SOIL CLASSIFICATION

AASHTO

A1	GRAVEL AND SAND
A2	SILTY OR CLAYEY GRAVEL AND SAND
A3	FINE SAND
A4	SILTY SOIL - LOW COMPRESSIBILITY
A5	SILTY SOIL - HIGHLY COMPRESSIBLE
A6	CLAYEY SOIL - LOW COMPRESSIBILITY
A7	CLAYEY SOIL - HIGHLY COMPRESSIBLE

ROCK QUALITY DESIGNATION

R.Q.D. (%)	ROCK DESCRIPTION
<25	VERY POOR
25 to 50	POOR
51 to 75	FAIR
76 to 90	GOOD
>90	EXCELLENT

SHEAR STRENGTH

UNDRAINED SHEAR STRENGTH IN P.S.F.	CONSISTENCY
<250	VERY SOFT
250-500	SOFT
500-1000	MED. STIFF
1000-2000	STIFF
2000-4000	VERY STIFF
>4000	HARD

CORRELATION GUIDE OF "N" TO DENSITY / CONSISTENCY

DENSITY (GRANULAR SOILS)		CONSISTENCY (COHESIVE SOILS)	
N	DESCRIPTIVE TERM	N	DESCRIPTIVE TERM
<5	VERY LOOSE	<2	VERY SOFT
5-10	LOOSE	2-4	SOFT
11-24	MED. DENSE	5-8	MED. STIFF
25-50	DENSE	9-15	STIFF
>50	VERY DENSE	16-30	VERY STIFF
		31-60	HARD
		>60	VERY HARD

COMMONLY USED SYMBOLS

▼	WATER ELEVATION
⊗	STANDARD PENETRATION BORING
⊕	AUGER BORING
⊙	ROD SOUNDING
S	SAMPLE
N	STANDARD PENETRATION TEST BLOW COUNT PER FOOT FOR: 2" O.D. SAMPLER 1⅜" I.D. SAMPLER HAMMER WEIGHT OF 140 LBS. HAMMER FALL OF 30"
VS	FIELD VANE SHEAR TEST
US	UNDISTURBED SOIL SAMPLE
B	BLAST
DC	DIAMOND CORE
MD	MUD DRILL
WA	WASH AHEAD
HSA	HOLLOW STEM AUGER
AX	CORE SIZE 1⅛"
BX	CORE SIZE 1⅝"
NX	CORE SIZE 2⅛"
M	DOUBLE TUBE CORE BARREL USED
LL	LIQUID LIMIT
PL	PLASTIC LIMIT
PI	PLASTICITY INDEX
NP	NON PLASTIC
W	MOISTURE CONTENT (DRY WGT. BASIS)
D	DRY
M	MOIST
MTW	MOIST TO WET
W	WET
SAT	SATURATED
BO	BOULDER
GR	GRAVEL
SA	SAND
SI	SILT
CL	CLAY
HP	HARDPAN
LE	LEDGE
NLTD	NO LEDGE TO DEPTH
CNPF	CAN NOT PENETRATE FURTHER
TLOB	TO LEDGE OR BOULDER
NR	NO RECOVERY
REC.	RECOVERY
%REC.	PERCENT RECOVERY
RQD	ROCK QUALITY DESIGNATION
CBR	CALIFORNIA BEARING RATIO
<	LESS THAN
>	GREATER THAN
R	REFUSAL (N>100)

COLOR

blk	BLACK	pnk	PINK
bl	BLUE	pu	PURPLE
brn	BROWN	rd	RED
dk	DARK	tn	TAN
gry	GRAY	wh	WHITE
gn	GREEN	yel	YELLOW
lt	LIGHT	mltc	MULTICOLORED
or	ORANGE		

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

BORING LOG

BRISTOL
HES 021-1(28)
VT 116/North St/South St Improvements

Boring No.: B-3
Page No.: 1 of 1
Pin No.:
Checked By: TAD

Boring Crew: MBC, East Barre, VT, Harrington (Stantec)
Date Started: 6/25/13 Date Finished: 6/25/13
VTSPG NAD83: N 595802.10 ft E 1488519.00 ft
Station: 12+93.82 Offset: −31.53
Ground Elevation: 571.05 ft

