

PRELIMINARY INFORMATION SHEET



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FINAL HYDRAULIC REPORT

HYDROLOGIC DATA

Date: 1/17/02

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 = 3.4 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): 4.6 m upstream and 4.3 m downstream
 VERTICAL CLEARANCE ABOVE STREAMBED: 2.0 m (Low Beam El. 495.2 m)
 WATERWAY OF FULL OPENING: 7.5 sq. m
 DISPOSITION OF STRUCTURE: Remove
 TYPE OF MATERIAL UNDER SUBSTRUCTURE: Unknown

WATER SURFACE ELEVATIONS AT:

Q2.33 = 494.2 m VELOCITY = 3.1 mps
 Q10 = 494.6 m " 3.8 mps
 Q25 = 494.8 m " 4.1 mps
 Q50 = 495.0 m " 4.4 mps
 Q100 = 495.1 m " 4.5 mps

LONG TERM STREAMBED CHANGES: There is about 0.3 m of scour along the north abutment. No other changes were noted. The channel appears stable.

IS THE ROADWAY OVERTOPPED BELOW Q100: No
 FREQUENCY: Above Q100
 RELIEF ELEVATION: 495.4 m
 DISCHARGE OVER ROAD @Q100: None

UPSTREAM STRUCTURE

TOWN: Chittenden DISTANCE: 160 m
 HIGHWAY #: T.H. 23 STRUCTURE #: 20
 CLEAR SPAN: 5.2 m CLEAR HEIGHT: 1.7 m
 YEAR BUILT: Unknown FULL WATERWAY: 7.5 sq. m
 STRUCTURE TYPE: Steel beam bridge with timber deck

DOWNSTREAM STRUCTURE

TOWN: Chittenden DISTANCE: 550 m
 HIGHWAY #: T.H. 23 STRUCTURE #: 22
 CLEAR SPAN: 5.8 m CLEAR HEIGHT: 1.7 m
 YEAR BUILT: Unknown FULL WATERWAY: N.A.
 STRUCTURE TYPE: Corrugated metal plate arch

LOAD FACTOR - LOAD RATING (TONS)

LOADING LEVELS	TRUCK						
	M	MS	3S2	6 AXLE	3A. STR.	4A. STR.	SA. SEMI
INVENTORY	34	47					
POSTED	48	65	93		54	57	81
OPERATING		78	111	106	64	68	

COMMENTS:

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): 10.1 m
 VERTICAL CLEARANCE ABOVE STREAMBED: 2.4 m
 WATERWAY OF FULL OPENING: 19.0 sq. m

WATER SURFACE ELEVATIONS AT:

Q2.33 = 494.0 m VELOCITY = 1.9 mps
 Q10 = 494.3 m " 2.1 mps
 Q25 = 494.4 m " 2.2 mps
 Q50 = 494.6 m " 2.4 mps
 Q100 = 494.7 m " 2.6 mps

IS THE ROADWAY OVERTOPPED BELOW Q100: No
 FREQUENCY: Above Q100
 RELIEF ELEVATION: 495.6 m
 DISCHARGE OVER ROAD @Q100: None

AVERAGE LOW ELEVATION OF SUPERSTRUCTURE: 495.4 m on upstream side
 VERTICAL CLEARANCE: @ Q100 = 0.7 m

SCOUR: 0 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: Traffic will be maintained on the existing bridge.
 CLEAR SPAN (NORMAL TO STREAM):
 VERTICAL CLEARANCE ABOVE STREAMBED:
 WATERWAY AREA OF FULL OPENING:

ADDITIONAL INFORMATION

The new bridge is to be located about 10 m downstream of the existing bridge. Water surface elevations for each bridge are listed at a point just upstream of the indicated bridge.

DESIGN CRITERIA

- DESIGN LIVE LOAD AASHTO MS-22.5
- DESIGN SPAN 12.6m
- 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/m³
- DESIGN LOAD FOR SPREAD FOOTINGS ON SOIL 392 kPa

TRAFFIC MAINTENANCE

- IS TRAFFIC TO BE MAINTAINED? YES
 IF YES, ON EXISTING STRUCTURE? EXISTING STRUCTURE
 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

PROJECT NAME: CHITTENDEN
 PROJECT NUMBER: STP 1443(45)

FILE NAME: /96j236/str/sj236pi.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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