

PRELIMINARY INFORMATION SHEET

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FINAL HYDRAULIC REPORT

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HYDROLOGIC DATA Date: 6/9/99

DRAINAGE AREA: 15.8 sq mi
 CHARACTER OF TERRAIN: Mountainous, Rolling Hills to Open Fields
 STREAM CHARACTERISTICS: Perennial, Sinuous and Non Braided
 NATURE OF STREAMBED: Gravel to Cobble

PEAK FLOW DATA

Q 2.33 = 775 cfs	Q 50 = 3000 cfs
Q 10 = 1700 cfs	Q 100 = 3600 cfs
Q 25 = 2400 cfs	Q 500 = 4900 cfs

DATE OF FLOOD RECORD: Unknown
 ESTIMATED DISCHARGE: N/A
 WATER SURFACE ELEV.: N/A
 NATURAL STREAM VELOCITY: @ Q50 = 4.5 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: X
 IMMEDIATELY ABOVE SITE:

EXISTING STRUCTURE INFORMATION

STRUCTURE TYPE: Two Span Steel Beam Bridge with Concrete Deck
 YEAR BUILT: 1934
 CLEAR SPAN(NORMAL TO STREAM): 118 ft (Two Span)
 VERTICAL CLEARANCE ABOVE STREAMBED: 10 ft (Under Open Span)
 WATERWAY OF FULL OPENING: 680 sf
 DISPOSITION OF STRUCTURE: Remove
 TYPE OF MATERIAL UNDER SUBSTRUCTURE: Unknown

WATER SURFACE ELEVATIONS AT:

Q2.33 = 844.7 ft	VELOCITY = 6.1 fps
Q10 = 846.6 ft	" 7.3 fps
Q25 = 847.4 ft	" 8.1 fps
Q50 = 848.0 ft	" 8.8 fps
Q100 = 848.3 ft	" 9.6 fps

LONG TERM STREAMBED CHANGES: Unknown

IS THE ROADWAY OVERTOPPED BELOW Q100: No
 FREQUENCY: Above Q100
 RELIEF ELEVATION: 851.5 ft
 DISCHARGE OVER ROAD @ Q100: None

UPSTREAM STRUCTURE

TOWN: Reading DISTANCE: 0.5 mi
 HIGHWAY #: VT 106 STRUCTURE #: Bridge 13
 CLEAR SPAN: 84 ft CLEAR HEIGHT: 10 ft
 YEAR BUILT: 1949 FULL WATERWAY: Unknown
 STRUCTURE TYPE: Single Span Steel Beam with Concrete Deck

DOWNSTREAM STRUCTURE

TOWN: West Windsor DISTANCE: 1.3 mi
 HIGHWAY #: TH-37 STRUCTURE #: Bridge 34
 CLEAR SPAN: 32 ft CLEAR HEIGHT: 9 ft
 YEAR BUILT: 1890 FULL WATERWAY: Unknown
 STRUCTURE TYPE: Single Span Wooden Covered Bridge

LOAD FACTOR LOAD RATING (TONS)

LOADING LEVELS (LOAD FACTOR)	TRUCK						
	H	HS	HS2	6 AXLE	3A, STR.	4A, STR.	5A, SEMI
INVENTORY A=2.17 B=1.00	39	49					
POSTED A=1.55 B=1.40	54	69	87		62	63	77
OPERATING A=1.30 B=1.67		82	104	126	73	76	

STRENGTH RFR = $\frac{M_{LL} + 1.3 M_{HS}}{A \times M_{LL}}$ SERVICEABILITY RFR = $\frac{0.95 F_y S_{LL} + M_{HS}}{1.67 M_{LL}}$

TRAFFIC DATA

YEAR	ADT	DHV	% D	% T	ADTT
1999	1480	-	56	3	90
2019	2000	280	56	2	110

20 year ESAL for flexible pavement from 967,000 to : 967,000
 40 year ESAL for flexible pavement from 3,192,000 to : 3,192,000
 Design Speed: 50 mph

PROPOSED STRUCTURE

STRUCTURE TYPE: Single Span Steel Beam with Concrete Deck
 CLEAR SPAN(NORMAL TO STREAM): 60.8 ft
 VERTICAL CLEARANCE ABOVE STREAMBED: 12.0 ft
 WATERWAY OF FULL OPENING: 620 sq ft

WATER SURFACE ELEVATIONS AT:

Q2.33 = 844.7 ft	VELOCITY = 6.2 fps
Q10 = 846.4 ft	" 7.2 fps
Q25 = 847.4 ft	" 7.2 fps
Q50 = 848.1 ft	" 8.0 fps
Q100 = 848.8 ft	" 8.4 fps

IS THE ROADWAY OVERTOPPED BELOW Q100: No
 FREQUENCY: Above Q100
 RELIEF ELEVATION: 852.1 ft
 DISCHARGE OVER ROAD @ Q100: None

AVERAGE LOW ELEVATION OF SUPERSTRUCTURE: 852.0 ft
 VERTICAL CLEARANCE: @ Q100 3.2 ft

SCOUR: Contraction Scour @ Q100 = 0.0 ft and @ Q500 = 2.2 ft

REQUIRED CHANNEL PROTECTION: Type II

PERMIT INFORMATION

AVERAGE DAILY FLOW:	30 cfs	DEPTH OR ELEVATION:	
ORDINARY LOW WATER:	15 cfs		0.3 ft
ORDINARY HIGH WATER:	330 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

DESIGN CRITERIA

- DESIGN LIVE LOAD AASHTO: HS-25-44
- DESIGN SPAN: 65'-0"
- ALLOWABLE LOAD FOR SPREAD FOOTINGS ON SOIL: 8.4 ksf
ON LEDGE: N/A
- ALLOWABLE LOAD FOR PILING: N/A
TYPE: N/A
ESTIMATED LENGTH: N/A
- STRUCTURAL STEEL AASHTO GRADE: M270 GRADE 50W
- REINFORCING STEEL GRADE: 60 ksi
- CONCRETE CLASS A (HPC-A) f'c: 4000 psi
CONCRETE CLASS B (HPC-B) f'c: 3500 psi
- SOIL UNIT WEIGHT: 140 pcf
- DESIGN LOAD FOR SPREAD FOOTINGS ON SOIL: 5 ksf (Abut. 1), 7 ksf (Abut. 2)

TRAFFIC MAINTENANCE

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

PROJECT NAME: READING

PROJECT NUMBER: BRS 0148(6)S

FILE NAME: PW/85e034/Structures/se034pi.xls PLOT DATE: 10/13/2005
 PROJECT MANAGER: R. WHITCOMB DRAWN BY: J. GILMORE
 DESIGNED BY: C. CARLSON CHECKED BY: C. CARLSON
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