	Casing	Sampler
Type:	H.S.A.	SS
I.D.:	2.5 in	1.38 in
Hammer Wt:	N.A.	140
Hammer Fall:	N.A.	30
Hammer/Rod Type:	Safety/N	
Rig:	Truck/Mobile B-53	CE = 1

Groundwater Observations

Date	Depth (ft)	Notes
06/25/13		NE

Depth (ft)	Strata (1)	CLASSIFICATION OF MATERIALS (Description)	Blows/6" (N Value)	Moisture Content %	Gravel %	Sand %	Fines %
		Asphalt, 0.0 ft − 0.25 ft					
		Visual Classification, GrSa, brn, Moist, Rec. = 1.2 ft	5-5-6-4 (11)				
		Visual Classification, GrSa, brn, Moist, Rec. = 0.7 ft	6-6-10-10 (16)				
5		A-1-a, SaGr, brn, Moist, Rec. = 1.2 ft	10-10-10-10 (20)	4.1	59.0	32.2	8.8
		A-1-a, SaGr, brn, Moist, Rec. = 1.0 ft	16-15-13-12 (28)	2.3	65.0	27.1	7.9
		Visual Classification, SaGr, tan, Moist, Rec. = 0.7 ft	8-7-8-10 (15)				
10		Visual Classification, SaGr, brn, Moist, Rec. = 0.8 ft	8-5-5-10 (10)				
15		Visual Classification, SaGr, brn, Moist, Rec. = 0.5 ft	7-2-10-7 (12)				
20		A-1-a, SaGr, brn, Moist, Rec. = 1.0 ft	15-16-15-15 (31)	2.7	69.0	24.9	6.1
25		Visual Classification, GrSa, brn, Moist, Rec. = 1.0 ft	15-12-22-28 (34)				

Hole stopped @ 27.0 ft

Remarks:
Based on drill action, cobbles are present from 15 to 27 feet.

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.

VTRANS_BRISTOL INTERSECTION.GPJ VERMONT AOT.GDT 7/25/13

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

BORING LOG

BRISTOL
HES 021-1(28)
VT 116/North St/South St Improvements

Boring No.: B-4
Page No.: 1 of 1
Pin No.:
Checked By: TAD

Boring Crew: MBC, East Barre, VT, Harrington (Stantec)
Date Started: 6/25/13 Date Finished: 6/25/13
VTSPG NAD83: N 595794.60 ft E 1488547.00 ft
Station: 13+23.13 Offset: 41.70
Ground Elevation: 568.73 ft

	Casing	Sampler
Type:	H.S.A.	SS
I.D.:	2.5 in	1.38 in
Hammer Wt:	N.A.	140
Hammer Fall:	N.A.	30
Hammer/Rod Type:	Safety/N	
Rig:	Truck/Mobile B-53	CE = 1

Groundwater Observations

Date	Depth (ft)	Notes
06/25/13		See remarks

Depth (ft)	Strata (1)	CLASSIFICATION OF MATERIALS (Description)	Blows/6" (N Value)	Moisture Content %	Gravel %	Sand %	Fines %
		Asphalt, 0.0 ft − 0.25 ft					
		A-2-4, GrSa, brn, Moist, Rec. = 1.2 ft	9-8-13-8 (21)	5.5	40.0	44.0	16.0
		Visual Classification, GrSa, brn, Moist, Rec. = 0.7 ft	8-7-3-4 (10)				
5		A-1-b, GrSa, brn, Moist, Rec. = 1.2 ft	6-4-3-2 (7)	7.4	42.9	45.1	12.0
		Visual Classification, GrSa, brn, Moist, Rec. = 0.2 ft	2-2-2-2 (4)				
		Visual Classification, SaGr, brn, Wet, Rec. = 0.3 ft	1-1-2-2 (3)				
10		Visual Classification, SaGr, brn, Wet, Rec. = 0.5 ft	3-2-2-2 (4)				
15		Visual Classification, SaGr, brn, Wet, Rec. = 0.3 ft	13-8-10-11 (18)				
20		A-1-a, SaGr, brn, Moist, Rec. = 1.2 ft	18-16-16-18 (32)	3.3	74.9	19.3	5.8
		Visual Classification, GrSa, brn, Moist, Rec. = 0.7 ft	15-20-25-33 (45)				
25							

Hole stopped @ 24.5 ft

Remarks:
Soil samples from 8.5 to 17 feet were wet. Reportedly a water line is leaking nearby and the samples may be wet due to water from the leak.

