

# PRELIMINARY INFORMATION SHEET

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FINAL HYDRAULIC REPORT

**HYDROLOGIC DATA** Date: April 2009

DRAINAGE AREA : 3.7 sq. mi.  
 CHARACTER OF TERRAIN : Hilly to mountainous, mostly forested with some open areas  
 STREAM CHARACTERISTICS : Steep, sinuous  
 NATURE OF STREAMBED : Cobbles, boulders and gravel

PEAK FLOW DATA

Q 2.33 = 180 cfs	Q 50 = 700 cfs
Q 10 = 425 cfs	Q 100 = 840 cfs
Q 25 = 560 cfs	Q 500 = 1200 cfs

DATE OF FLOOD OF RECORD : Unknown  
 ESTIMATED DISCHARGE: Unknown  
 WATER SURFACE ELEV.: Unknown  
 NATURAL STREAM VELOCITY: @ Q50 = 24.1 fps at outlet  
 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: 9.5' CGMPP  
 YEAR BUILT: 1968  
 CLEAR SPAN(NORMAL TO STREAM): 9.5'  
 VERTICAL CLEARANCE ABOVE STREAMBED: 9.5'  
 WATERWAY OF FULL OPENING: 70.9 sq. ft.  
 DISPOSITION OF STRUCTURE: Insert liner  
 TYPE OF MATERIAL UNDER SUBSTRUCTURE: Unknown

WATER SURFACE ELEVATIONS AT:

Q2.33 = 536.1'	VELOCITY = 15.3 fps
Q10 = 539.2'	" 20.5 fps
Q25 = 540.9'	" 22.5 fps
Q50 = 542.8'	" 24.1 fps
Q100 = 545.0'	" 25.5 fps

LONG TERM STREAMBED CHANGES: None noted

IS THE ROADWAY OVERTOPPED BELOW Q100: No  
 FREQUENCY: Above Q100  
 RELIEF ELEVATION: Above elevation 580'  
 DISCHARGE OVER ROAD @Q100: None

**UPSTREAM STRUCTURE**

TOWN: Sharon DISTANCE: 200'  
 HIGHWAY #: Abandoned road STRUCTURE #: \_\_\_\_\_  
 CLEAR SPAN: 13' CLEAR HEIGHT: 6'  
 YEAR BUILT: Unknown FULL WATERWAY: 78 sq. ft.  
 STRUCTURE TYPE: Concrete slab bridge

**DOWNSTREAM STRUCTURE**

TOWN: None -Confluence with the White River DISTANCE: \_\_\_\_\_  
 HIGHWAY #: \_\_\_\_\_ STRUCTURE #: \_\_\_\_\_  
 CLEAR SPAN: \_\_\_\_\_ CLEAR HEIGHT: \_\_\_\_\_  
 YEAR BUILT: \_\_\_\_\_ FULL WATERWAY: \_\_\_\_\_  
 STRUCTURE TYPE: \_\_\_\_\_

**0 LOAD RATING (TONS)**

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

**TRAFFIC DATA**

YEAR	ADT	DHV	% D	% T	ADTT
2007	6000	780	50	18	1.08

20 year ESAL for flexible pavement from \_\_\_\_\_ to \_\_\_\_\_  
 40 year ESAL for flexible pavement from \_\_\_\_\_ to \_\_\_\_\_  
 Design Speed : mph

**PROPOSED STRUCTURE**

STRUCTURE TYPE: 8.5' CAAP liner, with full beveled inlet headwall

CLEAR SPAN(NORMAL TO STREAM): 8.5'  
 VERTICAL CLEARANCE ABOVE STREAMBED: 8.5'  
 WATERWAY OF FULL OPENING: 56.7 sq. ft.

WATER SURFACE ELEVATIONS AT:

Q2.33 = 536.5'	VELOCITY= 15.3 fps
Q10 = 539.5'	" 20.5 fps
Q25 = 541.1'	" 22.5 fps
Q50 = 543.0'	" 24.1 fps
Q100 = 545.4'	" 25.5 fps

IS THE ROADWAY OVERTOPPED BELOW Q100: No  
 FREQUENCY: Above Q100  
 RELIEF ELEVATION: Above elevation 580'  
 DISCHARGE OVER ROAD @Q100: None

AVERAGE LOW ELEVATION OF SUPERSTRUCTURE: 540.7' (Top of pipe at inlet)  
 VERTICAL CLEARANCE: @ Q50 = Inlet submerged below Q25

SCOUR: Not applicable for a culvert

REQUIRED CHANNEL PROTECTION: Stone Fill, Type IV or match existing as needed.

**PERMIT INFORMATION**

AVERAGE DAILY FLOW: 7 cfs DEPTH OR ELEVATION:  
 ORDINARY LOW WATER: 4 cfs Depth < 1.0'  
 ORDINARY HIGH WATER: 77 cfs Depth = 3.0'

**TEMPORARY BRIDGE REQUIREMENTS**

STRUCTURE TYPE: No temporary bridge required.  
 CLEAR SPAN (NORMAL TO STREAM): \_\_\_\_\_  
 VERTICAL CLEARANCE ABOVE STREAMBED: \_\_\_\_\_  
 WATERWAY AREA OF FULL OPENING: \_\_\_\_\_

**ADDITIONAL INFORMATION**

The above final hydraulics is based on the following information shown on the Preliminary Plans.  
 Existing 114" pipe inlet elev. = 531.7', outlet elev. 491.4', length = 478.33', slope = 8.2%  
 New 102" liner pipe inlet elev. = 532.2', outlet elev. 491.9', length = 478.33', slope = 8.2%

**DESIGN CRITERIA**

- DESIGN LIVE LOAD AASHTO: N/A
- DESIGN SPAN: N/A
- ALLOWABLE LOAD FOR SPREAD FOOTINGS ON SOIL: 4 ksf  
ON LEDGE: 10 ksf
- ALLOWABLE LOAD FOR PILING: N/A  
TYPE: N/A  
ESTIMATED LENGTH: N/A
- STRUCTURAL STEEL AASHTO M270M/M270 GRADE: 50W
- REINFORCING STEEL GRADE: 60
- CONCRETE, HIGH PERFORMANCE CLASS A f<sub>c</sub>: 4000 psi  
CONCRETE, HIGH PERFORMANCE CLASS B f<sub>c</sub>: 3500 psi
- DESIGN SOIL UNIT WEIGHT: 140 pcf
- DESIGN LOAD FOR SPREAD FOOTINGS ON SOIL: \_\_\_\_\_

**TRAFFIC MAINTENANCE**

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

PROJECT NAME: SHARON  
 PROJECT NUMBER: IM CULV (18)

FILE NAME: engpi1.xls PLOT DATE: 6/18/2009  
 PROJECT LEADER: DMB DRAWN BY: RPH  
 DESIGNED BY: RPH CHECKED: BRC  
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