

# PRELIMINARY INFORMATION SHEET



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## FINAL HYDRAULIC REPORT

**HYDROLOGIC DATA** Date: 05/02/01

DRAINAGE AREA: 68 sq km  
 CHARACTER OF TERRAIN: Forested, rolling to hilly  
 STREAM CHARACTERISTICS: Straight with some moderate meandering  
 NATURE OF STREAMBED: gravel, cobbles, boulders, some ledge

**PEAK FLOW DATA**

Q 2.33 = 42 cms	Q 50 = 113 cms
Q 10 = 71 cms	Q 100 = 136 cms
Q 25 = 92 cms	Q 500 = 215 cms

DATE OF FLOOD OF RECORD: Unknown  
 ESTIMATED DISCHARGE: Unknown  
 WATER SURFACE ELEV.: Unknown  
 NATURAL STREAM VELOCITY: @ Q25 = 4.0 mps  
 ICE CONDITIONS: Minor  
 DEBRIS: Moderate  
 DOES THE STREAM REACH MAXIMUM HIGHWATER ELEV. RAPIDLY? yes  
 IS ORDINARY RISE RAPID? yes  
 IS STAGE AFFECTED BY UPSTREAM OR DOWNSTREAM CONDITIONS? no  
 IF YES, DESCRIBE: N/A

WATERSHED STORAGE: 10% HEADWATERS: X  
 UNIFORM: \_\_\_\_\_  
 IMMEDIATELY ABOVE SITE: \_\_\_\_\_

### EXISTING STRUCTURE INFORMATION

STRUCTURE TYPE: Single Span Wooden Covered Bridge  
 YEAR BUILT: 1879  
 CLEAR SPAN(NORMAL TO STREAM): 16.8 m  
 VERTICAL CLEARANCE ABOVE STREAMBED: 4.6m (avg low steel = 125.0m)  
 WATERWAY OF FULL OPENING: 74 sm  
 DISPOSITION OF STRUCTURE: Retain for Pedestrian use  
 TYPE OF MATERIAL UNDER SUBSTRUCTURE: Unknown

WATER SURFACE ELEVATIONS AT:

Q2.33 = 122.1 m	VELOCITY = 3.4 mps
Q10 = 122.7 m	" 4.3 mps
Q25 = 123.2 m	" 4.8 mps
Q50 = 123.5 m	" 5.2 mps
Q100 = 123.9 m	" 5.6 mps

LONG TERM STREAMBED CHANGES: 0.3m scour through bridge area

IS THE ROADWAY OVERTOPPED BELOW Q100: no  
 FREQUENCY: Greater than Q100  
 RELIEF ELEVATION: 126m  
 DISCHARGE OVER ROAD @Q100: N/A

### UPSTREAM STRUCTURE

TOWN: Brattleboro DISTANCE: 460m  
 HIGHWAY #: TH 372 STRUCTURE #: BR 51  
 CLEAR SPAN: 15.2 m CLEAR HEIGHT: 3.0 m  
 YEAR BUILT: 1994 FULL WATERWAY: 44 sm  
 STRUCTURE TYPE: Concrete Slab Bridge

### DOWNSTREAM STRUCTURE

TOWN: Brattleboro DISTANCE: 1040m  
 HIGHWAY #: 191 SB STRUCTURE #: 6-S  
 CLEAR SPAN: 120.4 m CLEAR HEIGHT: 24.4m  
 YEAR BUILT: 1960 FULL WATERWAY: 2900 sm  
 STRUCTURE TYPE: 3 span plate girder bridge

### LOAD FACTOR - LOAD RATING (METRIC TONS)

LOADING LEVELS	TRUCK						
	M	MS	3S2	6 AXLE	3A. STR.	4A. STR.	5A. SEMI
INVENTORY	30	43					
POSTED	42	60	70		56	57	65
OPERATING		72	83	97	67	68	

COMMENTS:

### TRAFFIC DATA

YEAR	ADT	DHV	% D	% T	ADTT
2001	3660	505	57	4	115
2021	4750	645	57	3	130

20 year ESAL for flexible pavement from 2001 to 2021 : 1,687,000  
 40 year ESAL for flexible pavement from 2001 to 2041 : 3,881,000  
 Design Speed: 40 km/h

