

# PRELIMINARY INFORMATION SHEET (BRIDGE)

**LRFD**

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**FINAL HYDRAULIC REPORT**

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**HYDROLOGIC DATA**

Date: April 2012

DRAINAGE AREA : 45.6 sq. mi.  
 CHARACTER OF TERRAIN : Mountainous, mostly wooded, rural  
 STREAM CHARACTERISTICS : Sinuous, semi-alluvial  
 NATURE OF STREAMBED : Mostly gravel and cobbles w/scattered boulders

**PEAK FLOW DATA**

Q 2.33 =	2,300 cfs	Q 50 =	6,700cfs
Q 10 =	4,400 cfs	Q 100 =	7,800 cfs
Q 25 =	5,600 cfs	Q 500 =	10,920 cfs

DATE OF FLOOD OF RECORD : unknown  
 ESTIMATED DISCHARGE : Unknown  
 WATER SURFACE ELEV. : Unknown  
 NATURAL STREAM VELOCITY : @ Q50 = 7.9 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 : X  
 IMMEDIATELY ABOVE SITE :

**EXISTING STRUCTURE INFORMATION**

STRUCTURE TYPE : Single span Pratt through truss  
 YEAR BUILT : 1929  
 CLEAR SPAN(NORMAL TO STREAM) : 89 ft  
 VERTICAL CLEARANCE ABOVE STREAMBED : 11 ft  
 WATERWAY OF FULL OPENING : 873 sq. ft  
 DISPOSITION OF STRUCTURE : To be removed  
 TYPE OF MATERIAL UNDER SUBSTRUCTURE : See borings

**WATER SURFACE ELEVATIONS AT:**

Q2.33 =	784.7 ft	VELOCITY =	7.2 fps
Q10 =	787.4 ft	"	9.9 fps
Q25 =	788.4 ft	"	10.4 fps
Q50 =	789.2 ft	"	11.2 fps
Q100 =	790.1 ft	"	11.9 fps

**LONG TERM STREAMBED CHANGES:** None

IS THE ROADWAY OVERTOPPED BELOW Q100: No  
 FREQUENCY: N/A  
 RELIEF ELEVATION: 790.6 ft  
 DISCHARGE OVER ROAD @Q100: N/A

**UPSTREAM STRUCTURE**

TOWN: Warren DISTANCE: 1.78 mi  
 HIGHWAY # : TH 4 STRUCTURE # : 30  
 CLEAR SPAN: 55 ft CLEAR HEIGHT: 28.9 ft  
 YEAR BUILT: 1929 FULL WATERWAY: Unknown  
 STRUCTURE TYPE: Single span T-beam

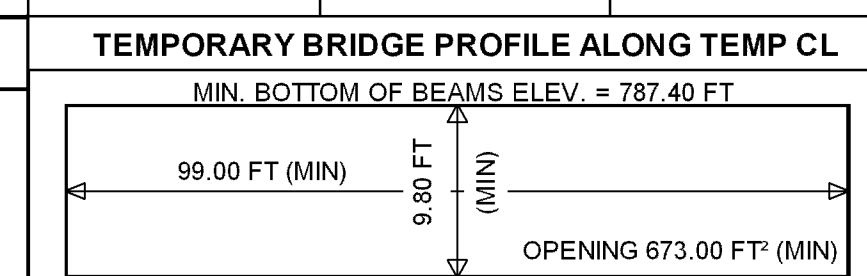
**DOWNSTREAM STRUCTURE**

TOWN: Waitsfield DISTANCE: 1.22 mi  
 HIGHWAY # : TH 29 STRUCTURE # : 22  
 CLEAR SPAN: 57 ft CLEAR HEIGHT: 22 ft  
 YEAR BUILT: 1999 FULL WATERWAY: Unknown  
 STRUCTURE TYPE: Single span pony truss

**LRFR LOAD RATING FACTORS**

LOADING LEVELS	TRUCK						
	HL-20	HL-93	3S2	6 AXLE	3A STR.	4A STR.	5A SEMI
TONNAGE	20	36	36	66	30	34.5	38
INVENTORY							
POSTING							
OPERATING							
COMMENTS:	TRUSS FABRICATOR SHALL PROVIDE LOAD RATING						

AS BUILT "REBAR" DETAIL		
LEVEL I	LEVEL II	LEVEL III
TYPE:	TYPE:	TYPE:
GRADE:	GRADE:	GRADE:



**PILE DRIVING AND TESTING REQUIREMENTS**

- NOMINAL PILE DRIVING CAPACITY
- PILE TEST RESISTANCE FACTOR  $\phi$ : 0.65
- MAXIMUM PILE TIP ELEVATION 693.00 FT
- 0

**PROPOSED STRUCTURE**

STRUCTURE TYPE: Single span prefabricated galvanized truss  
 CLEAR SPAN(NORMAL TO STREAM): 94 ft  
 VERTICAL CLEARANCE ABOVE STREAMBED: 12 ft  
 WATERWAY OF FULL OPENING: 1,230 sq. ft