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.

VTRANS_BRISTOL INTERSECTION.GPJ VERMONT AOT.GDT 7/25/13

GENERAL NOTES

1. THE SUBSURFACE EXPLORATIONS SHOWN HEREIN WAS MADE ON AUGUST 10, 2007 BY THE AGENCY.
2. SOIL AND ROCK CLASSIFICATIONS, PROPERTIES AND DESCRIPTIONS ARE BASED ON ENGINEERING INTERPRETATION FROM AVAILABLE SUBSURFACE INFORMATION BY THE AGENCY AND MAY NOT NECESSARILY REFLECT ACTUAL VARIATIONS IN SUBSURFACE CONDITIONS THAT MAY BE ENCOUNTERED BETWEEN INDIVIDUAL BORING OR SAMPLE LOCATIONS.
3. OBSERVED WATER LEVELS AND/OR CONDITIONS INDICATED ARE AS RECORDED AT THE TIME OF EXPLORATION AND MAY VARY ACCORDING TO THE PREVAILING RAINFALL, METHODS OF EXPLORATION AND OTHER FACTORS.
4. ENGINEERING JUDGEMENT WAS EXERCISED IN PREPARING THE SUBSURFACE INFORMATION PRESENTED HEREIN. ANALYSIS AND INTERPRETATION OF SUBSURFACE DATA WAS PERFORMED AND INTERPRETED FOR AGENCY DESIGN AND ESTIMATING PURPOSES. PRESENTATION OF THE INFORMATION IN THE CONTRACT IS INTENDED TO PROVIDE THE CONTRACTOR ACCESS TO THE SAME DATA AVAILABLE TO THE AGENCY. THE SUBSURFACE INFORMATION IS PRESENTED IN GOOD FAITH AND IS NOT INTENDED AS A SUBSTITUTE FOR PERSONAL INVESTIGATION, INDEPENDENT INTERPRETATION, INDEPENDENT ANALYSIS OR JUDGEMENT BY THE CONTRACTOR.

DEFINITIONS (AASHTO)

BEDROCK (LEDGE) - ROCK IN ITS NATIVE LOCATION OF INDEFINITE THICKNESS.
BOULDER - A ROCK FRAGMENT WITH AN AVERAGE DIMENSION >12 INCHES.
COBBLE - ROCK FRAGMENTS WITH AN AVERAGE DIMENSION BETWEEN 3 AND 12 INCHES.
GRAVEL - ROUNDED PARTICLES OF ROCK <3" AND > 0.0787" (#10 SIEVE).
SAND - PARTICLES OF ROCK < 0.0787" (#10 SIEVE) AND > 0.0029" (#200 SIEVE).
SILT - SOIL < 0.0029" (#200 SIEVE), NON OR SLIGHTLY PLASTIC AND EXHIBITS NO STRENGTH WHEN AIR-DRIED.
CLAY - FINE GRAINED SOIL, EXHIBITS PLASTICITY WHEN MOIST AND CONSIDERABLE STRENGTH WHEN AIR-DRIED.
VARVED - ALTERNATE LAYERS OF SILT AND CLAY.
HARDPAN - EXTREMELY DENSE SOIL, CEMENTED LAYER, NOT SOFTENED WHEN WET.
MUCK - SOFT ORGANIC SOIL (CONTAINING > 10% ORGANIC MATERIAL).
MOISTURE CONTENT - WEIGHT OF WATER DIVIDED BY DRY WEIGHT OF SOIL.
FLOWING SAND - GRANULAR SOIL SO SATURATED (LOOSE) THAT IT FLOWS INTO DRILL CASING DURING EXTRACTION OF WASH ROD.
STRIKE - ANGLE FROM MAGNETIC NORTH TO LINE OF INTERSECTION OF BED WITH A HORIZONTAL PLANE.
DIP - INCLINATION OF BED WITH A HORIZONTAL PLANE.

Stantec

PROJECT NAME: BRISTOL
PROJECT NUMBER: HES 021-1 (28)

FILE NAME: z10b078frm.dgn
PROJECT LEADER: T. LUTHER
DESIGNED BY: T. LUTHER
BORING LOG SHEET 2

PLOT DATE: 4/29/2014
DRAWN BY: P. ARMATA
CHECKED BY: G. EDWARDS
SHEET 8 OF 29