### PROPOSED STRUCTURE

STRUCTURE TYPE: Single Span Plate Girder Bridge on Integral Abutments

CLEAR SPAN(NORMAL TO STREAM): 26.5m  
 VERTICAL CLEARANCE ABOVE STREAMBED: 5.0 m  
 WATERWAY OF FULL OPENING: 103 sm

WATER SURFACE ELEVATIONS AT:

Q2.33 = 122.1 m	VELOCITY = 3.0 mps
Q10 = 122.7 m	" 3.7 mps
Q25 = 123.1 m	" 4.0 mps
Q50 = 123.5 m	" 4.3 mps
Q100 = 123.9 m	" 4.6 mps

IS THE ROADWAY OVERTOPPED BELOW Q100: no  
 FREQUENCY: greater than Q100  
 RELIEF ELEVATION: 126.6 m  
 DISCHARGE OVER ROAD @Q100: N/A

AVERAGE LOW ELEVATION OF SUPERSTRUCTURE: 124.9 m  
 VERTICAL CLEARANCE: @ Q25 = 1.8 m

SCOUR: No Contraction Scour @ Q100.

REQUIRED CHANNEL PROTECTION: Type IV

### PERMIT INFORMATION

AVERAGE DAILY FLOW: 1.5 cms DEPTH OR ELEVATION:  
 ORDINARY LOW WATER: 0.7 cms 0.1 m  
 ORDINARY HIGH WATER: 18 cms 0.6 m

### TEMPORARY BRIDGE REQUIREMENTS

STRUCTURE TYPE: TRAFFIC WILL BE DETOURED  
 CLEAR SPAN (NORMAL TO STREAM): \_\_\_\_\_  
 VERTICAL CLEARANCE ABOVE STREAMBED: \_\_\_\_\_  
 WATERWAY AREA OF FULL OPENING: \_\_\_\_\_

### ADDITIONAL INFORMATION

Water surface elevations are reported upstream of the existing covered bridge for both the existing and proposed structures. Velocities are reported at the indicated bridge.

### DESIGN CRITERIA

- DESIGN LIVE LOAD AASHTO MS 22.5
- DESIGN SPAN 27.5 m
- ALLOWABLE LOAD FOR SPREAD FOOTINGS ON SOIL N/A  
ON LEDGE N/A
- ALLOWABLE LOAD FOR PILING SEE GENERAL NOTES SHEET  
TYPE STEEL PILING, HP 310x125(HP 12 X 84) Fy=345 kPa (50 ksi)  
ESTIMATED LENGTH ABUT. NO. 1 = 16 m +/- ABUT. NO. 2 = 5 m +/-
- STRUCTURAL STEEL AASHTO M270M/M270 GRADE 345W
- REINFORCING STEEL GRADE 420
- CONCRETE, HIGH PERFORMANCE CLASS A, LOW CEMENT fc: 30 Mpa  
CONCRETE, HIGH PERFORMANCE CLASS B fc: 25 Mpa
- DESIGN SOIL UNIT WEIGHT 22.00 kN/m<sup>3</sup>
- DESIGN LOAD FOR SPREAD FOOTINGS ON SOIL N/A

### TRAFFIC MAINTENANCE

- IS TRAFFIC TO BE MAINTAINED? NO\*  
IF YES, ON EXISTING STRUCTURE? NO  
OR ON TEMPORARY BRIDGE? N/A  
ONE OR TWO-WAY TRAVEL? N/A
- TRAFFIC CONTROL SIGNALS REQUIRED? NO
- ARE SIDEWALKS REQUIRED? NO  
IF SO, ON WHAT SIDE? N/A

\*PEDESTRIAN/BICYCLE TRAFFIC WILL BE MAINTAINED ON EXISTING COVERED BRIDGE.

PROJECT NAME: BRATTLEBORO

PROJECT NUMBER: BRF 2000(21)S

FILE NAME: 196j228Structures\metpi.xls PLOT DATE: 4/27/2009  
 PROJECT MANAGER: R. WHITCOMB DRAWN BY: D. PETERSON  
 DESIGNED BY: C. CARLSON CHECKED BY: C. CARLSON  
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