

SOIL CLASSIFICATION

- AASHTO
- A1 Gravel and Sand
 - A3 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

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 kPa	CONSISTENCY
<12	Very Soft
12-24	Soft
24-48	Med. Stiff
48-96	Stiff
96-192	Very Stiff
>192	Hard

CORRELATION GUIDE OF "N" TO DENSITY/CONSISTENCY

DENSITY (GRANULAR SOILS)	CONSISTENCY (COHESIVE SOILS)
<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
- 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 28.5 mm
- BX Core Size 41.2 mm
- NX Core Size 52.1 mm
- 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)

DEFINITIONS (AASHTO)

- BEDROCK (LEDGE) - Rock in its native location of indefinite thickness.
- BOULDER - A rock fragment with an average dimension > 304.8 mm.
- COBBLE - Rock fragments with an average dimension between 76.2 and 304.8 mm.
- GRAVEL - Rounded particles of rock < 76.2 mm and > 2 mm (#10 sieve).
- SAND - Particles of rock < 2 mm (#10 sieve) and > 75 μm (#200 sieve).
- SILT - Soil < 75 μm (#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. : B1 SHEET 1 OF 1 DATE STARTED: 7/23/98 DATE COMPLETED: 7/26/98						
PROJECT NAME: RIPTON SITE NAME: BR-17 STATION: 1+088.00 GROUND EL.: 360.317		PROJECT NUMBER: FH 010-1(2) SITE NO.: TH-18 OFFSET: 6.00 G.W. DEPTH:						
BORING CREW: CREW CHIEF: DRILLER: WILLIS LOGGERS: MERRILL, ADDITIONAL CREW:		BORING RIC: SKID RIC BORING TYPE: WASH BORE SAMPLE TYPE: SPLIT BARREL						
DEPTH	SYMBOL	CLASSIFICATION OF MATERIALS (Description)	BLOWS PER 0.3 m	M.C. %	GRAVEL SAND %	FINES %	LL	PI
		No rec. Boulders.	R					
		A-1-b, 0.5M, brn rec.=0.10m	R	5.4	37.4	40.5	13.1	
		A-1-b, 5.5Gr, M, brn rec.=0.30m	R	11.8	49.1	30.8	20.1	
		Run #1: BVMDC 4.02m-5.52m, rec.=1.25m See Geologist's Report	Run	Rec %	RQD %	Dip °		
		Run #2: BVMDC 5.59m-7.03m, rec.=1.37m See Geologist's Report	2	91	85	30-60		
		Hole stopped @ 7.02m						
GEOLOGIST'S REPORT:								
Run #1: Gray quartz-chlorite muscovite schist. Hard. Unweathered. Competent.								
Run #2: Same as Run #1.								

