

# PRELIMINARY INFORMATION SHEET (BRIDGE)

**LRFD**

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**STANDARDS LIST**

E-121	STANDARD SIGN PLACEMENT - CONVENTIONAL ROAD	08-08-1995
E-134	BRIDGE NUMBER PLAQUE	08-08-1995
E-143	REGULATORY SIGN DETAILS	06-15-2004
E-155	WARNING SIGN DETAILS	05-01-2004
E-193	PAVEMENT MARKING DETAILS	08-18-1995
G-1B	BOX BEAM GUARD RAIL	06-01-1994
F-1	WOVEN WIRE FENCE WITH WOOD POSTS	04-23-2012
S-3644A	BRIDGE RAILING, GALVANIZED 3 RAIL BOX BEAM	04-23-2012
S-3648	GUARDRAIL APPROACH SECTION, GALVANIZED 3 RAIL BOX BEAM	04-23-2012
S-364C	GUARDRAIL APPROACH SECTION, GALVANIZED 3 RAIL BOX BEAM	04-23-2012
S-364D	GUARDRAIL APPROACH SECTION, GALVANIZED 3 RAIL BOX BEAM	04-23-2012
T-10	CONVENTIONAL ROADS CONSTRUCTION APPROACH SIGNING	08-06-2012
T-35	CONSTRUCTION ZONE LONGITUDINAL DROP-OFFS	08-06-2012
T-36	CONSTRUCTION ZONE LONGITUDINAL DROP-OFFS FOR PAVING	08-06-2012
T-45	SQUARE TUBE SIGN POST AND ANCHOR	08-06-2012

**STRUCTURE DETAIL SHEETS**

SD-516.10	BRIDGE JOINT ASPHALTIC PLUG	08-29-2011
SD-502.00	CONCRETE DETAILS AND NOTES	10-10-2012

**FINAL HYDRAULIC REPORT**

**HYDROLOGIC DATA** Date: September 2013

DRAINAGE AREA : 17.9 sq. mi.  
 CHARACTER OF TERRAIN : Hilly, mixture of meadow and woods, rural  
 STREAM CHARACTERISTICS : Sinuous and incised  
 NATURE OF STREAMBED : Alluvial, sand and gravel

**PEAK FLOW DATA**

Q 2.33 =	1000 cfs	Q 50 =	2700 cfs
Q 10 =	1600 cfs	Q 100 =	3200 cfs
Q 25 =	2200 cfs	Q 500 =	4100 cfs

DATE OF FLOOD OF RECORD : Unknown  
 ESTIMATED DISCHARGE : Unknown  
 WATER SURFACE ELEV. : Unknown  
 NATURAL STREAM VELOCITY : @ Q25= 10.4 fps  
 ICE CONDITIONS : Moderate  
 DEBRIS : Moderate  
 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: Bailey Bridge  
 YEAR BUILT: 1924, Bailey bridge installed between 2004 and 2006  
 CLEAR SPAN(NORMAL TO STREAM): 41'  
 VERTICAL CLEARANCE ABOVE STREAMBED: ~12.5'  
 WATERWAY OF FULL OPENING: 425 sq. ft.  
 DISPOSITION OF STRUCTURE: Replace  
 TYPE OF MATERIAL UNDER SUBSTRUCTURE: See borings

**WATER SURFACE ELEVATIONS AT:**

Q2.33 =	549.1'	VELOCITY =	5.5 fps
Q10 =	550.8'	"	6.9 fps
Q25 =	552.3'	"	7.8 fps
Q50 =	553.4'	"	8.6 fps
Q100 =	553.7'	"	10.6 fps

LONG TERM STREAMBED CHANGES: None noted  
 IS THE ROADWAY OVERTOPPED BELOW Q100: No  
 FREQUENCY: N/A  
 RELIEF ELEVATION: 557.0'  
 DISCHARGE OVER ROAD @Q100: N/A

**UPSTREAM STRUCTURE**

TOWN: Enosburg DISTANCE: 19,000'  
 HIGHWAY #: TH 4 STRUCTURE #: 50  
 CLEAR SPAN: 72' CLEAR HEIGHT:  
 YEAR BUILT: 1918, reconstructed 1975 FULL WATERWAY:  
 STRUCTURE TYPE: Rolled Beam

**DOWNSTREAM STRUCTURE**

TOWN: Enosburg DISTANCE: 18,900'  
 HIGHWAY #: VT 108 STRUCTURE #: 48  
 CLEAR SPAN: 74' CLEAR HEIGHT:  
 YEAR BUILT: 1998 FULL WATERWAY:  
 STRUCTURE TYPE: Welded Plate Girder

**LRFR LOAD RATING FACTORS**

LOADING LEVELS	TRUCK						
	H-20	HL-93	3S2	6 AXLE	3A STR.	4A STR.	5A SEM
TONNAGE	20	36	36	66	30	34.5	38
INVENTORY	1.78	1.09					
POSTING							
OPERATING	2.81	1.41	1.48	0.98	1.25	1.13	1.24

COMMENTS: \* REFER TO MICROPILE FOUNDATION NOTES ON SHEET 5

**PROPOSED STRUCTURE**

STRUCTURE TYPE: NEXT Beam Bridge  
 CLEAR SPAN(NORMAL TO STREAM): 65'  
 VERTICAL CLEARANCE ABOVE STREAMBED: ~12'  
 WATERWAY OF FULL OPENING: 590 sq. ft.

