STATE OF VERMONT
AGENCY OF TRANSPORTATION

PRELIMINARY INFORMATION SHEET

Metric

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FINAL HYDRAULIC REPORT

HYDROLOGIC DATA

Date: March 1, 2001

DRAINAGE AREA: 72.6 sq. km
CHARACTER OF TERRAIN: Hilly, forested upland, developed suburban & urban lowlands
STREAM CHARACTERISTICS: Perennial, non-alluvial, sinuous, not braided or anabranched
NATURE OF STREAMBED: Ledge with some gravel and cobble deposits

PEAK FLOW DATA

Q 2.33 =	42 cms	Q 50 =	161 cms
Q 10 =	96 cms	Q 100 =	224 cms
Q 25 =	142 cms	Q 500 =	346 cms

DATE OF FLOOD OF RECORD: Unknown
ESTIMATED DISCHARGE: Unknown
WATER SURFACE ELEV.: Unknown
NATURAL STREAM VELOCITY: @ Q50 = Unknown
ICE CONDITIONS: Moderate
DEBRIS: Moderate
DOES THE STREAM REACH MAXIMUM HIGHWATER ELEV. RAPIDLY? No
IS ORDINARY RISE RAPID? No
IS STAGE AFFECTED BY UPSTREAM OR DOWNSTREAM CONDITIONS? No
IF YES, DESCRIBE:

WATERSHED STORAGE: 1% HEADWATERS: UNIFORM: X IMMEDIATELY ABOVE SITE:

EXISTING STRUCTURE INFORMATION

STRUCTURE TYPE: Single-span steel girder bridge
YEAR BUILT: 1938
CLEAR SPAN(NORMAL TO STREAM): 15.1 m
VERTICAL CLEARANCE ABOVE STREAMBED: 4.8 m (Ave. low beam = 76.3 m)
WATERWAY OF FULL OPENING: 65 sq. m
DISPOSITION OF STRUCTURE: Re-using abutments in rehabilitation
TYPE OF MATERIAL UNDER SUBSTRUCTURE: Ledge

WATER SURFACE ELEVATIONS AT:

Q2.33 =	Unknown	VELOCITY =	Unknown
Q10 =	72.8 m *	"	Unknown
Q25 =	Unknown	"	Unknown
Q50 =	73.5 m *	"	Unknown
Q100 =	74.0 m *	"	Unknown

LONG TERM STREAMBED CHANGES: None noted

IS THE ROADWAY OVERTOPPED BELOW Q100: No
FREQUENCY: > Q100
RELIEF ELEVATION: 77.4 m
DISCHARGE OVER ROAD @Q100: None

UPSTREAM STRUCTURE

TOWN: Brattleboro — DISTANCE: 425 m
HIGHWAY #: TH 438 (FAU Elm St.) — STRUCTURE #: Br#32
CLEAR SPAN: 25.6 m — CLEAR HEIGHT: 4.6 m
YEAR BUILT: 1999 — FULL WATERWAY: Unknown
STRUCTURE TYPE: Single-span prestressed concrete box girder bridge

DOWNSTREAM STRUCTURE

TOWN: Brattleboro — DISTANCE: 90 m
HIGHWAY #: Railroad — STRUCTURE #: Unknown
CLEAR SPAN: Unknown — CLEAR HEIGHT: Unknown
YEAR BUILT: Unknown — FULL WATERWAY: Unknown
STRUCTURE TYPE: Stone and concrete arch bridge

LOAD FACTOR LOAD RATING (TONS)

LOADING LEVELS	TRUCK M	MS	3S2	5 AXLE	3A. STR.	4A. STR.	SA. SEMI
INVENTORY	35	43					
POSTED	49	60	80		54	55	69
OPERATING		71	95	110	64	66	

COMMENTS: SERVICEABILITY GOVERNS

TRAFFIC DATA

YEAR	ADT	DHV	% D	% T	ADTT
1999	15260	1526	54	2	765
2019	19730	1975	54	2	950

20 year ESAL for flexible pavement: 1999 to 2019 : 7,338,000
40 year ESAL for flexible pavement: 1999 to 2039 : 22,496,000
Design Speed: 40 km/h

