

PRELIMINARY INFORMATION SHEET (BRIDGE)

LRFD

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FINAL HYDRAULIC REPORT

PLAN SHEETS

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STRUCTURAL DETAIL SHEETS

SD-501.00	CONCRETE DETAILS AND NOTES
SD-502.00	CONCRETE DETAILS AND NOTES
SD-516.10	BRIDGE JOINT ASPHALTIC PLUG

HYDROLOGIC DATA Date: January 2011

DRAINAGE AREA : 9.0 sq. mi.
 CHARACTER OF TERRAIN : Hilly to mountainous, mostly forested with some open areas
 STREAM CHARACTERISTICS : Perennial, incised, alluvial, sinuous with narrow floodplains
 NATURE OF STREAMBED : Gravel, cobbles and boulders

PEAK FLOW DATA

Q 2.33 =	650 cfs	Q 50 =	2000 cfs
Q 10 =	1250 cfs	Q 100 =	2400 cfs
Q 25 =	1650 cfs	Q 500 =	3400 cfs

DATE OF FLOOD OF RECORD : Unknown
 ESTIMATED DISCHARGE : Unknown
 WATER SURFACE ELEV. : Unknown
 NATURAL STREAM VELOCITY : @ Q50 = 8.3 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 : Single span concrete T-beam bridge
 YEAR BUILT : built in 1931 and widened in 1951
 CLEAR SPAN(NORMAL TO STREAM): 37'
 VERTICAL CLEARANCE ABOVE STREAMBED: 16'
 WATERWAY OF FULL OPENING: 580 sq. ft.
 DISPOSITION OF STRUCTURE: Remove
 TYPE OF MATERIAL UNDER SUBSTRUCTURE: See boring logs

WATER SURFACE ELEVATIONS AT:

Q2.33 =	666.2'	VELOCITY =	6.1 fps
Q10 =	667.7'	"	8.2 fps
Q25 =	668.7'	"	9.4 fps
Q50 =	669.5'	"	10.4 fps
Q100 =	670.4'	"	11.4 fps

LONG TERM STREAMBED CHANGES: Approximately 1' of channel degradation and local scour along the south abutment and some aggradation in front of the north abutment since 1931.

IS THE ROADWAY OVERTOPPED BELOW Q100: No
 FREQUENCY: Above Q100
 RELIEF ELEVATION: 678.2'
 DISCHARGE OVER ROAD @Q100: None

UPSTREAM STRUCTURE

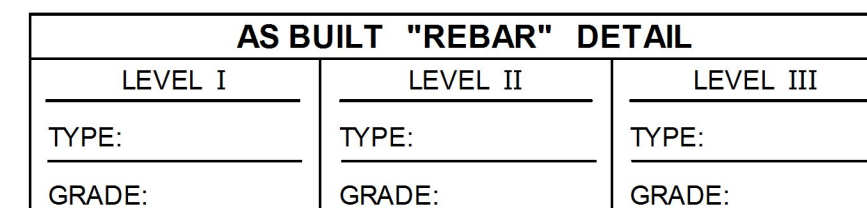
TOWN: Stowe DISTANCE: 1500'
 HIGHWAY #: T.H. 7 STRUCTURE #: 50
 CLEAR SPAN: 55' CLEAR HEIGHT: >20'
 YEAR BUILT: 1971 FULL WATERWAY:
 STRUCTURE TYPE: Bridge

DOWNSTREAM STRUCTURE

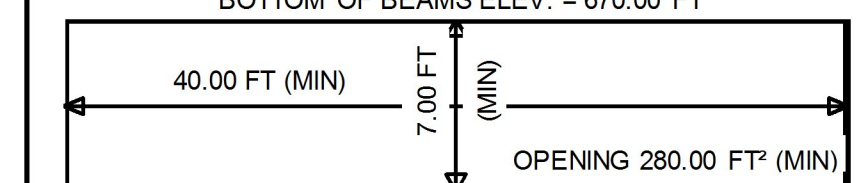
TOWN: N.A. - Confluence with Little River DISTANCE: 1800'
 HIGHWAY #: STRUCTURE #:
 CLEAR SPAN: CLEAR HEIGHT:
 YEAR BUILT: FULL WATERWAY:
 STRUCTURE TYPE:

