

# PRELIMINARY INFORMATION SHEET (BRIDGE)

**LRFD**

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**FINAL HYDRAULIC REPORT**

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**STANDARDS LIST**

B-71	STANDARD FOR RESIDENTIAL AND COMMERCIAL DRIVES	07-08-2005
D-1	PRECAST REINFORCED CONCRETE DROP INLET DETAILS	06-01-1994
D-16	DRAINAGE DETAILS INCLUDING DROP INLETS, IRON GRATE TYPE B&C, CONC END	06-01-1994
E-121	STANDARD SIGN PLACEMENT - CONVENTIONAL ROAD	08-08-1995
E-123	GUIDE SIGN PLACEMENT - MISCELLANEOUS DETAILS	03-16-2004
E-164	SQUARE STEEL SIGN POST	06-08-2009
G-1B	BOX BEAM GUARD RAIL	06-01-1994
S-364A	BRIDGE RAILING, GALVANIZED 3 RAIL BOX BEAM	04-23-2012
S-364B	GUARDRAIL APPROACH SECTION, GALVANIZED 3 RAIL BOX BEAM	04-23-2012
S-364C	GUARDRAIL APPROACH SECTION, GALVANIZED 3 RAIL BOX BEAM	04-23-2012

**HYDROLOGIC DATA**

Date: April 2011

DRAINAGE AREA : 69.3 sq. mi.  
 CHARACTER OF TERRAIN : Hilly to mountainous drainage basin  
 STREAM CHARACTERISTICS : Steep, sinuous, alluvial and probably incised  
 NATURE OF STREAMBED : Mostly cobbles and boulders with some sand and gravel

**PEAK FLOW DATA**

Q 2.33 =	3,500 cfs	Q 50 =	10,800 cfs
Q 10 =	7,100 cfs	Q 100 =	12,570 cfs
Q 25 =	8,960 cfs	Q 500 =	17,500 cfs

DATE OF FLOOD OF RECORD : Unknown - Water overtopped the roadway in 1998  
 ESTIMATED DISCHARGE : Unknown  
 WATER SURFACE ELEV. : Unknown  
 NATURAL STREAM VELOCITY : @ Q25 = 15.5 fps  
 ICE CONDITIONS : Slight to moderate  
 DEBRIS : Slight to moderate  
 DOES THE STREAM REACH MAXIMUM HIGH-WATER 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 : Steel Pony Truss bridge  
 YEAR BUILT : 1928  
 CLEAR SPAN(NORMAL TO STREAM) : 71' minimum effective clear span  
 VERTICAL CLEARANCE ABOVE STREAMBED : 18'  
 WATERWAY OF FULL OPENING : 932 sq. ft.  
 DISPOSITION OF STRUCTURE : Remove and replace with a new bridge  
 TYPE OF MATERIAL UNDER SUBSTRUCTURE : See boring logs

**WATER SURFACE ELEVATIONS AT:**

Q2.33 =	481.5'	VELOCITY =	12.7 fps
Q10 =	485.0'	"	15.9 fps
Q25 =	486.7'	"	16.9 fps
Q50 =	488.2'	"	17.6 fps
Q100 =	490.8'	"	18.3 fps

LONG TERM STREAMBED CHANGES : None noted.

IS THE ROADWAY OVERTOPPED BELOW Q100 : No  
 FREQUENCY : At Q100  
 RELIEF ELEVATION : 490.6'  
 DISCHARGE OVER ROAD @Q100 : None or minimal

**UPSTREAM STRUCTURE**

TOWN: Bristol DISTANCE: 7,600'  
 HIGHWAY #: VT 116 STRUCTURE #: 10  
 CLEAR SPAN: 112' CLEAR HEIGHT: 14'  
 YEAR BUILT: 2000 FULL WATERWAY: 1290 sq. ft.  
 STRUCTURE TYPE: Single span steel beam bridge

**DOWNSTREAM STRUCTURE**

TOWN: Bristol DISTANCE: 3,800'  
 HIGHWAY #: T. H. 5 STRUCTURE #: 11  
 CLEAR SPAN: 105' CLEAR HEIGHT: 10'  
 YEAR BUILT: 1973 FULL WATERWAY: 880 sq. ft.  
 STRUCTURE TYPE: Single span steel beam bridge

**LRFR LOAD RATING FACTORS**

LOADING LEVELS	TRUCK						
	H-20	HL-93	3S2	6 AXLE	3A. STR.	4A. STR.	5A. SEMI
TONNAGE	20	36	36	66	30	34.5	38
INVENTORY	1.88	1.02					
POSTING							
OPERATING	2.45	1.33	1.66	1.02	1.62	1.49	
COMMENTS:							

**PILE DRIVING AND TESTING REQUIREMENTS**

- NOMINAL PILE DRIVING CAPACITY  $R_{nd}$ : 627.00 KIP
- PILE TEST RESISTANCE FACTOR  $\phi$ : 0.65
- MAXIMUM PILE TIP ELEVATION: 439.00 FT
- 

**PROPOSED STRUCTURE**

STRUCTURE TYPE: Single span steel beam bridge  
 CLEAR SPAN(NORMAL TO STREAM): 89' minimum effective clear span  
 VERTICAL CLEARANCE ABOVE STREAMBED: 16'  
 WATERWAY OF FULL OPENING: 1239 sq. ft.

