



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

BORING NUMBER: C-3
 SHEET 1 of 1
 DATE STARTED: 5/13/10
 DATE COMPLETED: 5/18/10

PROJECT NAME: SOUTH BURLINGTON-COLCHESTER
 SITE NAME: I-89
 STATION: MEDIAN
 OFFSET:
 VTSPG NAD83: N 748991.20 ft E 1461661.10 ft

PROJECT NUMBER: IM CULV(23)
 SITE NUMBER:
 GROUND ELEVATION: 142.8 ft
 GROUNDWATER DEPTH: 28.1 ft 5/18/10
 PROJECT PIN NUMBER: 09A046

BORING CREW
 CREW CHIEF: WERNER
 DRILLER: WERNER
 LOGGER: MAHMUTOVIC

BORING RIG: CME 55 TRACK AUTO
 BORING TYPE: WASH BORE
 SAMPLE TYPE: SPLIT BARREL
 CHECKED BY: CEE

DEPTH (ft)	SYMBOL	CLASSIFICATION OF MATERIALS (Description)	BLOWS PER FOOT	M.C. (%)	GRAVEL (%)	SAND (%)	FINES (%)
		A-2-4, SiSa, brn, Moist, Rec. = 0.9 ft	4	15.8	5.3	70.6	24.1
		A-2-4, SiSa, brn, Moist, Rec. = 1.5 ft	14	21.2	5.9	64.8	29.3
10		Field Note: No sample., Pulled out Hollow Stem Augers and replaced with 3.5" casing for wash bore drilling.	40				
		A-2-4, SiSa, brn, Moist, Rec. = 1.6 ft	57	13.2	4.1	60.7	35.2
20		A-2-4, GrSiSa, brn, Moist, Rec. = 1.2 ft	24	12.1	22.8	50.7	26.5
		A-2-4, Sa, brn, Moist, Rec. = 1.9 ft	20	16.7	11.0	71.6	17.4
30		A-2-4, SiSa, brn, Moist, Rec. = 0.9 ft	21	17.5	3.2	66.1	30.7
		Field Note: No sample.	20				
		A-4, SiSa, brn, Moist, Rec. = 1.2 ft	16	19.1	0.8	61.0	38.2
		A-2-4, SiSa, brn, Moist, Rec. = 1.3 ft	10	19.3	1.0	73.7	25.3
40		A-2-4, SiSa, brn, Moist, Rec. = 1.0 ft	16	19.4	2.6	67.4	30.0
		A-4, SaSi, gry, Moist, Rec. = 1.6 ft	23	21.1	0.6	39.4	60.0
		A-4, Si, gry, Moist, Rec. = 1.5 ft	13	25.0	0.7	9.8	89.5
50		Hole stopped @ 48.0 ft					
		DRILLER'S NOTES: 1. No ledge to depth. 2. Hole was sealed with cement grout to depth. 3. The hammer energy correction factor, e_c for the CME 55 Track Rig used in this investigation is 1.46. The N values provided on the boring logs are raw values and have not been corrected.					

LOG OF BORING SOUTH BURLINGTON-COLCHESTER IM CULV(23).GPJ VT AOT.GIT 5/28/10



STATE OF VERMONT
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 SUBSURFACE INFORMATION

BORING NUMBER: C-4
 SHEET 1 of 1
 DATE STARTED: 4/30/10
 DATE COMPLETED: 4/30/10

PROJECT NAME: SOUTH BURLINGTON-COLCHESTER
 SITE NAME: I-89
 STATION: SB EMBANKMENT
 OFFSET:
 VTSPG NAD83: N 749086.00 ft E 1461580.13 ft

PROJECT NUMBER: IM CULV(23)
 SITE NUMBER:
 GROUND ELEVATION: 120.1 ft
 GROUNDWATER DEPTH: NOT TAKEN
 PROJECT PIN NUMBER: 09A046

