

PRELIMINARY INFORMATION SHEET (BRIDGE)

LRFD

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FINAL HYDRAULIC REPORT - BRIDGE NO. 6

PLAN SHEETS

STANDARDS LIST

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HYDROLOGIC DATA

Date: 7 January 2014

DRAINAGE AREA : 3.55 sq. mi.
 CHARACTER OF TERRAIN : Hilly to mountainous; 45% woods, 55% meadow, small ponds
 STREAM CHARACTERISTICS : Perennial, sinuous, moderate slope
 NATURE OF STREAMBED : Silty sand; scour susceptible

PEAK FLOW DATA

Q 2.33 =	160 cfs	Q 50 =	650 cfs
Q 10 =	380 cfs	Q 100 =	790 cfs
Q 25 =	520 cfs	Q 500 =	1110 cfs

DATE OF FLOOD OF RECORD : Unknown
 ESTIMATED DISCHARGE : Unknown
 WATER SURFACE ELEV. : Unknown
 NATURAL STREAM VELOCITY : @ Q50 = 13.2 fps
 ICE CONDITIONS : Light
 DEBRIS : Light
 DOES THE STREAM REACH MAXIMUM HIGHWATER ELEV. RAPIDLY? No
 IS ORDINARY RISE RAPID? No
 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 : 8' diameter multi-plate pipe (CGMP)
 YEAR BUILT : 1965
 CLEAR SPAN(NORMAL TO STREAM) : 9.0'
 VERTICAL CLEARANCE ABOVE STREAMBED : 9.0'
 WATERWAY OF FULL OPENING : 63.6 sq. ft.
 DISPOSITION OF STRUCTURE : Remove and replace
 TYPE OF MATERIAL UNDER SUBSTRUCTURE : See borings

WATER SURFACE ELEVATIONS AT:

Q2.33 =	842.1'	VELOCITY =	8.5 fps
Q10 =	845.2'	"	11.1 fps
Q25 =	847.0'	"	12.4 fps
Q50 =	848.7'	"	13.6 fps
Q100 =	851.2'	"	15.0 fps

LONG TERM STREAMBED CHANGES: None noted

IS THE ROADWAY OVERTOPPED BELOW Q100: No
 FREQUENCY: N/A
 RELIEF ELEVATION: 855.1'
 DISCHARGE OVER ROAD @Q100: None

UPSTREAM STRUCTURE

TOWN: Irasburg DISTANCE: 2336'
 HIGHWAY #: TH26 STRUCTURE #:
 CLEAR SPAN: CLEAR HEIGHT:
 YEAR BUILT: FULL WATERWAY:
 STRUCTURE TYPE:
 DOWNSTREAM STRUCTURE

DOWNSTREAM STRUCTURE

TOWN: Irasburg DISTANCE: 360'
 HIGHWAY #: STRUCTURE #:
 CLEAR SPAN: CLEAR HEIGHT:
 YEAR BUILT: FULL WATERWAY:
 STRUCTURE TYPE: Confluence w/ Stony Hill Brook

LRFR LOAD RATING FACTORS

LOADING LEVELS	TRUCK						
	H-20	HL-93	SS2	6 AXLE	3A. STR.	4A. STR.	5A. SEM
TONNAGE	20	36	36	66	30	34.5	38
INVENTORY							
POSTING							
OPERATING							
COMMENTS:							

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

* SEE GEOTECHNICAL REPORT

PROPOSED STRUCTURE

STRUCTURE TYPE: Precast Concrete Box Culvert
 CLEAR SPAN(NORMAL TO STREAM): 20.0'
 VERTICAL CLEARANCE ABOVE STREAMBED: 6.0'
 WATERWAY OF FULL OPENING: 120 sq. ft.

WATER SURFACE ELEVATIONS AT:

Q2.33 =	839.1'	VELOCITY=	4.8 fps
Q10 =	840.8'	"	6.8 fps
Q25 =	841.7'	"	7.8 fps
Q50 =	842.4'	"	8.6 fps
Q100 =	843.2'	"	9.5 fps

IS THE ROADWAY OVERTOPPED BELOW Q100: No
 FREQUENCY: NA
 RELIEF ELEVATION: 855.1'
 DISCHARGE OVER ROAD @Q100: None

AVERAGE LOW ELEVATION OF SUPERSTRUCTURE: 842.6'
 VERTICAL CLEARANCE: @ Q50 = 0.2'

SCOUR: Replacement structure is a box culvert so scour is not a concern.