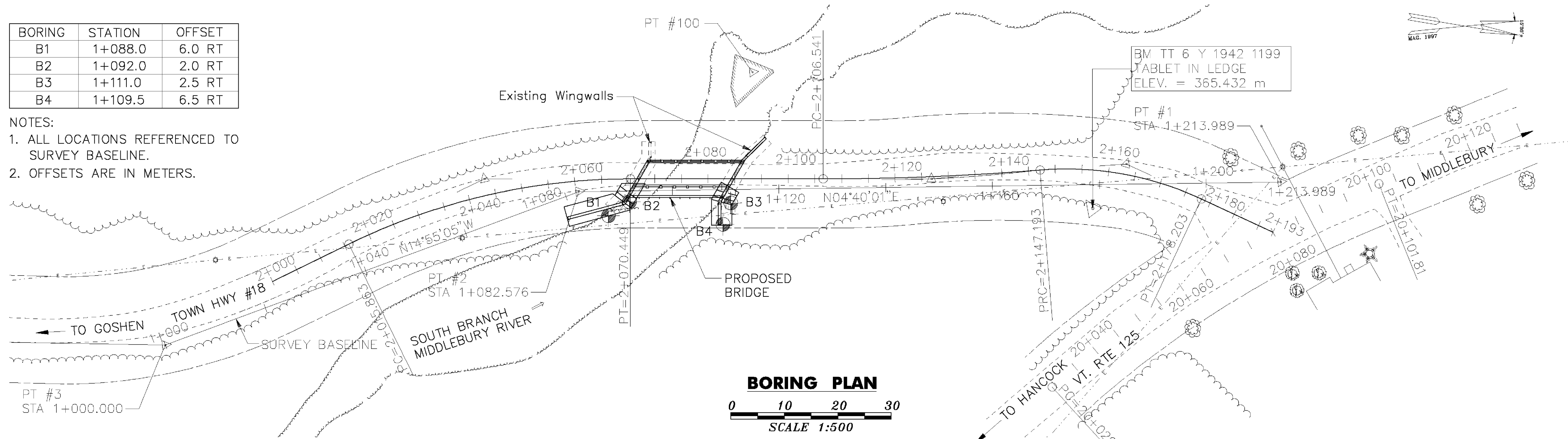
STATE OF VERMONT AGENCY OF TRANSPORTATION MATERIALS & RESEARCH DIVISION SUBSURFACE INFORMATION		HOLE NO. : B2 SHEET 1 OF 1 DATE STARTED: 7/17/98 DATE COMPLETED: 7/22/98						
PROJECT NAME: RIPTON SITE NAME: BR-17 STATION: 1+092.00 GROUND EL.: 350.412		PROJECT NUMBER: FH 010-1(2) SITE NO.: TH-18 OFFSET: 2.00 G.W. DEPTH:						
BORING CREW: CREW CHIEF: DRILLER: WILLIS LOGGERS: MERRILL, ADDITIONAL CREW:		BORING RIC: SKID RIC BORING TYPE: WASH BORE SAMPLE TYPE: SPLIT BARREL						
DEPTH	SYMBOL	CLASSIFICATION OF MATERIALS (Description)	BLOWS PER 0.3 m	M.C. %	GRAVEL SAND %	FINES %	LL	PI
		BVC 1.02m-2.59m, Coarse Gravel & Boulders	R					
		Top of Rock @ 2.20m						
		Run #1: BVMDC 2.70m-4.20m, rec.=0.74m See Geologist's Report	1	49	49	60		
		Run #2: BVMDC 4.22m-4.80m, rec.=0.40m, See Geologist's Report	2	67	67	60		
		Run #3: BVMDC 4.83m-6.30m, rec.=1.30m See Geologist's Report	3	67	67	60		
		Hole stopped @ 6.30m						
GEOLOGIST'S REPORT:								
Run #1: Gray quartz-chlorite muscovite schist. Hard. Unweathered. Fair to poor recovery. Rock recovered is competent.								
Run #2: Same as Run #1, except with a greater amount of muscovite.								
Run #3: Upper 0.3m is the same as Run #2. The remainder of the run is the same as Run #1.								

STATE OF VERMONT AGENCY OF TRANSPORTATION MATERIALS & RESEARCH DIVISION SUBSURFACE INFORMATION		HOLE NO. : B3 SHEET 1 OF 1 DATE STARTED: 7/20/98 DATE COMPLETED: 8/4/98						
PROJECT NAME: RIPTON SITE NAME: BR-17 STATION: 1+111.00 GROUND EL.: 363.125		PROJECT NUMBER: FH 010-1(2) SITE NO.: TH-18 OFFSET: 2.50 G.W. DEPTH:						
BORING CREW: CREW CHIEF: DRILLER: WILLIS LOGGERS: MERRILL, ADDITIONAL CREW:		BORING RIC: SKID RIC BORING TYPE: WASH BORE SAMPLE TYPE: SPLIT BARREL						
DEPTH	SYMBOL	CLASSIFICATION OF MATERIALS (Description)	BLOWS PER 0.3 m	M.C. %	GRAVEL SAND %	FINES %	LL	PI
		No rec. Boulders.	R					
		No rec. Boulders.	R					
		A-1-a, 5.5Gr, Dry, brn, rec.=0.15m	R	9.2	50	37.5	17.4	
		Run #1: BVMDC 6.70m-8.20m, rec.=1.32m See Geologist's Report	1	88	74	50		
		Run #2: BVMDC 8.22m-9.72m, rec.=1.50m See Geologist's Report	2	100	80	50		
		Hole stopped @ 9.72m						
GEOLOGIST'S REPORT:								
Run #1: Gray quartz-chlorite muscovite schist. Hard. Unweathered. Competent.								
Run #2: Same as Run #1, except with a greater amount of muscovite.								

