

**SOIL CLASSIFICATION**

**AASHTO**

- A1 Gravel and Sand
- A2 Fine Sand
- A2 Silty or Clayey Gravel and Sand
- A4 Silty Soil - Low Compressibility
- A5 Silty Soil - Highly Compressible
- A6 Clayey Soil - Low Compressibility
- A7 Clayey Soil - Highly Compressible

**UNIFIED SOIL SYSTEM**

- GW/GP Clean Gravels (Few Fines)
- GM/GC Gravels (Appreciable Fines)
- SW/SP Clean Sands (Few Fines)
- SM/SC Sand (Appreciable Fines)
- ML/CL Low Plastic Silts & Clays
- OL Low Plastic Organic Silt
- MH/CH High Plastic Silts & Clays
- OH High Plastic Organic Silt
- Pt Highly Organic Soils

**MOISTURE**

DESCRIPTIVE TERM	OBSERVED IN FIELD	% ± BY ANALYSIS
Dry	No Visible Water	<10
Moist	Damp	10-20
Moist to Wet	Moist to Wet	21-50
Wet	Visible Water	51-70
Saturated		>70

**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
250-900	Soft
900-1000	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
- ⊕ Sample
- N Standard Penetration Test
- Blow Count Per Foot For: 2" O. D. Sampler 1 3/8" 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 1 1/8"
- BX Core Size 1 5/8"
- NX Core Size 2 1/8"
- 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
- WOR Weight Of Rod
- w Wet
- Sat Saturated
- Bo Boulder
- Gr Gravel
- So Sand
- Si Silt
- Cl Clay
- HP Hardpan
- Le Ledge
- NLTD No Ledge To Depth
- CNPT Can Not Penetrate Further
- LOB To Ledge Or Boulder
- NR No Recovery
- Rec. Recovery
- %Rec. Percent Recovery
- RQD Rock Quality Designation
- CBR California Bearing Ratio
- < Less Than
- > Greater Than

**COLOR**

- bk Black
- bl Blue
- brn Brown
- dk Dark
- gr Gray
- gn Green
- lt Light
- or Orange
- pnk Pink
- pu Purple
- rd Red
- tn Tan
- wh White
- yel Yellow
- mltc Multicolored