REQUIRED CHANNEL PROTECTION: Stone Fill, Type III

PERMIT INFORMATION

AVERAGE DAILY FLOW: 7.5 cfs DEPTH OR ELEVATION:
 ORDINARY LOW WATER: 4.0 cfs Depth = 0.5'
 ORDINARY HIGH WATER: 110 cfs Depth = 3.0'

TEMPORARY BRIDGE REQUIREMENTS

STRUCTURE TYPE: Temporary Bridge not Required
 CLEAR SPAN (NORMAL TO STREAM): N/A
 VERTICAL CLEARANCE ABOVE STREAMBED: N/A
 WATERWAY AREA OF FULL OPENING: N/A

ADDITIONAL INFORMATION

TRAFFIC MAINTENANCE NOTES

1. MAINTAIN ONE-WAY TRAFFIC UNDER PHASED CONSTRUCTION.
2. TRAFFIC SIGNALS ARE NECESSARY.
3. SIDEWALKS ARE NOT NECESSARY

DESIGN VALUES

1. DESIGN LIVE LOAD	HL-93
2. FUTURE PAVEMENT	d _p : 3.0 INCH
3. DESIGN SPAN	L: 20.0 FT
4. MIN. MID-SPAN POS. CAMBER @ RELEASE (PRESTRESSED UNITS)	Δ: ---
5. PRESTRESSING STRAND (0.60 INCH DIAMETER - LOW RELAX)	f _y : ---
6. PRESTRESSED CONCRETE STRENGTH	f' _c : ---
7. PRESTRESSED CONCRETE RELEASE STRENGTH	f' _{cr} : ---
8. CONCRETE, HIGH PERFORMANCE CLASS AA	f' _c : ---
9. CONCRETE, HIGH PERFORMANCE CLASS A	f' _c : ---
10. CONCRETE, HIGH PERFORMANCE CLASS B	f' _c : 3.5 KSI
11. CONCRETE, CLASS C	f' _c : ---
12. REINFORCING STEEL	f _y : 60 KSI
13. STRUCTURAL STEEL AASHTO M270	f _y : ---
14. SOIL UNIT WEIGHT	γ: 0.140 KCF
15. NOMINAL BEARING RESISTANCE OF SOIL	q _n : * 4.3 KSF
16. SOIL BEARING RESISTANCE FACTOR (REFER TO AASHTO LRFD)	φ: 0.45
17. NOMINAL BEARING RESISTANCE OF ROCK	q _n : ---
18. ROCK BEARING RESISTANCE FACTOR (REFER TO AASHTO LRFD)	φ: ---
19. NOMINAL AXIAL PILE RESISTANCE	q _p : ---
20. PILE YIELD STRENGTH ASTM A572	f _y : ---
21. PILE SIZE	---
22. EST. PILE LENGTH	L _p : ---
23. PILE RESISTANCE FACTOR	φ: ---
24. LATERAL PILE DEFLECTION	Δ: ---
25. BASIC WIND SPEED	V _{3s} : ---
26. MINIMUM GROUND SNOW LOAD	pg: ---
27. SEISMIC DATA	PGA: --- S _s : --- S ₁ : ---

PROJECT NAME: IRASBURG
 PROJECT NUMBER: STP CULV(30)

FILE NAME: z_irasburg_br6_pi.xls PLOT DATE: 10/20/2014
 PROJECT LEADER: M. CHENETTE DRAWN BY: L. BUXTON
 DESIGNED BY: A. LACHANCE CHECKED BY: J. HUNGERFORD
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TRAFFIC DATA

YEAR	ADT	DHV	% D	% T	ADTT	
2013	1700	190	51	8.4	190	20 year ESAL for flexible pavement from 2013 to 2033 : 1,781,000
2023	1800	200	51	10.6	250	Design Speed : 50 mph

2013 to 2023 : 715,000
 20 year ESAL for flexible pavement from 2013 to 2033 : 1,781,000
 Design Speed : 50 mph