BORING CREW
 CREW CHIEF: GARROW
 DRILLER: GARROW
 LOGGER: PORTER

BORING RIG: CME 45C TRACK AUTO
 BORING TYPE: WASH BORE
 SAMPLE TYPE: SPLIT BARREL
 CHECKED BY: CEE

DEPTH (ft)	SYMBOL	CLASSIFICATION OF MATERIALS (Description)	BLOWS PER FOOT	M.C. (%)	GRAVEL (%)	SAND (%)	FINES (%)	LL (%)	PI (%)
		A-4, SiSa, brn, Moist, Rec. = 1.5 ft	2	16.4	2.0	57.0	41.0		
5		A-2-4, SiSa, brn, Moist, Rec. = 1.5 ft	7	15.5	0.4	75.3	24.3		
		A-2-4, SiSa, brn, Moist, Rec. = 1.8 ft	27	16.0	1.9	72.9	25.2		
10		A-2-4, SiSa, brn, Moist, Rec. = 1.3 ft	12	20.2	2.4	68.1	29.5		
		A-2-4, Sa, gry, Moist, Rec. = 1.5 ft	17	17.5	1.5	80.5	18.0		
15		A-2-4, SiSa, gry, Moist, Rec. = 1.8 ft	21	18.6	3.4	73.8	22.8		
		A-2-4, SiSa, gry, Moist, Rec. = 2.0 ft	16	21.3	2.9	64.7	32.4		
		A-4, Si, gry, Moist, Rec. = 1.4 ft	14	23.5	1.7	19.8	78.5	30	6
20		A-4, SaSi, gry, Moist, Rec. = 1.5 ft	7	27.6	0.5	23.2	76.3		
		A-4, SaSi with Trace of Organics (4.2%), gry, Moist, Rec. = 1.6 ft	6	35.5	0.0	26.9	73.1		
25		A-4, Si, gry, Moist, Rec. = 1.4 ft	5	28.5	0.2	13.6	86.2		
		Hole stopped @ 26.0 ft							
30		DRILLER'S NOTES: 1. No ledge to depth. 2. Hole was sealed with cement grout to depth. 3. The hammer energy correction factor, C_e for the CME 45 Track Rig used in this investigation is 1.34. The N values provided on the boring logs are raw values and have not been corrected.							

LOG OF BORING SOUTH BURLINGTON-COLCHESTER IM CULV(23).GPI VT AOT.GDT 5/28/10



STATE OF VERMONT
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SUBSURFACE INFORMATION

BORING NUMBER: C-5
SHEET 1 of 1
DATE STARTED: 4/29/10
DATE COMPLETED: 4/30/10

PROJECT NAME: SOUTH BURLINGTON-COLCHESTER
SITE NAME: I-89
STATION: NB EMBANKMENT
OFFSET:
VTSPG NAD83: N 748894.81 ft E 1461743.25 ft

PROJECT NUMBER: IM CULV(23)
SITE NUMBER:
GROUND ELEVATION: 121.1 ft
GROUNDWATER DEPTH: NOT TAKEN
PROJECT PIN NUMBER: 09A046

BORING CREW
CREW CHIEF: GARROW
DRILLER: GARROW
LOGGER: PORTER

BORING RIG: CME 45C TRACK AUTO
BORING TYPE: WASH BORE
SAMPLE TYPE: SPLIT BARREL
CHECKED BY: CEE

DEPTH (ft)	SYMBOL	CLASSIFICATION OF MATERIALS (Description)	BLOWS PER FOOT	M.C. (%)	GRAVEL (%)	SAND (%)	FINES (%)	LL (%)	PI (%)
		A-2-4, SiSa, brn, Moist, Rec. = 1.1 ft	2	16.2	0.7	67.0	32.3		
5		A-4, SaSi, gry, Moist, Rec. = 0.4 ft	16	22.7	2.1	27.0	70.9	30	6
		A-2-4, SiSa, brn, Moist, Rec. = 1.1 ft		16.2	0.8	70.9	28.3		
		A-2-4, SiSa, brn, Moist, Rec. = 1.4 ft	24	18.3	2.2	66.1	31.7		
10		A-2-4, SiSa, brn, Moist, Rec. = 1.4 ft	12	20.2	6.2	65.5	28.3		
		A-2-4, SiSa, gry, Moist, Rec. = 1.5 ft	14	18.6	5.8	72.4	21.8		
15		A-2-4, SiSa, gry, Moist, Rec. = 1.5 ft	15	18.8	3.8	73.2	23.0		
		A-4, SiSa, gry, Moist, Rec. = 1.9 ft	14	21.0	2.9	48.8	48.3		
		A-4, SaSi, gry, Moist, Rec. = 1.3 ft	10	29.6	1.0	32.7	66.3		
20		A-4, Si, gry, Moist, Rec. = 1.5 ft	7	31.5	0.0	18.1	81.9		
		A-4, Si with Trace of Organics (2.9%), gry, Moist, Rec. = 1.3 ft	7	24.4	0.0	17.4	82.6		
25		A-4, Si, gry, Moist, Rec. = 1.4 ft	6	28.5	0.0	15.7	84.3		
		Hole stopped @ 27.0 ft							
30		DRILLER'S NOTES: 1. No ledge to depth. 2. Hole was sealed with cement grout to depth. 3. The hammer energy correction factor, c_c for the CME 45 Track Rig used in this investigation is 1.34. The N values provided on the boring logs are raw values and have not been corrected.							

