

# PRELIMINARY INFORMATION SHEET



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FINAL HYDRAULIC REPORT

**HYDROLOGIC DATA** Date: 2/4/02

DRAINAGE AREA : 6.9 sq. km  
 CHARACTER OF TERRAIN : Hilly to mountainous, mostly forested.  
 STREAM CHARACTERISTICS : Perennial, alluvial, sinuous, and locally anabranching.  
 NATURE OF STREAMBED : Cobbles, boulders and gravel.

PEAK FLOW DATA

Q 2.33 = 7.6 cms	Q 50 = 18.4 cms
Q 10 = 12.7 cms	Q 100 = 21.2 cms
Q 25 = 15.6 cms	Q 500 = 34.0 cms

DATE OF FLOOD OF RECORD: Unknown  
 ESTIMATED DISCHARGE: Unknown  
 WATER SURFACE ELEV.: Unknown  
 NATURAL STREAM VELOCITY: @ Q25 = 2.8 mps  
 ICE CONDITIONS: Moderate  
 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:

WATERSHED STORAGE: 2% HEADWATERS: X  
 UNIFORM: X  
 IMMEDIATELY ABOVE SITE:

**EXISTING STRUCTURE INFORMATION**

STRUCTURE TYPE: Steel beam bridge with timber deck.  
 YEAR BUILT: Unknown  
 CLEAR SPAN(NORMAL TO STREAM): 5.2 m  
 VERTICAL CLEARANCE ABOVE STREAMBED: 1.5 m (Low Beam El. 501.0 m)  
 WATERWAY OF FULL OPENING: 6.7 sq. m  
 DISPOSITION OF STRUCTURE: Remove  
 TYPE OF MATERIAL UNDER SUBSTRUCTURE: Unknown

WATER SURFACE ELEVATIONS AT:

Q2.33 = 500.7 m	VELOCITY = 2.4 mps*
Q10 = 501.0 m	" 2.8 mps*
Q25 = 501.2 m	" 1.6 mps*
Q50 = 501.3 m	" 1.7 mps*
Q100 = 501.4 m	" 1.8 mps*

LONG TERM STREAMBED CHANGES: No changes noted. The channel appears stable.

IS THE ROADWAY OVERTOPPED BELOW Q100: Yes  
 FREQUENCY: About Q2.33  
 RELIEF ELEVATION: 500.6 m  
 DISCHARGE OVER ROAD @Q100: 7.5 cms

**UPSTREAM STRUCTURE**

TOWN: None DISTANCE: \_\_\_\_\_  
 HIGHWAY #: \_\_\_\_\_ STRUCTURE #: \_\_\_\_\_  
 CLEAR SPAN: \_\_\_\_\_ CLEAR HEIGHT: \_\_\_\_\_  
 YEAR BUILT: \_\_\_\_\_ FULL WATERWAY: \_\_\_\_\_  
 STRUCTURE TYPE: \_\_\_\_\_

**DOWNSTREAM STRUCTURE**

TOWN: Chittenden DISTANCE: 160 m  
 HIGHWAY #: T.H. 23 STRUCTURE #: 19  
 CLEAR SPAN: 4.3 m CLEAR HEIGHT: 2.0 m  
 YEAR BUILT: Unknown FULL WATERWAY: 7.5 sq. m  
 STRUCTURE TYPE: Steel beam bridge with timber deck

**LOAD FACTOR - LOAD RATING (TONS)**

LOADING LEVELS	TRUCK						
	M	MS	3S2	6 AXLE	3A. STR.	4A. STR.	SA SEM
INVENTORY	31	48					
POSTED	43	67	86		51	52	85
OPERATING		80	102	95	60	62	

**TRAFFIC DATA**

YEAR	ADT	DHV	% D	% T	ADTT
2004	60	25	58	3	<5
2024	80	30	58	3	5

20 year ESAL for flexible pavement from 2004 to 2024 : <50,000  
 40 year ESAL for flexible pavement from 2004 to 2044 : <50,000  
 Design Speed : 50 km/h

**PROPOSED STRUCTURE**

STRUCTURE TYPE: Single span concrete slab bridge.

