

PRELIMINARY INFORMATION SHEET (BRIDGE)

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FINAL HYDRAULIC REPORT

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STANDARDS LIST

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, MEDIAN)	02-10-2014
G-19	GENERIC GRADING PLANS FOR GUARDRAIL END TERMINALS	11-15-2002
S-360A	BRIDGE RAILING, GALVANIZED 2 RAIL BOX BEAM	04-23-2012
S-360B	GUARDRAIL APPROACH SECTION, GALVANIZED 2 RAIL BOX BEAM	04-23-2012
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-28	CONSTRUCTION SIGN DETAILS	08-06-2012
T-30	CONSTRUCTION SIGN DETAILS	08-06-2012
T-31	CONSTRUCTION SIGN DETAILS	08-06-2012
T-42	BRIDGE NUMBER PLAQUE	04-09-2014
T-45	SQUARE TUBE SIGN POST AND ANCHOR	01-02-2013

STRUCTURES DETAIL SHEETS

SD-501.00	CONCRETE DETAILS AND NOTES	5/7/2010
SD-502.00	CONCRETE DETAILS AND NOTES	5/7/2010

HYDROLOGIC DATA

Date: February 2014

DRAINAGE AREA : 4.7 sq. mi.
 CHARACTER OF TERRAIN : Hilly, mixture of open and forested land cover
 STREAM CHARACTERISTICS : Sinuous, alluvial with low banks to floodplain relief
 NATURE OF STREAMBED : Mostly sand, gravel and silt with some cobbles

PEAK FLOW DATA

Q 2.33 =	250 cfs	Q 50 =	800 cfs
Q 10 =	500 cfs	Q 100 =	950 cfs
Q 25 =	650 cfs	Q 500 =	1330 cfs

DATE OF FLOOD OF RECORD : Unknown
 ESTIMATED DISCHARGE : Unknown
 WATER SURFACE ELEV. : Unknown
 NATURAL STREAM VELOCITY : @ Q50 = 8.0 fps
 ICE CONDITIONS : Light to moderate
 DEBRIS : Light to moderate
 DOES THE STREAM REACH MAXIMUM HIGHWATER ELEV. RAPIDLY? No
 IS ORDINARY RISE RAPID? No
 IS STAGE AFFECTED BY UPSTREAM OR DOWNSTREAM CONDITIONS? Yes
 IF YES, DESCRIBE : Flood flows on the Missisquoi River may back up through this site.
 That was not considered in this final hydraulics. Water elevations may be higher than shown.

WATERSHED STORAGE : < 1% HEADWATERS :
 UNIFORM : X
 IMMEDIATELY ABOVE SITE :

EXISTING STRUCTURE INFORMATION

STRUCTURE TYPE : Single span concrete T-beam bridge
 YEAR BUILT : 1900
 CLEAR SPAN(NORMAL TO STREAM) : 21'
 VERTICAL CLEARANCE ABOVE STREAMBED : 5'
 WATERWAY OF FULL OPENING : 125 sq. ft.
 DISPOSITION OF STRUCTURE : Remove and replace with new structure
 TYPE OF MATERIAL UNDER SUBSTRUCTURE : See boring logs

WATER SURFACE ELEVATIONS AT:

Q2.33 =	429.9'	VELOCITY =	5.9 fps
Q10 =	431.3'	"	7.5 fps
Q25 =	431.9'	"	7.6 fps
Q50 =	433.4'	"	8.0 fps
Q100 =	433.9'	"	9.1 fps

LONG TERM STREAMBED CHANGES : Scour through bridge area.

IS THE ROADWAY OVERTOPPED BELOW Q100 : No
 FREQUENCY : Above Q100
 RELIEF ELEVATION : 436.2'
 DISCHARGE OVER ROAD @Q100 : 0 cfs

UPSTREAM STRUCTURE

TOWN : Richford DISTANCE : 4.500'
 HIGHWAY # : TH 8 STRUCTURE # : 26
 CLEAR SPAN : Not available CLEAR HEIGHT : NA
 YEAR BUILT : Not available FULL WATERWAY : NA
 STRUCTURE TYPE : Not available

DOWNSTREAM STRUCTURE

TOWN : Richford DISTANCE : 800'
 HIGHWAY # : Confluence Missisquoi River STRUCTURE # :
 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 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:	GRADE:		TYPE:	GRADE:		TYPE:	GRADE:	

TRAFFIC DATA

YEAR	ADT	DHV	% D	% T	ADTT	20 year ESAL for flexible pavement from 2015 to 2035 : 882,000
2015	830	120	56	13.9	120	40 year ESAL for flexible pavement from 2015 to 2055 : 1,946,000
2035	880	120	56	17.5	160	Design Speed : 50 mph

PROPOSED STRUCTURE

STRUCTURE TYPE : Single span precast concrete structure

CLEAR SPAN(NORMAL TO STREAM) : 26'
 VERTICAL CLEARANCE ABOVE STREAMBED : 6'
 WATERWAY OF FULL OPENING : 175 sq. ft.

WATER SURFACE ELEVATIONS AT:

Q2.33 =	429.8'	VELOCITY =	5.9 fps
Q10 =	431.0'	"	7.5 fps
Q25 =	431.4'	"	7.6 fps
Q50 =	431.7'	"	8.0 fps
Q100 =	431.9'	"	8.4 fps

IS THE ROADWAY OVERTOPPED BELOW Q100 : No
 FREQUENCY : Above Q100
 RELIEF ELEVATION : 436.6'
 DISCHARGE OVER ROAD @Q100 : 0 cfs

AVERAGE LOW ELEVATION OF SUPERSTRUCTURE : 433.6'
 VERTICAL CLEARANCE : @ Q50 = 1.9'

SCOUR : Contraction scour = 3' at Q100 and 4' at Q200.

REQUIRED CHANNEL PROTECTION : Stone Fill, Type II

PERMIT INFORMATION

AVERAGE DAILY FLOW : 10 cfs DEPTH OR ELEVATION :
 ORDINARY LOW WATER : 5 cfs Depth = 0.5'
 ORDINARY HIGH WATER : 110 cfs Depth = 2.0'

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

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	d _p : 0.0 INCH
3. DESIGN SPAN	L: 26.00 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: ---
10. CONCRETE, HIGH PERFORMANCE CLASS B	f'c: ---
11. CONCRETE, CLASS C	f'c: 3.0 KSI
12. REINFORCING STEEL	f _y : 60 KSI
13. STRUCTURAL STEEL AASHTO M270	f _y : ---
SEE PROJECT NOTES SHEET FOR INFORMATION -- 0.14 KCF	
14. NOMINAL BEARING RESISTANCE OF SOIL	q _n : ---
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: ---
19. LATERAL PILE DEFLECTION	Δ: ---
20. BASIC WIND SPEED	V _{3s} : ---
21. MINIMUM GROUND SNOW LOAD	p _g : ---
22. SEISMIC DATA	PGA: 0 S _s : --- S ₁ : ---

23. ---
 24. ---
 25. ---
 26. ---

PROJECT NAME : RICHFORD
 PROJECT NUMBER : BRF 0302(29)

FILE NAME : s12j158pi.xls PLOT DATE : 1/6/2015
 PROJECT LEADER : C. CARLSON DRAWN BY : R. PELLETT
 DESIGNED BY : H. SALLS CHECKED BY : H. SALLS
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