PROPOSED STRUCTURE

STRUCTURE TYPE: Single-span steel girder bridge
CLEAR SPAN(NORMAL TO STREAM): 15.1 m
VERTICAL CLEARANCE ABOVE STREAMBED: 5.1 m
WATERWAY OF FULL OPENING: 73 sq. m

WATER SURFACE ELEVATIONS AT:

Q2.33 =	Unknown	VELOCITY=	Unknown
Q10 =	72.8 m *	"	Unknown
Q25 =	Unknown	"	Unknown
Q50 =	73.5 m *	"	Unknown
Q100 =	74.0 m *	"	Unknown

IS THE ROADWAY OVERTOPPED BELOW Q100: No
FREQUENCY: > Q100
RELIEF ELEVATION: 77.4 m
DISCHARGE OVER ROAD @Q100: None

AVERAGE LOW ELEVATION OF SUPERSTRUCTURE: 75.8 m
VERTICAL CLEARANCE: @ Q50 = 2.3 m

SCOUR: None, Channel bottom & Abutments on Ledge
REQUIRED CHANNEL PROTECTION: N/A

PERMIT INFORMATION

AVERAGE DAILY FLOW:	2 cms	DEPTH OR ELEVATION:
ORDINARY LOW WATER:	1 cms	0.3 m
ORDINARY HIGH WATER:	18 cms	0.6 m

TEMPORARY BRIDGE REQUIREMENTS

STRUCTURE TYPE: N/A
CLEAR SPAN (NORMAL TO STREAM): N/A
VERTICAL CLEARANCE ABOVE STREAMBED: N/A
WATERWAY AREA OF FULL OPENING: N/A

ADDITIONAL INFORMATION

* Water Surface Elevations taken from FEMA Flood Insurance Study for the Town of Brattleboro, Dated Dec. 4, 1985

Note: A detailed hydraulic analysis was not performed due to limited survey and the fact that this is a rehabilitation of a hydraulically adequate bridge with no new adverse hydraulic conditions.

DESIGN CRITERIA

1. DESIGN LIVE LOAD AASHTO: MS 22.5
2. DESIGN SPAN: 19m ALONG CENTERLINE U.S. 5
3. ALLOWABLE LOAD FOR SPREAD FOOTINGS ON SOIL: N/A
   ON LEDGE
4. ALLOWABLE LOAD FOR PILING: N/A
   TYPE: N/A
   ESTIMATED LENGTH: N/A
5. STRUCTURAL STEEL, AASHTO M270/M270M GRADE: 345W
6. REINFORCING STEEL GRADE: 420
7. CONCRETE CLASS A (HPC-A) f'c: 30 MPa
   CONCRETE CLASS B (HPC-B) f'c: 25 MPa
8. SOIL UNIT WEIGHT: 22.00 Kn/m³
9. DESIGN LOAD FOR SPREAD FOOTINGS ON SOIL: N/A

TRAFFIC MAINTENANCE

1. IS TRAFFIC TO BE MAINTAINED? YES
   IF YES, ON EXISTING STRUCTURE? YES, (COMBINATION ON BRIDGE & DETOUR)
   OR ON TEMPORARY BRIDGE? N/A
   ONE OR TWO-WAY TRAVEL? N/A
2. TRAFFIC CONTROL SIGNALS REQUIRED? NO
3. ARE SIDEWALKS REQUIRED? YES, ON DOWNSTREAM SIDE OF EXISTING
   IF SO, ON WHAT SIDE? BRIDGE DURING PHASE ONE, UPSTREAM SIDE OF NEW BRIDGE DURING PHASE TWO.

PROJECT NAME: **BRATTLEBORO**
PROJECT NUMBER: **BHF 2000 (17)**

FILE NAME: 194)078\Structures\sj078pi.xls — PLOT DATE: 01/28/2003
PROJECT MANAGER: R. R. WHITCOMB — DRAWN BY: G. ROY
DESIGNED BY: T. SUMNER — CHECKED BY: T. SUMNER
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