CLEAR SPAN(NORMAL TO STREAM): 8.4 m  
 VERTICAL CLEARANCE ABOVE STREAMBED: 1.8 m  
 WATERWAY OF FULL OPENING: 11.6 sq. m

WATER SURFACE ELEVATIONS AT:

Q2.33 = 500.7 m	VELOCITY = 2.1 mps*
Q10 = 501.0 m	" 2.5 mps*
Q25 = 501.1 m	" 2.6 mps*
Q50 = 501.2 m	" 2.7 mps*
Q100 = 501.3 m	" 2.7 mps*

IS THE ROADWAY OVERTOPPED BELOW Q100: Yes  
 FREQUENCY: Just above Q25  
 RELIEF ELEVATION: 501.1 m \*\*  
 DISCHARGE OVER ROAD @Q100: 0.1 cms

AVERAGE LOW ELEVATION OF SUPERSTRUCTURE: 501.3 m on upstream side  
 VERTICAL CLEARANCE: @ Q25 = 0.2 m

SCOUR: 0.4 m of contraction scour up to Q500. Abutments will be protected against abutment scour by stone fill.  
 REQUIRED CHANNEL PROTECTION: Stone Fill, Type IV

**PERMIT INFORMATION**

AVERAGE DAILY FLOW: 0.2 cms DEPTH OR ELEVATION:  
 ORDINARY LOW WATER: 0.1 cms Depth = 0.1 m  
 ORDINARY HIGH WATER: 4.0 cms Depth = 0.6 m

**TEMPORARY BRIDGE REQUIREMENTS**

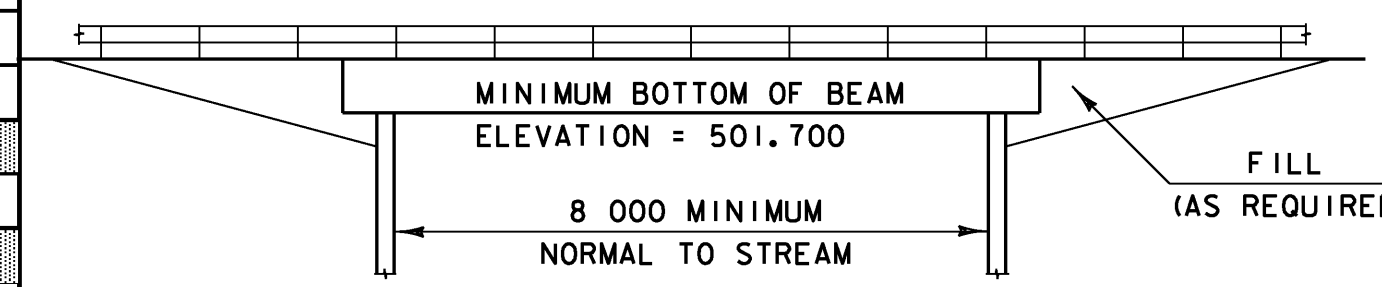
STRUCTURE TYPE: Single span bridge  
 CLEAR SPAN (NORMAL TO STREAM): 8.0 m minimum  
 VERTICAL CLEARANCE ABOVE STREAMBED: Minimum elevation 501.7 m  
 WATERWAY AREA OF FULL OPENING: 11.5 sq. m. minimum

**ADDITIONAL INFORMATION**

\* Velocities listed are the average total velocity of the channel and any roadway overflow.  
 \*\* Based on a berm being constructed to elevation 501.1 m, at about station 1+210 right, to prevent floodwaters from bypassing the bridge and flowing down the ditch to the west.

- DESIGN CRITERIA**
- DESIGN LIVE LOAD AASHTO MS-22.5
  - DESIGN SPAN 9.1m
  - ALLOWABLE LOAD FOR SPREAD FOOTINGS ON SOIL 190 kPa ON LEDGE N/A
  - ALLOWABLE LOAD FOR PILING N/A TYPE N/A ESTIMATED LENGTH N/A
  - STRUCTURAL STEEL AASHTO M270/M270M GRADE N/A
  - REINFORCING STEEL GRADE 420
  - CONCRETE CLASS A (HPC-A) f'c: N/A CONCRETE CLASS B (HPC-B) f'c: 25 Mpa
  - SOIL UNIT WEIGHT 22.00 kN/m<sup>3</sup>
  - DESIGN LOAD FOR SPREAD FOOTINGS ON SOIL 392 kPa

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



**TEMPORARY BRIDGE DETOUR DETAIL (BRIDGE 20)**  
(NOT TO SCALE)

PROJECT NAME: CHITTENDEN  
 PROJECT NUMBER: STP 1443(46)

FILE NAME: /96j238/str/sj238pl.xls PLOT DATE: 4/29/2009  
 PROJECT MANAGER: C. CARLSON DRAWN BY: J. GILMORE  
 DESIGNED BY: K. UPMAL CHECKED BY: C. CARLSON  
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