**WATER SURFACE ELEVATIONS AT:**

Q2.33 =	481.5'	VELOCITY=	10.5 fps
Q10 =	484.0'	"	13.7 fps
Q25 =	485.6'	"	15.0 fps
Q50 =	486.9'	"	16.1 fps
Q100 =	488.1'	"	16.8 fps

IS THE ROADWAY OVERTOPPED BELOW Q100 : No  
 FREQUENCY : Above Q100  
 RELIEF ELEVATION : 492.5'  
 DISCHARGE OVER ROAD @Q100 : None

AVERAGE LOW ELEVATION OF SUPERSTRUCTURE : 487.1'  
 VERTICAL CLEARANCE : @ Q25 = 1.5' average

SCOUR : Contraction scour = 3' at Q100 and 5' at Q500.

REQUIRED CHANNEL PROTECTION : Stone Fill, Type IV

**PERMIT INFORMATION**

AVERAGE DAILY FLOW : 140 cfs DEPTH OR ELEVATION:  
 ORDINARY LOW WATER : 65 cfs Depth = 1'  
 ORDINARY HIGH WATER : 1500 cfs Depth = 6'

**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**

**TRAFFIC MAINTENANCE NOTES**

- MAINTAIN TRAFFIC ON AN OFF SITE DETOUR.
- TRAFFIC SIGNALS ARE NOT NECESSARY.
- SIDEWALKS ARE NOT NECESSARY

**DESIGN VALUES**

1. DESIGN LIVE LOAD	HL-93
2. FUTURE PAVEMENT	dp: 2.5 INCH
3. DESIGN SPAN	L: 120.60 FT
4. MIN. MID-SPAN POS. CAMBER @ RELEASE (PRESTRESSED UNITS)	$\Delta$ : ---
5. PRESTRESSING STRAND	fy: ---
6. PRESTRESSED CONCRETE STRENGTH	f'c: ---
7. PRESTRESSED CONCRETE RELEASE STRENGTH	f'ci: ---
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	fy: 60 KSI
13. STRUCTURAL STEEL AASHTO M270 (WEATHERING)	fy: 60 KSI
14. SOIL UNIT WEIGHT	$\gamma$ : 0.140 KCF
15. NOMINAL BEARING RESISTANCE OF SOIL	qn: 4.0 KSF
16. SOIL BEARING RESISTANCE FACTOR (REFER TO AASHTO LRFD)	$\phi$ : ---
17. NOMINAL BEARING RESISTANCE OF ROCK	qn: 10.0 KSF
18. ROCK BEARING RESISTANCE FACTOR (REFER TO AASHTO LRFD)	$\phi$ : ---
19. NOMINAL AXIAL PILE RESISTANCE	qp: ---
20. PILE YIELD STRENGTH ASTM A572	fy: 50 KSI
21. PILE SIZE	HP 14X 89
22. EST. PILE LENGTH	Lp: 102 FT
23. PILE RESISTANCE FACTOR	$\phi$ : ---
24. LATERAL PILE DEFLECTION	$\Delta$ : ---
25. BASIC WIND SPEED	V3s: ---
26. MINIMUM GROUND SNOW LOAD	pg: ---
27. SEISMIC DATA	PGA: --- S: --- SI: ---

PROJECT NAME: BRISTOL  
 PROJECT NUMBER: BRO 1445(32)

FILE NAME: s05j062pi.xls PLOT DATE: 6/7/2013  
 PROJECT LEADER: J. LACROIX DRAWN BY: R. PELLETT  
 DESIGNED BY: G. LAROCHE CHECKED BY: T. FILLBACH  
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**STRUCTURAL DETAIL SHEETS**

SD-501.00	CONCRETE DETAILS AND NOTES
SD-502.00	CONCRETE DETAILS AND NOTES
SD-601.00	STRUCTURAL STEEL DETAILS AND NOTES
SD-602.00	STRUCTURAL STEEL PLATE GIRDER DETAILS AND NOTES

**ADDITIONAL DETAIL SHEETS**

WATERLINE DETAILS BY OTHERS - GREEN MOUNTAIN ENGINEERING

**TRAFFIC DATA**

YEAR	ADT	DHV	% D	% T	ADTT	20 year ESAL for flexible pavement from 2014 to 2034 : 99000
2014	570	90	62	6.3	30	40 year ESAL for flexible pavement from 2014 to 2054 : 17800
2034	640	100	62	6.6	40	Design Speed : 25 mph