

PRELIMINARY INFORMATION SHEET (BRIDGE)

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FINAL HYDRAULIC REPORT

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REFERENCE SHEETS - EXISTING BRIDGE

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72	30° SKEW STANDARD I-BEAM BRIDGE
73	ABUTMENT NO. 1
74	ABUTMENT NO. 2
75	DETAILS OF PIERS 1 & 2

STRUCTURES DETAIL SHEETS

SD-501.00	CONCRETE DETAILS AND NOTES	5/7/2010
SD-502.00	CONCRETE DETAILS AND NOTES	5/7/2010
SD-516.10	BRIDGE JOINT ASPHALTIC PLUG	5/7/2010
SD-601.00	STRUCTURAL STEEL DETAILS AND NOTES	5/7/2010
SD-602.00	STRUCTURAL STEEL PLATE GIRDER DETAILS AND NOTES	5/7/2010

STANDARDS LIST

B-5	SLOPE GRADING, EMBANKMENTS, MUCK	06-01-1994
B-71	STANDARD FOR RESIDENTIAL AND COMMERCIAL DRIVES	07-08-2005
C-3A	SIDEWALK RAMPS	03-10-2008
C-10	CURBING	02-11-2008
D-13	CONCRETE CATCH BASIN	01-03-2000
D-15	PRECAST REINF CONC. MH GRATES, CAST IRON GRATE WITH FRAME, TYPE D & E	06-01-1994
E-121	STANDARD SIGN PLACEMENT - CONVENTIONAL ROAD	08-08-1995
E-123	GUIDE SIGN PLACEMENT - MISCELLANEOUS DETAILS	03-16-2004
E-163	TUBULAR STEEL SIGN POST	05-20-1999
E-193	PAVEMENT MARKING DETAILS	08-18-1995
G-1	STEEL BEAM GUARDRAIL DETAILS (POST, DELINEATOR, TYPICALS)	02-10-2014
G-1D	STEEL BEAM GUARDRAIL DETAILS (END TERMINAL, ANCHOR, MEDIATE)	02-10-2014
S-363	THREE BEAM TO STANDARD STEEL BEAM TRANSITION SECTION	04-23-2012
T-1	TRAFFIC CONTROL GENERAL NOTES	08-06-2012
T-10	CONVENTIONAL ROADS CONSTRUCTION APPROACH SIGNING	08-06-2012
T-17	TRAFFIC CONTROL MISCELLANEOUS DETAILS	08-06-2012
T-24	TRAFFIC CONTROL FOR MAINTENANCE PAVEMENT MARKING OPERATION	08-06-2012
T-28	CONSTRUCTION SIGN DETAILS	08-06-2012
T-29	CONSTRUCTION SIGN DETAILS	08-06-2012
T-30	CONSTRUCTION SIGN DETAILS	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-40	DELINEATORS AND MILEPOSTS	01-02-2013
T-42	BRIDGE NUMBER PLAQUE	04-09-2014
T-44	MILEMARKER DETAILS STATE AND TOWN HIGHWAYS	04-09-2014
T-45	SQUARE TUBE SIGN POST AND ANCHOR	01-02-2013

HYDROLOGIC DATA

DATE: DECEMBER 30, 2011

DRAINAGE AREA: 41.4 SQ. MI.
 CHARACTER OF TERRAIN: HILLY TO MOUNTAINOUS VALLEY SETTING
 STREAM CHARACTERISTICS: CHANNELIZED SINUOUS, LITTLE TO NO FLOODPLAIN
 NATURE OF STREAMBED: GRAVEL AND COBBLE

Q 2.33 = 2170 CFS Q50 = 5750 CFS
 Q 10 = 3300 CFS Q 100 = 7100 CFS
 Q 25 = 4600 CFS Q 500 = 11300 CFS

DATE OF FLOOD OF RECORD: AUGUST 28, 2011
 ESTIMATED DISCHARGE: 9420 CFS AT USGS 01334000
 WATER SURFACE ELEVATION: UNKNOWN
 NATURAL STREAM VELOCITY: 9.2 FPS @ Q50
 ICE CONDITIONS: LOW TO MODERATE
 DEBRIS: LOW TO 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: N/A

