STATE OF VERMONT
AGENCY OF TRANSPORTATION

PRELIMINARY INFORMATION SHEET (BRIDGE)

Version 11.06.15

LRFD

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FINAL HYDRAULIC REPORT

HYDROLOGIC DATA

Date: May 2013

DRAINAGE AREA : 23.8 sq. mi.
CHARACTER OF TERRAIN : Hilly to mountainous
STREAM CHARACTERISTICS : Sinuous, semi-alluvial, incised, past degradation
NATURE OF STREAMBED : Gravel, cobbles, some boulders and some ledge upstream

PEAK FLOW DATA

Q 2.33 =	1300 cfs	Q 50 =	3550 cfs
Q 10 =	2350 cfs	Q 100 =	4200 cfs
Q 25 =	3000 cfs	Q 500 =	5750 cfs

DATE OF FLOOD OF RECORD : Unknown
ESTIMATED DISCHARGE: Unknown
WATER SURFACE ELEV.: Unknown
NATURAL STREAM VELOCITY : @ Q50 = 13.1 fps
ICE CONDITIONS : Moderate
DEBRIS: Moderate
DOES THE STREAM REACH MAXIMUM HIGHWATER 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: Two-span rolled beam bridge with concrete deck
YEAR BUILT: Built 1938, reconstructed 1975
CLEAR SPAN(NORMAL TO STREAM): Two spans of 58' = 116' total
VERTICAL CLEARANCE ABOVE STREAMBED: 19'
WATERWAY OF FULL OPENING: 1500 sq. ft.
DISPOSITION OF STRUCTURE: Remove
TYPE OF MATERIAL UNDER SUBSTRUCTURE: See boring logs

WATER SURFACE ELEVATIONS AT:

Q2.33 =	731.0'	VELOCITY =	6.8 fps
Q10 =	733.2'	"	7.9 fps
Q25 =	734.1'	"	8.8 fps
Q50 =	734.9'	"	9.5 fps
Q100 =	735.6'	"	10.6 fps

LONG TERM STREAMBED CHANGES: There is evidence of past stream bed degradation

IS THE ROADWAY OVERTOPPED BELOW Q100: No
FREQUENCY: Above Q100
RELIEF ELEVATION: 741.7'
DISCHARGE OVER ROAD @Q100: None

UPSTREAM STRUCTURE

TOWN: Stowe — DISTANCE: 4,000'
HIGHWAY # : TH 5 (FAS 0236) (Luce Hill Road) — STRUCTURE #: 53
CLEAR SPAN: about 55' — CLEAR HEIGHT: 20'
YEAR BUILT: Built 1952, reconstructed 1982 — FULL WATERWAY: NA
STRUCTURE TYPE: Single span steel beam bridge with concrete deck

DOWNSTREAM STRUCTURE

TOWN: Stowe — DISTANCE: 6,400'
HIGHWAY # : TH 6 (Weeks Hill Road) — STRUCTURE #: 52
CLEAR SPAN: about 61' — CLEAR HEIGHT: 16'
YEAR BUILT: 1958 — FULL WATERWAY: NA
STRUCTURE TYPE: Single span steel beam bridge with concrete deck

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	1.40	1.23					
POSTING							
OPERATING	1.88	1.60	3.77	2.51	2.51	3.17	3.55
COMMENTS:							

PILE DRIVING AND TESTING REQUIREMENTS

1	NOMINAL PILE DRIVING CAPACITY	400 KIP
2	PILE TEST RESISTANCE FACTOR	0.65
3	MAXIMUM PILE LENGTHS	SEE DESIGN VALUES
4	SEE GENERNAL NOTES FOR MINIMUM PILE LENGTH	

PROPOSED STRUCTURE

STRUCTURE TYPE: Single span curved girder bridge with concrete deck

CLEAR SPAN(NORMAL TO STREAM): 102'
VERTICAL CLEARANCE ABOVE STREAMBED: 16'
WATERWAY OF FULL OPENING: 1120 sq. ft.