**WATER SURFACE ELEVATIONS AT:**

Q2.33 =	784.9 ft	VELOCITY=	8.3 fps
Q10 =	787.6 ft	"	9.9 fps
Q25 =	788.6 ft	"	10.4 fps
Q50 =	789.4 ft	"	11.2 fps
Q100 =	790.1 ft	"	11.9 fps

IS THE ROADWAY OVERTOPPED BELOW Q100: No  
 FREQUENCY: N/A  
 RELIEF ELEVATION: 790.8 ft  
 DISCHARGE OVER ROAD @Q100: N/A

AVERAGE LOW ELEVATION OF SUPERSTRUCTURE: 789.8'  
 VERTICAL CLEARANCE: @ Q50 = 0.4'

SCOUR: Contraction scour of 4 ft at Q500

REQUIRED CHANNEL PROTECTION: Stone Fill Type IV

**PERMIT INFORMATION**

AVERAGE DAILY FLOW:	93 cfs	DEPTH OR ELEVATION:
ORDINARY LOW WATER:	42 cfs	depth = 1 ft
ORDINARY HIGH WATER:	990 cfs	depth = 5 ft

**TEMPORARY BRIDGE REQUIREMENTS**

STRUCTURE TYPE: Two Way Single Span Bridge  
 CLEAR SPAN (NORMAL TO STREAM): 79 ft (99 ft bridge span)  
 VERTICAL CLEARANCE ABOVE STREAMBED: 9.8 ft at minimum elev. 787.4 ft  
 WATERWAY AREA OF FULL OPENING: 673 sq. ft

**ADDITIONAL INFORMATION**

**TRAFFIC MAINTENANCE NOTES**

- MAINTAIN TWO-WAY TRAFFIC ON A TEMPORARY BRIDGE.
- TRAFFIC SIGNALS ARE NOT NECESSARY.
- SIDEWALKS ARE NOT NECESSARY
- THE APPROACHES FOR THE TEMPORARY BRIDGE SHALL BE PAVED.

**DESIGN VALUES**

1. DESIGN LIVE LOAD	HL-93
2. FUTURE PAVEMENT	$d_p$ : 3.0 INCH
3. DESIGN SPAN	$L$ : 138.50 FT
4. MIN. MID-SPAN POS. CAMBER @ RELEASE (PRESTRESSED UNITS)	$\Delta$ : ---
5. PRESTRESSING STRAND	$f_y$ : ---
6. PRESTRESSED CONCRETE STRENGTH	$f'_c$ : ---
7. PRESTRESSED CONCRETE RELEASE STRENGTH	$f'_{cr}$ : ---
8. CONCRETE, HIGH PERFORMANCE CLASS AA	$f'_c$ : 4.0 KSI
9. CONCRETE, HIGH PERFORMANCE CLASS A	$f'_c$ : 4.0 KSI
10. CONCRETE, HIGH PERFORMANCE CLASS B	$f'_c$ : 3.5 KSI
11. CONCRETE, CLASS C	$f'_c$ : 3.0 KSI
12. REINFORCING STEEL	$f_y$ : 60 KSI
13. STRUCTURAL STEEL AASHTO M270 (GALVANIZED)	$f_y$ : 50 KSI
14. SOIL UNIT WEIGHT	$\gamma$ : 0.140 KCF
15. NOMINAL BEARING RESISTANCE OF SOIL	$q_n$ : 4.0 KSF
16. SOIL BEARING RESISTANCE FACTOR (REFER TO AASHTO LRFD)	$\phi$ : ---
17. NOMINAL BEARING RESISTANCE OF ROCK	$q_n$ : 10.0 KSF
18. ROCK BEARING RESISTANCE FACTOR (REFER TO AASHTO LRFD)	$\phi$ : ---
19. NOMINAL AXIAL PILE RESISTANCE	$q_p$ : 461.0 KIPS
20. PILE YIELD STRENGTH ASTM A572	$f_y$ : 50 KSI
21. PILE SIZE	HP 14X117
22. EST. PILE LENGTH	$L_p$ : 118 FT
23. PILE RESISTANCE FACTOR	$\phi$ : 0.65
24. LATERAL PILE DEFLECTION	$\Delta$ : ---
25. BASIC WIND SPEED	$V_{3s}$ : ---
26. MINIMUM GROUND SNOW LOAD	$p_g$ : ---
27. SEISMIC DATA	PGA: --- $S_s$ : --- $S_1$ : ---

PROJECT NAME: WARREN  
 PROJECT NUMBER: BRF 013-14(4)

FILE NAME: s78f242forms.dgn PLOT DATE: 3/18/2012  
 PROJECT LEADER: J. LACROIX DRAWN BY: U. STANLEY  
 DESIGNED BY: U. STANLEY CHECKED BY: J. LACROIX  
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**TRAFFIC DATA**

YEAR	ADT	DHV	% D	% T	ADTT
2010	4300	530	52	5.5	240
2030	5200	650	52	9.3	480

20 year ESAL for flexible pavement from 2010 to 2030 : 1365000  
 40 year ESAL for flexible pavement from 2010 to 2050 : 3362000  
 Design Speed : 50 mph