STATE OF VERMONT
AGENCY OF TRANSPORTATION

PRELIMINARY INFORMATION SHEET (BRIDGE)

Version
LRFD

FINAL HYDRAULIC REPORT

HYDROLOGIC DATA

Date: October 2012

DRAINAGE AREA : 245.0 sq. mi.
CHARACTER OF TERRAIN : Hilly, broad floodplain, agricultural
STREAM CHARACTERISTICS : Sinuous, incised, alluvial
NATURE OF STREAMBED : Mostly silt and sand

PEAK FLOW DATA

Q 2.33 =	6650 cfs	Q 50 =	16,200 cfs
Q 10 =	11,000 cfs	Q 100 =	18,500 cfs
Q 25 =	14,000 cfs	Q 500 =	24,500 cfs

DATE OF FLOOD OF RECORD: November 1927
ESTIMATED DISCHARGE: unknown
WATER SURFACE ELEV.: unknown
NATURAL STREAM VELOCITY : @ Q25 = 4.4 fps
ICE CONDITIONS : 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: Could be affected by Ripley Dam and confluence with East Creek

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

EXISTING STRUCTURE INFORMATION

STRUCTURE TYPE: 2-span steel through and pony truss bridge
YEAR BUILT: 1928
CLEAR SPAN(NORMAL TO STREAM): 204' with pier
VERTICAL CLEARANCE ABOVE STREAMBED: 19'
WATERWAY OF FULL OPENING: 2530 sq. ft.
DISPOSITION OF STRUCTURE: replace
TYPE OF MATERIAL UNDER SUBSTRUCTURE: see borings

WATER SURFACE ELEVATIONS AT:

Q2.33 =	526.8'	VELOCITY =	4.1 fps
Q10 =	529.6'	"	5.4 fps
Q25 =	531.4'	"	6.1 fps
Q50 =	532.2'	"	6.8 fps
Q100 =	533.2'	"	7.1 fps

LONG TERM STREAMBED CHANGES: None

IS THE ROADWAY OVERTOPPED BELOW Q100: yes
FREQUENCY: about Q10
RELIEF ELEVATION: 529.7'
DISCHARGE OVER ROAD @Q100: 2970 cfs

UPSTREAM STRUCTURE

TOWN: Rutland City — DISTANCE: 3650'
HIGHWAY # : — STRUCTURE #:
CLEAR SPAN: — CLEAR HEIGHT:
YEAR BUILT: — FULL WATERWAY:
STRUCTURE TYPE: Confluence of Moon Brook

DOWNSTRUCTURE STRUCTURE

TOWN: Rutland City — DISTANCE: 400'
HIGHWAY # : — STRUCTURE #:
CLEAR SPAN: — CLEAR HEIGHT:
YEAR BUILT: — FULL WATERWAY:
STRUCTURE TYPE: Confluence with East Creek

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	3.3	1.22					
POSTING							
OPERATING	4.29	1.59	2.81	1.65	2.95	2.59	2.55
COMMENTS:							

PROPOSED STRUCTURE

STRUCTURE TYPE: 2-span steel girder bridge

CLEAR SPAN(NORMAL TO STREAM): 152' + 108' = 260' total
VERTICAL CLEARANCE ABOVE STREAMBED: ~ 19'
WATERWAY OF FULL OPENING: 3060 sq. ft.

WATER SURFACE ELEVATIONS AT:

Q2.33 =	526.8'	VELOCITY=	4.7 fps
Q10 =	529.5'	"	6.1 fps
Q25 =	531.2'	"	6.5 fps
Q50 =	532.0'	"	6.9 fps
Q100 =	533.1'	"	7.1 fps

IS THE ROADWAY OVERTOPPED BELOW Q100: Yes
FREQUENCY: about Q10
RELIEF ELEVATION: 529.7'
DISCHARGE OVER ROAD @Q100: 1060 cfs

AVERAGE LOW ELEVATION OF SUPERSTRUCTURE: 531.0'
VERTICAL CLEARANCE: @ Q25 = - 0.2' (Water is into the beams.)

SCOUR: @Q500, pier scour is calculated to be 13'

REQUIRED CHANNEL PROTECTION: Stone Fill, Type III

PERMIT INFORMATION

AVERAGE DAILY FLOW:	510 cfs	DEPTH OR ELEVATION:
ORDINARY LOW WATER:	220 cfs	~518.0'
ORDINARY HIGH WATER:	2850 cfs	~524.0'

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	d_p:	3.0 INCH
3. ABUTMENT BEARING TO BEARING LENGTH (TWO SPANS) (160.00 - 115.00) FT	L:	275.00 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:	4.0 KSF
15. SOIL BEARING RESISTANCE FACTOR (REFER TO AASHTO LRFD)	ϕ:	---
16. NOMINAL BEARING RESISTANCE OF ROCK	q_n:	10.0 KSF
17. ROCK BEARING RESISTANCE FACTOR (REFER TO AASHTO LRFD)	ϕ:	---
18. PILE RESISTANCE FACTOR	ϕ:	0.65
19. LATERAL PILE DEFLECTION	Δ:	1.30 INCH
20. BASIC WIND SPEED	V_{3s}:	---
21. MINIMUM GROUND SNOW LOAD	p_g:	---
22. SEISMIC DATA PGA: 0.65	S_s:	---
	S_1:	---
23.		---
24.		---
25.		---
26.		---

PROJECT NAME: **RUTLAND CITY**
PROJECT NUMBER: **BRF 3000 (16)**

TRAFFIC DATA

YEAR	ADT	DHV	% D	% T	ADTT
2012	3800	430	62	4.7	130
2032	4100	460	62	4.6	130

20 year ESAL for flexible pavement from 2012 to 2032 : 366000
40 year ESAL for flexible pavement from 2012 to 2052 : 751000
Design Speed : 30 mph

AS BUILT "REBAR" DETAIL

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

PILE DRIVING AND TESTING REQUIREMENTS

1. NOMINAL PILE DRIVING CAPACITY — Rndr: **See Notes**
2. PILE TEST RESISTANCE FACTOR — ϕ: **0.65**
3. MAXIMUM PILE TIP ELEVATION — **See Notes**
4. ONE DYNAMIC PILE TEST, MINIMUM, AT EACH SUBSTRUCTURE LOCATION. TEST PILE TO BE FIRST DRIVEN AT EACH LOCATION. TEST PILE CAN BE USED AS PART OF SUBSTRUCTURE

FILE NAME: **s94j092forms.dgn**
PROJECT LEADER: **C. CARLSON**
DESIGNED BY: **M.EVANS-MONGEON**
PRELIMINARY INFORMATION SHEET 1

PLOT DATE: 3/18/2014
DRAWN BY: **M.LONGSTREET**
CHECKED BY: **M.EVANS-MONGE**
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