WATER SURFACE ELEVATIONS AT:

Q2.33 =	729.7'	VELOCITY=	8.5 fps
Q10 =	731.5'	"	10.7 fps
Q25 =	732.5'	"	12.5 fps
Q50 =	733.2'	"	13.1 fps
Q100 =	734.1'	"	13.8 fps

IS THE ROADWAY OVERTOPPED BELOW Q100: No
FREQUENCY: Above Q100
RELIEF ELEVATION: 741.7'
DISCHARGE OVER ROAD @Q100: None

AVERAGE LOW ELEVATION OF SUPERSTRUCTURE: 739.4'
VERTICAL CLEARANCE: @ Q50 = 6.2'

SCOUR: Contraction scour = 1' up to Q100 and 5' at Q500.

REQUIRED CHANNEL PROTECTION: Stone Fill, Type IV

PERMIT INFORMATION

AVERAGE DAILY FLOW:	50 cfs	DEPTH OR ELEVATION:
ORDINARY LOW WATER:	25 cfs	Depth = 1'
ORDINARY HIGH WATER:	560 cfs	Depth = 3'

TEMPORARY BRIDGE REQUIREMENTS

STRUCTURE TYPE: Single span bridge
CLEAR SPAN (NORMAL TO STREAM): 80' minimum, centered on channel
VERTICAL CLEARANCE ABOVE STREAMBED: Elevation 734.0' minimum
WATERWAY AREA OF FULL OPENING: 580 sq. ft. minimum

ADDITIONAL INFORMATION

TRAFFIC MAINTENANCE NOTES

1. MAINTAIN TWO-WAY TRAFFIC ON A TEMPORARY BRIDGE.
2. TRAFFIC SIGNALS ARE NOT NECESSARY.
3. SIDEWALKS ARE NOT NECESSARY
4. THE APPROACHES FOR THE TEMPORARY BRIDGE SHALL BE PAVED.

DESIGN VALUES

1. DESIGN LIVE LOAD		HL-93
2. FUTURE PAVEMENT	d_P:	2.5 INCH
3. DESIGN SPAN	L:	145.00 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. SOIL UNIT WEIGHT	γ:	0.140 KCF
15. NOMINAL BEARING RESISTANCE OF SOIL	q_n:	---
16. SOIL BEARING RESISTANCE FACTOR (REFER TO AASHTO LRFD)	ϕ:	---
17. NOMINAL BEARING RESISTANCE OF ROCK	q_n:	---
18. ROCK BEARING RESISTANCE FACTOR (REFER TO AASHTO LRFD)	ϕ:	---
19. NOMINAL AXIAL PILE RESISTANCE	q_p:	521 KIP
20. PILE YIELD STRENGTH ASTM A572	f_y:	50 KSI
21. PILE SIZE		HP 12x63
22. EST. PILE LENGTH	L_p:	64' ABUT 1
	L_p:	47' ABUT 2
23. PILE RESISTANCE FACTOR	ϕ:	0.50
24. LATERAL PILE DEFLECTION	Δ:	0.74 IN
25. BASIC WIND SPEED	V_{3s}:	---
26. MINIMUM GROUND SNOW LOAD	p_g:	---
27. SEISMIC DATA PGA: ---	S_s:	---
	S_1:	---

PROJECT NAME: STOWE
PROJECT NUMBER: BRF 0235(15)

AS BUILT "REBAR" DETAIL

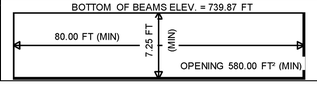
LEVEL I	LEVEL II	LEVEL III
TYPE:	TYPE:	TYPE:
GRADE:	GRADE:	GRADE:

TRAFFIC DATA

YEAR	ADT	DHV	% D	% T	ADTT
2014	8200	1100	52	5.7	480
2034	8700	1200	52	8.6	780

20 year ESAL for flexible pavement from 2014 to 2034 : 1920000
40 year ESAL for flexible pavement from 2014 to 2054 : 4446000
Design Speed : 30 mph

TEMPORARY BRIDGE PROFILE ALONG TEMP CL



MODEL: PI
CLD 12-0120

FILE NAME: z88cl90pi.dgn
PROJECT LEADER: J. BYATT
DESIGNED BY: K. RUTTER
PRELIMINARY INFORMATION SHEET

PLOT DATE: 6/1/2015
DRAWN BY: M. SMITH
CHECKED BY: J. BYATT
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