORING LOG 750-08.17 SPRINGFIELD STP CULV(47)01 VERMONT AGT.DOT 3/4/15