STATE OF VERMONT AGENCY OF TRANSPORTATION MATERIALS & RESEARCH DIVISION SUBSURFACE INFORMATION		HOLE NO. : B4 SHEET 1 OF 1 DATE STARTED: 8/5/98 DATE COMPLETED: 8/10/98						
PROJECT NAME: RIPTON SITE NAME: BR-17 STATION: 1+093.00 GROUND EL.: 363.341		PROJECT NUMBER: FH 010-1(2) SITE NO.: TH-18 OFFSET: 6.50 G.W. DEPTH:						
BORING CREW: CREW CHIEF: DRILLER: WILLIS LOGGERS: MERRILL, ADDITIONAL CREW:		BORING RIC: SKID RIC BORING TYPE: WASH BORE SAMPLE TYPE: SPLIT BARREL						
DEPTH	SYMBOL	CLASSIFICATION OF MATERIALS (Description)	BLOWS PER 0.3 m	M.C. %	GRAVEL SAND %	FINES %	LL	PI
		No rec. Boulders.	R					
		A-1-a, 5.5Gr, Dry, brn, rec.=0.15m	R	33	9.3	50.6	42.5	6.9
		No rec. Boulders.	R					
		A-1-a, 5.5Gr, Dry, brn, rec.=0.30m	R	9.4	47.6	31.4	21	
		Run #1: BVMDC 7.20m-7.80m, rec.=0.28m, See Geologist's Report	1	47	40	50		
		Run #2: BVMDC 7.80m-8.70m, rec.=0.53m See Geologist's Report	2	59	37	60		
		Run #3: BVMDC 8.70m-10.20m, rec.=1.50m See Geologist's Report	3	100	33	50		
		Hole stopped @ 10.20m						
GEOLOGIST'S REPORT:								
Run #1: Gray quartz-chlorite muscovite schist. Hard. Unweathered. Competent.								
Run #2: Same as Run #1, except that the upper 0.20m contains a greater amount of muscovite.								
Run #3: Same as Run #1. Joints are open, weathered, and rough. Vertical joint from 8.1 meters to 10.0 meters.								

BORING	STATION	OFFSET
B1	1+088.0	6.0 RT
B2	1+092.0	2.0 RT
B3	1+111.0	2.5 RT
B4	1+109.5	6.5 RT

- NOTES:
- ALL LOCATIONS REFERENCED TO SURVEY BASELINE.
 - OFFSETS ARE IN METERS.



GENERAL NOTES

- The subsurface explorations shown herein were made between July 23, and August 10, 1998 by the Agency.
- 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.
- 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.
- Terminology used on boring logs to describe the hardness, degree of weathering, and spacing of fractures, joints and other discontinuities in the bedrock is defined in the AASHTO Manual on Subsurface Investigations, 1988.

REVISIONS

- REVISED WEST EDGE OF RIVER LINE.
- REVISED WINGWALL 2



STATE OF VERMONT AGENCY OF TRANSPORTATION

Town Of	RIPTON	Bridge No.	BRIDGE #17
Highway No.	TH 18	Log Sta.	
		Surv. Sta.	
TH 18 OVER SOUTH BRANCH MIDDLEBURY RIVER			
BORING INFORMATION SHEET			
Designed By	B P GUZAS	Drawn By	W J GAYNOR
Checked By	Y I LIU	Date	8/09
		Bridge Design Supervisor	R L JOY
		Date	10/09
PROJECT	RIPTON	PROJECT NO.	FH 010-1(2)
I.G.C. Info.			
Bridge Sheet No.		Sheet	13R of 26