LOG OF BORING SOUTH BURLINGTON-COLCHESTER IM CULV(23).GPI VT AOT.GDT 5/28/10



STATE OF VERMONT
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 SUBSURFACE INFORMATION

BORING NUMBER: SB-2
 SHEET 1 of 1
 DATE STARTED: 5/07/10
 DATE COMPLETED: 5/07/10

PROJECT NAME: SOUTH BURLINGTON-COLCHESTER
 SITE NAME: I-89
 STATION: MEDIAN
 OFFSET:
 VTSPG NAD83: N 722830.19 ft E 1464264.63 ft

PROJECT NUMBER: IM CULV(23)
 SITE NUMBER:
 GROUND ELEVATION: 238.1 ft
 GROUNDWATER DEPTH: NOT TAKEN
 PROJECT PIN NUMBER: 09A046

BORING CREW
 CREW CHIEF: WERNER
 DRILLER: WERNER
 LOGGER: MAHMUTOVIC

BORING RIG: CME 55 TRACK AUTO
 BORING TYPE: HOLLOW STEM AUGER
 SAMPLE TYPE: SPLIT BARREL
 CHECKED BY: CEE

LOG OF BORING SOUTH BURLINGTON-COLCHESTER IM CULV(23).GPI VT AOT.GDT 5/28/10

DEPTH (ft)	SYMBOL	CLASSIFICATION OF MATERIALS (Description)	BLOWS PER FOOT	M.C. (%)	GRAVEL (%)	SAND (%)	FINES (%)	LL (%)	PI (%)
		A-4, SaSi, brn, Moist, Rec. = 1.2 ft	7	20.0	2.4	42.7	54.9		
		A-4, SiSa, brn, Moist, Rec. = 1.1 ft	28	18.4	4.9	48.6	46.5		
10		A-2-4, SiSa, brn, MTW, Rec. = 1.4 ft	40	13.6	14.5	53.7	31.8		
		A-4, SiSa, brn, MTW, Rec. = 1.2 ft	40	12.4	0.6	58.1	41.3		
20		A-4, SaSi, brn, MTW, Rec. = 1.5 ft	32	16.5	7.9	33.1	59.0		
		A-4, SaSi, brn, MTW, Rec. = 1.3 ft	24	20.5	7.8	20.8	71.4		
		A-4, SaSi, brn, MTW, Rec. = 1.4 ft	39	18.7	4.1	35.0	60.9		
30		A-4, Si, brn, MTW, Rec. = 1.6 ft	46	19.5	1.8	16.2	82.0	26	3
		A-4, SaSi, brn, MTW, Rec. = 1.7 ft	40	18.3	1.9	24.2	73.9		
		A-4, SaSi, brn, Moist, Rec. = 1.7 ft	30	19.4	0.8	20.6	78.6	26	4
		A-4, SaSi, brn, MTW, Rec. = 1.9 ft	24	19.6	2.7	45.4	51.9		
40		A-2-4, Sa, brn, MTW, Rec. = 2.0 ft	16	18.9	4.6	80.4	15.0		
		A-2-4, Sa, brn, MTW, Rec. = 2.0 ft	46	16.3	6.8	82.3	10.9		
		A-3, Sa, brn, MTW, Rec. = 2.0 ft	28	18.7	6.7	86.2	7.1		
		A-7-6, Cl, gry, Moist, Rec. = 1.4 ft	5	35.0	0.6	4.4	95.0	42	21
50		Hole stopped @ 48.0 ft							
		DRILLER'S NOTES: 1. No ledge to depth. 2. Hole was sealed with cement grout to depth. 3. The hammer energy correction factor, C, for the CME 55 Track Rig used in this investigation is 1.46. The N values provided on the boring logs are raw values and have not been corrected.							



STATE OF VERMONT
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 SUBSURFACE INFORMATION

BORING NUMBER: SB-4
 SHEET 1 of 1
 DATE STARTED: 5/04/10
 DATE COMPLETED: 5/04/10

PROJECT NAME: SOUTH BURLINGTON-COLCHESTER
 SITE NAME: I-89
 STATION: SB EMBANKMENT
 OFFSET:
 VTSPG NAD83: N 722912.48 ft E 1464183.74 ft

PROJECT NUMBER: IM CULV(23)
 SITE NUMBER:
 GROUND ELEVATION: 218.7 ft
 GROUNDWATER DEPTH: NOT TAKEN
 PROJECT PIN NUMBER: 09A046

