

PRELIMINARY INFORMATION SHEET

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FINAL HYDRAULIC REPORT

HYDROLOGIC DATA Date: Jan. 8, 2009

DRAINAGE AREA: 11.0 sq. mi.
 CHARACTER OF TERRAIN: Hilly to mountainous, mostly forested.
 STREAM CHARACTERISTICS: Sinuous, slightly incised with a wide floodplain.
 NATURE OF STREAMBED: Mostly cobbles with some gravel.

PEAK FLOW DATA

Q 2.33 =	700 cfs	Q 50 =	2570 cfs
Q 10 =	1600 cfs	Q 100 =	3080 cfs
Q 25 =	2100 cfs	Q 500 =	4510 cfs

DATE OF FLOOD OF RECORD: September 1938
 ESTIMATED DISCHARGE: Unknown
 WATER SURFACE ELEV.: Unknown
 NATURAL STREAM VELOCITY: @ Q50 = 8.9 fps
 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: 1% HEADWATERS:
 UNIFORM:
 IMMEDIATELY ABOVE SITE:

EXISTING STRUCTURE INFORMATION

STRUCTURE TYPE: Single span steel beam bridge with concrete deck
 YEAR BUILT: 1924
 CLEAR SPAN(NORMAL TO STREAM): 39'
 VERTICAL CLEARANCE ABOVE STREAMBED: 7'
 WATERWAY OF FULL OPENING: 240 sq. ft.
 DISPOSITION OF STRUCTURE: Remove and replace
 TYPE OF MATERIAL UNDER SUBSTRUCTURE: See borings.

WATER SURFACE ELEVATIONS AT:

Q2.33 =	573.9'	VELOCITY =	7.1 fps
Q10 =	575.6'	-	10.8 fps
Q25 =	576.3'	-	9.4 fps
Q50 =	577.4'	-	6.6 fps
Q100 =	577.5'	-	7.7 fps

LONG TERM STREAMBED CHANGES: None noted.

IS THE ROADWAY OVERTOPPED BELOW Q100: Yes
 FREQUENCY: Between Q10 and Q25
 RELIEF ELEVATION: 576.1'
 DISCHARGE OVER ROAD @Q100: 1840 cfs

UPSTREAM STRUCTURE

TOWN: Chester DISTANCE: 5,500'
 HIGHWAY #: T.H. 3, VT Route 35 & FAS 0125 STRUCTURE #: 7
 CLEAR SPAN: 72' CLEAR HEIGHT: 7.5'
 YEAR BUILT: 1949 FULL WATERWAY:
 STRUCTURE TYPE: Single span steel beam bridge

DOWNSTREAM STRUCTURE

TOWN: Confluence with Middle Branch Williams River DISTANCE: 600'
 HIGHWAY #: STRUCTURE #:
 CLEAR SPAN: CLEAR HEIGHT:
 YEAR BUILT: FULL WATERWAY:
 STRUCTURE TYPE:

XXXX LOAD RATING (TONS)

LOADING LEVELS	TRUCK						
	H	HS	3S2	6 AXLE	3A STR.	4A STR.	5A SEM
INVENTORY							
POSTED							
OPERATING							

COMMENTS:

TRAFFIC DATA

YEAR	ADT	DHV	% D	% T	ADTT
2013	7200	1100	50	8.3	730
2033	8600	1300	50	10.8	1100

20 year ESAL for flexible pavement from 2013 to 2033 : 5,927,000
 40 year ESAL for flexible pavement from 2013 to 2053 : 13,731,000
 Design Speed : 30 mph

PROPOSED STRUCTURE

STRUCTURE TYPE: Single span pre-cast concrete beam bridge
 CLEAR SPAN(NORMAL TO STREAM): 53'
 VERTICAL CLEARANCE ABOVE STREAMBED: 7'
 WATERWAY OF FULL OPENING: 290 sq. ft.

WATER SURFACE ELEVATIONS AT:

Q2.33 =	573.9'	VELOCITY =	7.3 fps
Q10 =	575.5'	-	10.4 fps
Q25 =	576.3'	-	8.4 fps
Q50 =	576.8'	-	6.8 fps
Q100 =	577.2'	-	5.8 fps

IS THE ROADWAY OVERTOPPED BELOW Q100: Yes
 FREQUENCY: Between Q10 and Q25
 RELIEF ELEVATION: 576.1'
 DISCHARGE OVER ROAD @Q100: 1700 cfs

AVERAGE LOW ELEVATION OF SUPERSTRUCTURE: 577.1'
 VERTICAL CLEARANCE: @ Q50 = 0.3'

SCOUR: Less than 1' of contraction scour up to Q500.

REQUIRED CHANNEL PROTECTION: Stone Fill, Type III

PERMIT INFORMATION

AVERAGE DAILY FLOW:	20 cfs	DEPTH OR ELEVATION:	
ORDINARY LOW WATER:	10 cfs		0.5'
ORDINARY HIGH WATER:	300 cfs		2.0'

TEMPORARY BRIDGE REQUIREMENTS

STRUCTURE TYPE: No temporary bridge required. Traffic will use an offsite detour.
 CLEAR SPAN(NORMAL TO STREAM):
 VERTICAL CLEARANCE ABOVE STREAMBED:
 WATERWAY AREA OF FULL OPENING:

ADDITIONAL INFORMATION

DESIGN CRITERIA

- DESIGN LIVE LOAD AASHTO: HL-93
- DESIGN SPAN: 56 FEET
- ALLOWABLE LOAD FOR SPREAD FOOTINGS ON SOIL ON LEDGE
- ALLOWABLE LOAD FOR PILING TYPE ESTIMATED LENGTH ABUT #1 - 17', ABUT #2 - 7'
- STRUCTURAL STEEL AASHTO M270MM270 GRADE: N/A
- REINFORCING STEEL GRADE: 60
- CONCRETE, HIGH PERFORMANCE CLASS A f_c: 4000 psi
CONCRETE, HIGH PERFORMANCE CLASS B f_c: 3500 psi
- DESIGN SOIL UNIT WEIGHT: 140 pcf
- DESIGN LOAD FOR SPREAD FOOTINGS ON SOIL: N/A

TRAFFIC MAINTENANCE

- IS TRAFFIC TO BE MAINTAINED? NO - OFFSITE DETOUR
 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: CHESTER

PROJECT NUMBER: BRF 025-1(28)

FILE NAME: s84e061excel.dgn PLOT DATE: 3/10/2009
 PROJECT LEADER: C.P. WILLIAMS DRAWN BY: M.FESSEL
 DESIGNED BY: R.S. YOUNG CHECKED: R.S. YOUNG
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