**WATER SURFACE ELEVATIONS AT:**

Q2.33 =	549.0'	VELOCITY=	5.4 fps
Q10 =	550.6'	"	6.7 fps
Q25 =	552.1'	"	7.5 fps
Q50 =	553.0'	"	8.2 fps
Q100 =	553.2'	"	10.9 fps

IS THE ROADWAY OVERTOPPED BELOW Q100: No  
 FREQUENCY: N/A  
 RELIEF ELEVATION: 557.0'  
 DISCHARGE OVER ROAD @Q100: N/A

AVERAGE LOW ELEVATION OF SUPERSTRUCTURE: 555.9'  
 VERTICAL CLEARANCE: @ Q25 = 3.8'

SCOUR: 4' up to Q500  
 REQUIRED CHANNEL PROTECTION: Stone Fill, Type III

**PERMIT INFORMATION**

AVERAGE DAILY FLOW: 35 cfs DEPTH OR ELEVATION:  
 ORDINARY LOW WATER: 20 cfs ~545.0'  
 ORDINARY HIGH WATER: 430 cfs ~547.3'

**TEMPORARY BRIDGE REQUIREMENTS**

STRUCTURE TYPE: None required  
 CLEAR SPAN (NORMAL TO STREAM):  
 VERTICAL CLEARANCE ABOVE STREAMBED:  
 WATERWAY AREA OF FULL OPENING:

**ADDITIONAL INFORMATION**

**TRAFFIC MAINTENANCE NOTES**

1. MAINTAIN TRAFFIC ON AN OFF SITE DETOUR.
2. TRAFFIC SIGNALS ARE NOT NECESSARY.
3. SIDEWALKS ARE NOT NECESSARY

**DESIGN VALUES**

1. DESIGN LIVE LOAD	HL-93
2. FUTURE PAVEMENT	---
3. DESIGN SPAN	L: 69.00 FT FT
4. MIN. MID-SPAN POS. CAMBER @ RELEASE (PRESTRESSED UNITS)	Δ: ---
5. PRESTRESSING STRAND (0.60 INCH DIAMETER - LOW RELAX)	f <sub>y</sub> : 270 KSI
6. PRESTRESSED CONCRETE STRENGTH	f' <sub>c</sub> : 8.0 KSI
7. PRESTRESSED CONCRETE RELEASE STRENGTH	f' <sub>ci</sub> : 6.0 KSI
8. CONCRETE, HIGH PERFORMANCE CLASS AA	f' <sub>c</sub> : ---
9. CONCRETE, HIGH PERFORMANCE CLASS A	f' <sub>c</sub> : ---
10. CONCRETE, HIGH PERFORMANCE CLASS B	f' <sub>c</sub> : ---
11. CONCRETE, CLASS C	f' <sub>c</sub> : ---
12. REINFORCING STEEL	f <sub>y</sub> : ---
13. STRUCTURAL STEEL AASHTO M270	f <sub>y</sub> : ---
14. SOIL UNIT WEIGHT	γ: 0.140 KCF
15. NOMINAL BEARING RESISTANCE OF SOIL	q <sub>n</sub> : 4.0 KSF
16. SOIL BEARING RESISTANCE FACTOR (REFER TO AASHTO LRFD)	φ: ---
17. NOMINAL BEARING RESISTANCE OF ROCK	q <sub>n</sub> : ---
18. ROCK BEARING RESISTANCE FACTOR (REFER TO AASHTO LRFD)	φ: ---
19. NOMINAL AXIAL PILE RESISTANCE	q <sub>p</sub> : ---
20. PILE YIELD STRENGTH ASTM A572	f <sub>y</sub> : ---
21. PILE SIZE	*
22. EST. PILE LENGTH	L <sub>p</sub> : ---
23. PILE RESISTANCE FACTOR	φ: ---
24. LATERAL PILE DEFLECTION	Δ: ---
25. BASIC WIND SPEED	V <sub>3s</sub> : ---
26. MINIMUM GROUND SNOW LOAD	p <sub>g</sub> : ---
27. SEISMIC DATA	PGA: --- S: ---

**TRAFFIC DATA**

YEAR	ADT	DHV	% D	% T	ADTT	
2015	690	100	56	5.8	45	20 year ESAL for flexible pavement from 2015 to 2035 : 200000
2035	740	110	56	6.9	55	40 year ESAL for flexible pavement from 2015 to 2055 : 433000
						Design Speed : 50 mph

**AS BUILT "REBAR" DETAIL**

LEVEL I	LEVEL II	LEVEL III
TYPE:	TYPE:	TYPE:
GRADE:	GRADE:	GRADE:

PROJECT NAME: **ENOSBURG**  
 PROJECT NUMBER: **BRO 1448(40)**  
 FILE NAME: z12j168\_pi.xls PLOT DATE: 10/17/2013  
 PROJECT LEADER: G. BOGUE DRAWN BY: L. BUXTON  
 DESIGNED BY: G. BOGUE CHECKED BY: T. KNIGHT  
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