WATERSHED STORAGE: <5% HEADWATERS: -
 UNIFORM: X
 IMMEDIATELY ABOVE SITE: -

EXISTING STRUCTURE INFORMATION

STRUCTURE TYPE: 3 SPAN STEEL BEAM, NON-CONTINUOUS
 YEAR BUILT: 1938
 CLEAR SPAN (NORMAL TO STREAM): 216.2 FT
 VERTICAL CLEARANCE ABOVE STREAMBED: 15.8 FT
 WATERWAY OF FULL OPENING: 2790 SQ FT
 DISPOSITION OF STRUCTURE: REMOVE SUPERSTRUCTURE AND PORTION OF ABUTMENT CAP
 TYPE OF MATERIAL UNDER SUBSTRUCTURE: ABUTMENTS AND PIERS ON GRAVEL

WATER SURFACE ELEVATIONS AT: ONE BRIDGE LENGTH UPSTREAM

Q 2.33 = 616.8 FT VELOCITY = 7.4 FT/SEC
 Q 10 = 617.4 FT " 8.4 FT/SEC
 Q 25 = 618.0 FT " 9.3 FT/SEC
 Q50 = 618.4 FT " 9.9 FT/SEC
 Q 100 = 618.9 FT " 10.6 FT/SEC

LONG TERM STREAMBED CHANGES: THALWEG 2.5 FT LOWER THAN 1938 PLAN ELEV.

IS THE ROADWAY OVERTOPPED BELOW Q100? NO
 FREQUENCY: N/A
 RELIEF ELEVATION: 627.4
 DISCHARGE OVER ROAD @ Q100: N/A

UPSTREAM STRUCTURE

TOWN: BENNINGTON, VT DISTANCE: 600 FT
 HIGHWAY #: U.S. ROUTE 7 STRUCTURE #:
 CLEAR SPAN: CLEAR HEIGHT:
 YEAR BUILT: FULL WATERWAY:
 STRUCTURE TYPE:

DOWNSTREAM STRUCTURE

TOWN: BENNINGTON DISTANCE: 2 MI.
 HIGHWAY #: VT. ROUTE 279 STRUCTURE #:
 (BENNINGTON CONNECTOR)
 CLEAR SPAN: CLEAR HEIGHT:
 YEAR BUILT: FULL WATERWAY:
 STRUCTURE TYPE:

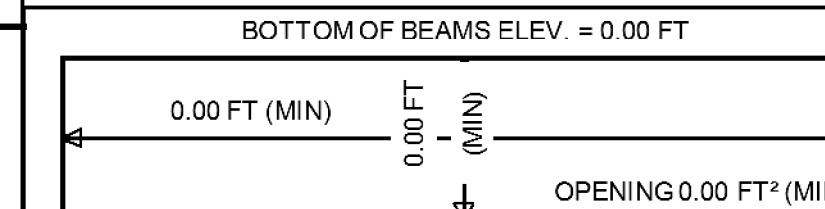
LRFR LOAD RATING FACTORS

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	4.01	1.32					
POSTING							
OPERATING	5.21	1.71	3.12	1.97	2.86	2.57	2.74
COMMENTS:							

AS BUILT "REBAR" DETAIL

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

TEMPORARY BRIDGE PROFILE ALONG TEMP CL



TRAFFIC DATA

YEAR	ADT	DHW	% D	% T	ADTT
2013	10500	1100	56	2.9	320
2033	11000	1150	56	4.6	530

20 year ESAL for flexible pavement from 2013 to 2033 : 1577000
 40 year ESAL for flexible pavement from 2013 to 2053 : 3548000
 Design Speed : 30 mph

PROPOSED STRUCTURE

STRUCTURE TYPE: 3 SPAN CONTINUOUS STEEL PLATE GIRDER

CLEAR SPAN (NORMAL TO STREAM): 229.6 FT
 VERTICAL CLEARANCE ABOVE STREAMBED: 16.9 FT
 WATERWAY OF FULL OPENING: 3050 SQ FT

