

PRELIMINARY INFORMATION SHEET

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FINAL HYDRAULIC REPORT

HYDROLOGIC DATA Date: March 2000

DRAINAGE AREA : 3.8 sq. mi.
 CHARACTER OF TERRAIN : Hilly with a mixture of open and forested cover.
 STREAM CHARACTERISTICS : Small, perennial but flashy, probably incised, and not braided
 NATURE OF STREAMBED : Ledge and cobbles upstream, cobbles and gravel downstream

PEAK FLOW DATA

Q 2.33 =	230 cfs	Q 50 =	915 cfs
Q 10 =	520 cfs	Q 100 =	1100 cfs
Q 25 =	730 cfs	Q 500 =	1700 cfs

DATE OF FLOOD RECORD : November 1927 (Based on 1978 Flood Insurance Study)
 ESTIMATED DISCHARGE : Unknown
 WATER SURFACE ELEV. : Unknown
 NATURAL STREAM VELOCITY : @ Q50 = 8.9 fps downstream
 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: _____ X
 IMMEDIATELY ABOVE SITE: _____

EXISTING STRUCTURE INFORMATION

STRUCTURE TYPE: Concrete slab bridge
 YEAR BUILT: 1900
 CLEAR SPAN (NORMAL TO STREAM): 12.0 ft.
 VERTICAL CLEARANCE ABOVE STREAMBED: 7.0 ft. average at inlet
 WATERWAY OF FULL OPENING: 85 sq. ft. at inlet, 105 sq. ft. at outlet
 DISPOSITION OF STRUCTURE: Remove and replace with a new structure
 TYPE OF MATERIAL UNDER SUBSTRUCTURE: At least partly on ledge.

WATER SURFACE ELEVATIONS AT:

Q2.33 =	869.9	VELOCITY =	9.0 fps
Q10 =	874.7	"	11.2 fps
Q25 =	876.3	"	12.5 fps
Q50 =	877.3	"	12.8 fps**
Q100 =	878.0	"	12.0 fps**

LONG TERM STREAMBED CHANGES: None noted at this time. However, a reference was found indicating there has been 3 ft. of channel degradation in the last 100 years.

IS THE ROADWAY OVERTOPPED BELOW Q100: Yes
 FREQUENCY: Q25 +/-
 RELIEF ELEVATION: 876.3
 DISCHARGE OVER ROAD @Q100: 220 cfs

UPSTREAM STRUCTURE

TOWN: Williamstown DISTANCE: 600 ft.
 HIGHWAY #: T.H. 6 STRUCTURE #: 21
 CLEAR SPAN: 15 ft. CLEAR HEIGHT: 7 ft.
 YEAR BUILT: Unknown FULL WATERWAY: 105 sq. ft.
 STRUCTURE TYPE: Single span steel beam bridge

DOWNSTREAM STRUCTURE

TOWN: Williamstown DISTANCE: 400 ft.
 HIGHWAY #: VT 14 STRUCTURE #: 59
 CLEAR SPAN: 16 ft. CLEAR HEIGHT: 7 ft.
 YEAR BUILT: 1958 FULL WATERWAY: 110 sq. ft.
 STRUCTURE TYPE: Concrete slab bridge

LOAD FACTOR- LOAD RATING (TONS)

LOADING LEVELS	TRUCK						
	H	HS	3S2	6 AXLE	3A. STR.	4A. STR.	SA. SEM
INVENTORY	33	50					
POSTED	46	70	91		54	56	91
OPERATING		84	109	102	64	67	

COMMENTS:

TRAFFIC DATA

YEAR	ADT	DHV	% D	% T	ADTT
2004	3000	420	51	7	210
2024	4000	550	-	-	-

20 year ESAL for flexible pavement from 2004 to 2024 : 1,265,000
 40 year ESAL for flexible pavement from 2004 to 2044 : 3,044,000
 Design Speed : 25 mph

PROPOSED STRUCTURE

STRUCTURE TYPE: Concrete slab bridge

CLEAR SPAN (NORMAL TO STREAM): 16.0 ft.
 VERTICAL CLEARANCE ABOVE STREAMBED: 8.0 ft. average
 WATERWAY OF FULL OPENING: 137 sq. ft.

WATER SURFACE ELEVATIONS AT:

Q2.33 =	871.8	VELOCITY =	8.3 fps
Q10 =	873.6	"	10.7 fps
Q25 =	875.1	"	11.9 fps
Q50 =	876.2	"	12.8 fps
Q100 =	877.3	"	13.5 fps**

IS THE ROADWAY OVERTOPPED BELOW Q100: Yes
 FREQUENCY: Q55
 RELIEF ELEVATION: 876.3
 DISCHARGE OVER ROAD @Q100: 25 cfs

AVERAGE LOW ELEVATION OF SUPERSTRUCTURE: 877.6 (876.5 minimum), at inlet
 VERTICAL CLEARANCE: @ Q50 = 1.4 ft. average, 0.3 ft. minimum, at inlet

SCOUR: Estimated to be 6.0 ft. at Q100, or to ledge.
 Scour will be less with the proposed bridge than with the existing bridge.
 REQUIRED CHANNEL PROTECTION: Stone Fill, Type II, as needed

PERMIT INFORMATION

AVERAGE DAILY FLOW:	8 cfs	DEPTH OR ELEVATION:	
ORDINARY LOW WATER:	4 cfs		0.5 ft.
ORDINARY HIGH WATER:	100 cfs		1.5 ft.

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

* This stream does not have an official name, it was referred to as Brook 2 in the 1978 F.I.S.
 ** Velocities listed are an average for the total flow (flow through the bridge and over the road), at the outlet. The Q100 velocity is higher for the proposed bridge than the existing bridge, because there is less roadway overflow with the proposed bridge.

DESIGN CRITERIA

- DESIGN LIVE LOAD AASHTO HS 25
- DESIGN SPAN 34.5 Feet centerline to centerline of bearing
- ALLOWABLE LOAD FOR SPREAD FOOTINGS ON SOIL N/A
ON LEDGE 10 KSF
- ALLOWABLE LOAD FOR PILING N/A
TYPE N/A
ESTIMATED LENGTH N/A
- STRUCTURAL STEEL AASHTO GRADE N/A
- REINFORCING STEEL GRADE 60
- CONCRETE CLASS A f'c : 4000 psi
CONCRETE CLASS B f'c : 3500 psi
- SOIL UNIT WEIGHT 140 pcf
- DESIGN LOAD FOR SPREAD FOOTINGS ON SOIL N/A

TRAFFIC MAINTENANCE

- IS TRAFFIC TO BE MAINTAINED? yes
 IF YES, ON EXISTING STRUCTURE? no
 OR ON TEMPORARY BRIDGE? no
 ONE OR TWO-WAY TRAVEL? two-way detour
- TRAFFIC CONTROL SIGNALS REQUIRED? no
- ARE SIDEWALKS REQUIRED? no
 IF SO, ON WHAT SIDE? N/A

PROJECT NAME: Williamstown

PROJECT NUMBER: BRS 0204 (4)

FILE NAME: \structures\se111\excel.dgn	PLOT DATE: 4/2/2008
PROJECT MANAGER: Evans-Mongeon	DRAWN BY: U. STANLEY
DESIGNED BY: U. STANLEY	CHECKED BY: M. EVANS-MONGEON
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