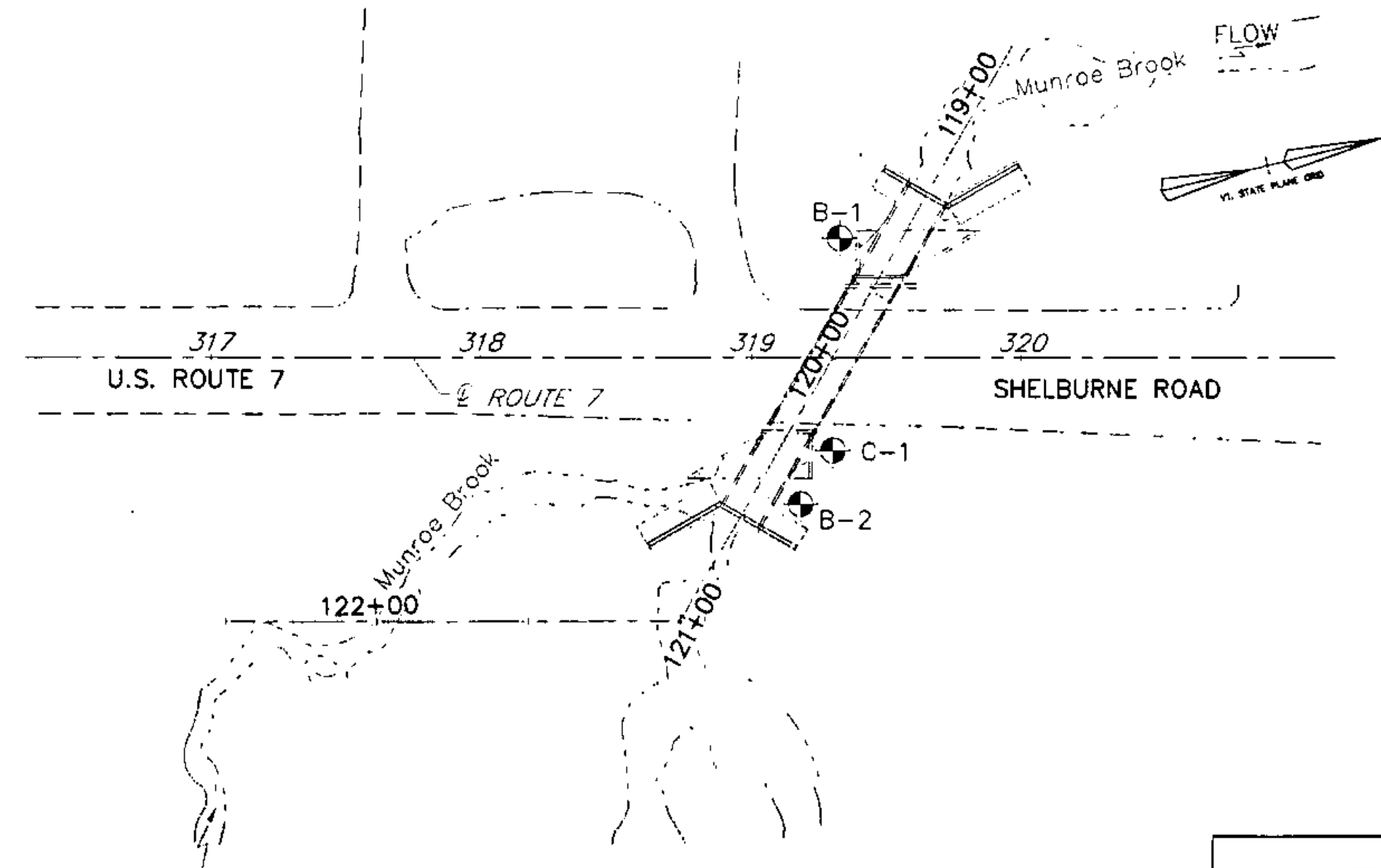
**DEFINITIONS (AASHTO)**

- 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 > 0.075" (#10 sieve).
- SAND** - Particles of rock < 0.075" (#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.

STATE OF VERMONT AGENCY OF TRANSPORTATION MATERIALS & RESEARCH DIVISION SUBSURFACE INFORMATION		HOLE NO.: B-1 SHEET 1 OF 1 DATE STARTED: 5/7/96 DATE COMPLETED: 5/9/96							
PROJECT NAME: SHELBURNE-SO. B		PROJECT NUMBER: FECC 019-4(19)							
SITE NAME: MUNROE BROOK CULVERT		SITE NO.: U.S. RT 7							
STATION: 319+33.00		OFFSET: -44.00							
GROUND EL.: 140.74		G.W. DEPTH:							
BORING CREW		BORING RIG: TRACTOR							
CREW CHIEF: MCGLYNN		DRILLER: KELLEY							
LOGGER: MCGLYNN		SAMPLE TYPE: SPLIT BARREL							
SYMBOL	SYMBOL	CLASSIFICATION OF MATERIALS (Description)	BLOWS PER FOOT	M.C. %	GRAVEL %	SAND %	FINES %	LL	PI
		0.00 - 8.00 NXDC Rock fill. Rec. = 3.0'							
		Proposed bottom of footing El. 133.00							
		No Rec.	13						
		No Rec.	96						
		16.50 - 20.00' BXDC core ahead. Advance casing.							
		A-4, So Si, Gry, Moist, HP, Rec. = 0.8'	R	8.5	17.5	35.6	46.9		NP
		21.0' - 25.0' BXDC, Core Ahead, Advance Casing.							
		A-1-5, So Gr, Gry, Moist, HP, Rec. = 0.3'	R	8.5	61.2	23.2	15.6		NP
		26.0' - 30.0' BXDC, Core Ahead, Advance Casing.							
		Boulders	R						
		30.6' - 35.0' BXDC, Core Ahead, Advance Casing.							
		A-4, So Si, Gr, Moist, HP, Rec. = 0.8'	R	7.7	11.8	34.1	54		NP
		Hole Stopped @ 36.0'							

**BORING NOTES**

- The subsurface explorations shown herein were made by the VAOT.
- Soil and rock classifications, properties and descriptions are based on engineering interpretation from available subsurface information and may not necessarily reflect actual variations in subsurface conditions that may be encountered between individual boring or sample locations.
- 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.
- 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.
- Pictorial structure details shown on the boring plan layout or soils profile are for illustrative purposes only and may not accurately portray final contract details.
- Boring Logs on this drawing were performed in May 1996 by the VAOT. Borings are for the Munroe Brook Culvert at Route 7. No testing was performed on samples taken for these borings.



**BRIDGE PLAN**  
SCALE: 1"=50'-0"

**STATE OF VERMONT AGENCY OF TRANSPORTATION**

Town Of	SHELBURNE	Bridge No.	145
Highway No.	U.S. ROUTE 7	Loc. Sta.	196+79
		Surv. Sta.	319+30
<b>U.S. ROUTE 7 OVER MUNROE BROOK</b>			
<b>BORING LOGS INFORMATION SHEET</b>			
Designed By	L. Janik	Drawn By	S. Scheifer
Checked By	J. Corliss	Date	April 2003
		Bridge Design Supervisor	W. Windus Date April 2003
PROJECT	SHELBURNE	PROJECT NO.	NHEC FECC 019-4(27)
I.G.C. Info.			
Bridge Sheet No.	BC101	Sheet	441 of 537

**ERDMAN ANTHONY**  
CONSULTING ENGINEERS  
Rochester, New York    Comp Hill, Pennsylvania  
Boston, Massachusetts