WATER SURFACE ELEVATIONS AT: ONE BRIDGE LENGTH UPSTREAM

Q 2.33 = 616.8 FT VELOCITY = 7.4 FT/SEC
 Q 10 = 617.4 FT " 8.4 FT/SEC
 Q 25 = 618.0 FT " 9.3 FT/SEC
 Q50 = 618.4 FT " 9.9 FT/SEC
 Q 100 = 618.9 FT " 10.6 FT/SEC

IS THE ROADWAY OVERTOPPED BELOW Q100? NO
 FREQUENCY: N/A
 RELIEF ELEVATION: 627.4
 DISCHARGE OVER ROAD @ Q100: N/A
 AVERAGE LOW ELEVATION OF SUPERSTRUCTURE: 627.5
 VERTICAL CLEARANCE: 8.6 FT @ Q100

SCOUR: CALCULATED SCOUR DEPTH BELOW PIER FOOTINGS, EXISTING
 ABUTMENT HEAVY RIPRAP IN FAIR CONDITION AND TO BE LEFT IN PLACE
 REQUIRED CHANNEL PROTECTION: HEAVY RIPRAP AT EXISTING PIERS

PERMIT INFORMATION

AVERAGE DAILY FLOW: 59 CFS DEPTH OR ELEVATION:
 ORDINARY LOW WATER: 27 CFS 612.0 FT
 ORDINARY HIGH WATER: 930 CFS 614.7 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

TRAFFIC MAINTENANCE NOTES

1. MAINTAIN SINGLE LANE NORTHBOUND TRAFFIC USING PHASED CONSTRUCTION SEQUENCE
2. DETOUR SOUTHBOUND TRAFFIC SOUTH ON VT ROUTE 7
3. SIDEWALK ON BRIDGE WILL BE CLOSED DURING CONSTRUCTION (SEE TRAFFIC CONTROL NOTES)

DESIGN VALUES

1. DESIGN LIVE LOAD HL-93
2. FUTURE PAVEMENT d_p : 0.0 INCH
3. ABUTMENT BEARING TO BEARING LENGTH (THREE SPANS) L : 268.00 FT (92.00 - 84.00 - 92.00) FT
4. MIN. MID-SPAN POS. CAMBER @ RELEASE (PRESTRESSED UNITS) Δ : ---
5. PRESTRESSING STRAND f_y : ---
6. PRESTRESSED CONCRETE STRENGTH f'_c : ---
7. PRESTRESSED CONCRETE RELEASE STRENGTH f'_{ci} : ---
8. CONCRETE, HIGH PERFORMANCE CLASS AA f'_c : ---
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 : ---
12. REINFORCING STEEL f_y : 60 KSI
13. STRUCTURAL STEEL AASHTO M270 (WEATHERING) f_y : 50 KSI
14. NOMINAL BEARING RESISTANCE OF SOIL q_n : 11.0 KSF
15. SOIL BEARING RESISTANCE FACTOR (REFER TO AASHTO LRFD) ϕ : 0.45
16. NOMINAL BEARING RESISTANCE OF ROCK q_n : ---
17. ROCK BEARING RESISTANCE FACTOR (REFER TO AASHTO LRFD) ϕ : ---
18. PILE RESISTANCE FACTOR ϕ : 0.65
19. LATERAL PILE DEFLECTION Δ : 1.36 INCH
20. BASIC WIND SPEED V_{3s} : 100 MPH
21. MINIMUM GROUND SNOW LOAD p_g : ---
22. SEISMIC DATA P_gA : 9 %g S_s : 25 %g S_1 : 7 %g

PROJECT NAME: BENNINGTON

PROJECT NUMBER: BRF 1000(16)

FILE NAME: z88j087bdr_pi.xls PLOT DATE: 8/29/2014
 PROJECT LEADER: R. HEBERT DRAWN BY: D. BURHANS
 DESIGNED BY: D. BURHANS CHECKED BY: R. HEBERT
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