BORING CREW
 CREW CHIEF: WERNER
 DRILLER: WERNER
 LOGGER: MAHMUTOVIC

BORING RIG: CME 55 TRACK AUTO
 BORING TYPE: HOLLOW STEM AUGER
 SAMPLE TYPE: SPLIT BARREL
 CHECKED BY: CEE

DEPTH (ft)	SYMBOL	CLASSIFICATION OF MATERIALS (Description)	BLOWS PER FOOT	M.C. (%)	GRAVEL (%)	SAND (%)	FINES (%)	LL (%)	PI (%)
		No sample was taken. Material was excavated., 0.0 ft - 2.0 ft							
5									
		A-4, SaSi, brn, Moist, Rec. = 1.7 ft	14	18.4	4.8	27.8	67.4		
10		A-4, SaSi, brn, Moist, Rec. = 1.4 ft	29	18.4	1.3	25.5	73.2		
		A-4, Si, brn-gry, Moist, Rec. = 1.4 ft	20	19.0	0.6	14.5	84.9		
		A-4, Si, gry-brn, Moist, Rec. = 1.1 ft	18	16.0	0.2	9.5	90.3	29	6
15		A-4, ClSi, gry-brn, MTW, Rec. = 1.6 ft	17	19.9	1.9	25.3	72.8	30	7
		A-2-4, SiSa, gry, Wet, Rec. = 1.6 ft	11	22.4	2.0	70.9	27.1		
20		A-3, Sa, gry, Wet, Rec. = 0.7 ft	6	20.1	11.5	82.0	6.5		
		A-7-6, Cl, gry, Wet, Rec. = 1.2 ft		32.9	0.0	6.0	94.0	48	25
		A-7-6, Cl, gry, Wet, Rec. = 1.7 ft	16	32.4	0.0	4.1	95.9	46	24
25									
		A-7-6, Cl, gry, Wet, Rec. = 2.0 ft	2	53.6	0.0	7.6	92.4	73	45
30		Hole stopped @ 30.0 ft							
35		DRILLER'S NOTES: 1. No ledge to depth. 2. Hole was sealed with cement grout to depth. 3. The hammer energy correction factor, c_c for the CME 55 Track Rig used in this investigation is 1.46. The N values provided on the boring logs are raw values and have not been corrected.							

LOG OF BORING SOUTH BURLINGTON-COLCHESTER IM CULV(23).GPI VT AOT.GDT 5/28/10



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BORING NUMBER: SB-5
 SHEET 1 of 1
 DATE STARTED: 4/29/10
 DATE COMPLETED: 4/29/10

PROJECT NAME: SOUTH BURLINGTON-COLCHESTER
 SITE NAME: I-89
 STATION: NB EMBANKMENT
 OFFSET:
 VTSPG NAD83: N 722741.81 ft E 1464350.67 ft

PROJECT NUMBER: IM CULV(23)
 SITE NUMBER:
 GROUND ELEVATION: 215.1 ft
 GROUNDWATER DEPTH: 14.8 ft 4/29/10
 PROJECT PIN NUMBER: 09A046

BORING CREW
 CREW CHIEF: WERNER
 DRILLER: WERNER
 LOGGER: MAHMUTOVIC

BORING RIG: CME 55 TRACK AUTO
 BORING TYPE: HOLLOW STEM AUGER
 SAMPLE TYPE: SPLIT BARREL
 CHECKED BY: CEE

DEPTH (ft)	SYMBOL	CLASSIFICATION OF MATERIALS (Description)	BLOWS PER FOOT	M.C. (%)	GRAVEL (%)	SAND (%)	FINES (%)
		A-4, SaSi, brn, Moist, Rec. = 1.1 ft	2	13.8	1.5	47.5	51.0
5		A-4, SaSi, brn, Moist, Rec. = 1.5 ft	16	12.4	2.2	48.8	49.0
		A-4, SaSi, brn, Moist, Rec. = 1.8 ft	20	19.4	2.1	20.4	77.5
		A-4, SaSi, brn, Moist, Rec. = 1.7 ft	24	13.5	8.4	43.8	47.8
10		A-4, Si, brn, Moist, Rec. = 1.8 ft	22	20.1	0.0	17.9	82.1
		A-4, SaSi, gry, MTW, Rec. = 1.5 ft	34	21.4	0.0	26.3	73.7
15		A-4, SiSa, gry, MTW, Rec. = 1.2 ft	14	21.3	3.0	58.1	38.9
		A-4, SaSi, gry, Wet, Rec. = 2.0 ft	10	25.1	1.4	45.2	53.4
		A-4, SaSi with Trace of Organics (1.7%), gry, Wet, Rec. = 1.2 ft	12	27.7	3.1	43.1	53.8
20		A-4, Si, gry, Wet, Rec. = 2.0 ft	12	28.7	2.1	18.4	79.5
		Hole stopped @ 22.0 ft					
25		DRILLER'S NOTES: 1. No ledge to depth. 2. Hole was sealed with cement grout to depth. 3. The hammer energy correction factor, C_c for the CME 55 Track Rig used in this investigation is 1.46. The N values provided on the boring logs are raw values and have not been corrected.					

LOG OF BORING SOUTH BURLINGTON-COLCHESTER IM CULV(23).GPI VT AOT.GDT 5/28/10