

PRELIMINARY INFORMATION SHEET

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FINAL HYDRAULIC REPORT

HYDROLOGIC DATA Date: 11/21/03

DRAINAGE AREA : 86.0 sq. mi.
 CHARACTER OF TERRAIN : Rolling to mountainous
 STREAM CHARACTERISTICS : Meandering, partially bounded by retaining walls and buildings.
 NATURE OF STREAMBED : Sand, gravel and cobbles.

PEAK FLOW DATA

Q 2.33 = 2,500 cfs	Q 50 = 7,850 cfs
Q 10 = 5,340 cfs	Q 100 = 8,980 cfs
Q 25 = 6,800 cfs	Q 500 = 11,800 cfs

DATE OF FLOOD OF RECORD: November 1927
 ESTIMATED DISCHARGE: Unknown
 WATER SURFACE ELEV.: 610.0'
 NATURAL STREAM VELOCITY: @ Q25 = 3.8 fps
 ICE CONDITIONS: Moderate
 DEBRIS: Slight to moderate
 DOES THE STREAM REACH MAXIMUM HIGHWATER ELEV. RAPIDLY? Yes
 IS ORDINARY RISE RAPID? Yes
 IS STAGE AFFECTED BY UPSTREAM OR DOWNSTREAM CONDITIONS? Maybe
 IF YES, DESCRIBE: There are no instream structures that affect the water surface elevations.
 At high flows buildings in the floodplain may affect water surface elevations.

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

EXISTING STRUCTURE INFORMATION

STRUCTURE TYPE: Single span steel pony truss.
 YEAR BUILT: 1928
 CLEAR SPAN(NORMAL TO STREAM): 106' **
 VERTICAL CLEARANCE ABOVE STREAMBED: 13.5' (Bot. of beams at el. 600.0')
 WATERWAY OF FULL OPENING: 1120 sq. ft. **
 DISPOSITION OF STRUCTURE: Remove
 TYPE OF MATERIAL UNDER SUBSTRUCTURE: See boring logs if available.

WATER SURFACE ELEVATIONS AT:

Q2.33 = 595.5'	VELOCITY = 4.0 fps
Q10 = 600.1'	" 3.7 fps
Q25 = 601.8'	" 4.0 fps
Q50 = 602.4'	" 4.2 fps
Q100 = 603.3'	" 4.3 fps

LONG TERM STREAMBED CHANGES: None noted.

IS THE ROADWAY OVERTOPPED BELOW Q100: Yes
 FREQUENCY: Below Q10.
 RELIEF ELEVATION: 598.0'
 DISCHARGE OVER ROAD @Q100: 4400 cfs

UPSTREAM STRUCTURE

TOWN: Barre City DISTANCE: 1375'
 HIGHWAY #: T.H. 7 (Prospect Street) STRUCTURE #: 7
 CLEAR SPAN: 50' CLEAR HEIGHT: 12'
 YEAR BUILT: 1947 FULL WATERWAY: 745 sq. ft.
 STRUCTURE TYPE: Steel beam bridge.

DOWNSTREAM STRUCTURE

TOWN: Barre City DISTANCE: 1850'
 HIGHWAY #: VT Route 62 STRUCTURE #: 12
 CLEAR SPAN: 2 spans at 26' = 52' total CLEAR HEIGHT: 15'
 YEAR BUILT: 1974 FULL WATERWAY: 780 sq. ft.
 STRUCTURE TYPE: Twin reinforced concrete box

IS THE ROADWAY OVERTOPPED BELOW Q100: Yes
 FREQUENCY: Below Q10.
 RELIEF ELEVATION: 598.0'
 DISCHARGE OVER ROAD @Q100: 4400 cfs

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LFD LOAD RATING (TONS)

LOADING LEVELS	TRUCK						
	H	HS	3S2	6 AXLE	3A. STR.	4A. STR.	SA SEMI
INVENTORY							
POSTED							
OPERATING							

COMMENTS:

TRAFFIC DATA

YEAR	ADT	DHV	% D	% T	ADTT
1993	2150	0	50	3	65
2013	2690	375	50	3	81

20 year ESAL for flexible pavement from 1993 to 2013 : 2,000,000
 40 year ESAL for flexible pavement from 1993 to 2033 : 5,000,000
 Design Speed : 30 mph

PROPOSED STRUCTURE

STRUCTURE TYPE: Single span steel truss bridge

CLEAR SPAN(NORMAL TO STREAM): 108'
 VERTICAL CLEARANCE ABOVE STREAMBED: 13.5'
 WATERWAY OF FULL OPENING: 1033 sf

WATER SURFACE ELEVATIONS AT:

Q2.33 = 595.5'	VELOCITY = 4.5 fps
Q10 = 599.9'	" 4.1 fps
Q25 = 601.2'	" 4.4 fps
Q50 = 602.1'	" 4.6 fps
Q100 = 602.9'	" 4.7 fps

IS THE ROADWAY OVERTOPPED BELOW Q100: Yes
 FREQUENCY: Below Q10
 RELIEF ELEVATION: 598.0'
 DISCHARGE OVER ROAD @Q100: Similar to existing conditions. (4400 cfs)

AVERAGE LOW ELEVATION OF SUPERSTRUCTURE: 600.0'
 VERTICAL CLEARANCE: @ Q10 = 0.1' (1.2' high average onto bottom chord at Q25)

SCOUR: 2.0' of contraction scour and degradation up to a Q500.

REQUIRED CHANNEL PROTECTION: Stone Fill, Type III

PERMIT INFORMATION

AVERAGE DAILY FLOW: 180 cfs DEPTH OR ELEVATION:
 ORDINARY LOW WATER: 80 cfs Depth = 0.5'
 ORDINARY HIGH WATER: 1070 cfs Depth = 2.0' (Elev. 589.0')

TEMPORARY BRIDGE REQUIREMENTS

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

ADDITIONAL INFORMATION

* The East Barre flood control dam reduces the peak flood flows to this site.

- DESIGN CRITERIA**
- DESIGN LIVE LOAD AASHTO HS-25
 - DESIGN SPAN 112.52 ft
 - ALLOWABLE LOAD FOR SPREAD FOOTINGS ON SOIL 5.02 ksf ON LEDGE
 - ALLOWABLE LOAD FOR PILING TYPE ESTIMATED LENGTH
 - STRUCTURAL STEEL AASHTO GRADE
 - REINFORCING STEEL GRADE 60
 - CONCRETE HIGH PERFORMANCE CLASS A f'c : 4000 psi
CONCRETE HIGH PERFORMANCE CLASS B f'c : 3500 psi
 - SOIL UNIT WEIGHT 140 pcf
 - DESIGN LOAD FOR SPREAD FOOTINGS ON SOIL 5.02 ksf

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

PROJECT NAME: BARRE CITY
 PROJECT NUMBER: HDP 9281(1)
 FILE NAME: SJ099PLXLS PLOT DATE: 5/26/2004
 PROJECT MANAGER: C. KELLER DRAWN BY: K. RUTTER
 DESIGNED BY: K. RUTTER CHECKED BY: T.A.SUMNER
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