LRFR LOAD RATING FACTORS

LOADING LEVELS	TRUCK						
	H-20	HL-93	3S2	6 AXLE	3A STR.	4A STR.	5A SEMI
TONNAGE	20	36	36	66	30	34.5	38
INVENTORY	2.39	1.19					
POSTING							
OPERATING	3.10	1.54	1.64	1.27	1.45	1.29	1.40
COMMENTS:							



TEMPORARY BRIDGE PROFILE ALONG TEMP CL



PILE DRIVING AND TESTING REQUIREMENTS

- NOMINAL PILE DRIVING CAPACITY ϕ : 525.00 KIP
- PILE TEST RESISTANCE FACTOR ϕ : 0.65
- REQUIRED PILE PENETRATION DEPTH 20.00 FT
- PERFORM ONE DYNAMIC PILE LOADING TEST AT EACH ABUTMENT.

PROPOSED STRUCTURE

STRUCTURE TYPE: Single span integral abutment bridge
 CLEAR SPAN(NORMAL TO STREAM): 66'
 VERTICAL CLEARANCE ABOVE STREAMBED: 18' at inlet, 16' at outlet
 WATERWAY OF FULL OPENING: 760 sq. ft.

WATER SURFACE ELEVATIONS AT:

Q2.33 =	666.2'	VELOCITY =	6.1 fps
Q10 =	667.8'	"	8.0 fps
Q25 =	668.7'	"	9.0 fps
Q50 =	669.5'	"	9.7 fps
Q100 =	670.3'	"	10.5 fps

IS THE ROADWAY OVERTOPPED BELOW Q100: No
 FREQUENCY: Above Q100
 RELIEF ELEVATION: 678.2'
 DISCHARGE OVER ROAD @Q100: None

AVERAGE LOW ELEVATION OF SUPERSTRUCTURE: 680.5' upstream, 677.5' downstr.
 VERTICAL CLEARANCE: @ Q100 = 10.2' upstream

SCOUR: 2' of contraction scour and long term degradation through the proposed bridge up to Q500.
 REQUIRED CHANNEL PROTECTION: Stone Fill, Type IV

PERMIT INFORMATION

AVERAGE DAILY FLOW:	20 cfs	DEPTH OR ELEVATION:	
ORDINARY LOW WATER:	10 cfs		0.5'
ORDINARY HIGH WATER:	280 cfs		2.5'

TEMPORARY BRIDGE REQUIREMENTS

STRUCTURE TYPE: Single span bridge
 CLEAR SPAN (NORMAL TO STREAM): 40' minimum
 VERTICAL CLEARANCE ABOVE STREAMBED: Elevation 670' minimum
 WATERWAY AREA OF FULL OPENING: 280 sq. ft. minimum

ADDITIONAL INFORMATION

TRAFFIC MAINTENANCE NOTES

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

DESIGN VALUES

1. DESIGN LIVE LOAD	HL-93
2. FUTURE PAVEMENT	d_p : 3.0 INCH
3. DESIGN SPAN	L : 74.00 FT
4. MIN. MID-SPAN POS. CAMBER @ RELEASE (PRESTRESSED UNITS)	Δ : 1.69 INCH
5. PRESTRESSING STRAND (0.60 INCH DIAMETER - LOW RELAX)	f_y : 270 KSI
6. PRESTRESSED CONCRETE STRENGTH	f'_c : 6.0 KSI
7. PRESTRESSED CONCRETE RELEASE STRENGTH	f'_{cr} : 5.0 KSI
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	f_y : ---
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 : 525.0 KIPS
20. PILE YIELD STRENGTH ASTM A572	f_y : 50 KSI
21. PILE SIZE	HP 12X74
22. EST. PILE LENGTHS (TWO SUBSTRUCTURES) (ABUTMENT 1 = 23 AND ABUTMENT 2 = 39) FT	L_p : ---
23. PILE RESISTANCE FACTOR	ϕ : 0.65
24. LATERAL PILE DEFLECTION	Δ : 0.30 INCH
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 029-1(17)**

FILE NAME: s85e037pi.dgn PLOT DATE: 17 - JUN - 2013
 PROJECT LEADER: C. CARLSON DRAWN BY: G. ROY
 DESIGNED BY: H. I. SALLS CHECKED BY: H. I. SALLS
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TRAFFIC DATA

YEAR	ADT	DHV	% D	% T	ADTT
2013	11000	1200	55	6	1000
2033	13500	1500	55	8	1900

20 year ESAL for flexible pavement from 2013 to 2033 : 7414000
 40 year ESAL for flexible pavement from 2013 to 2053 : 17923000
 Design Speed : 40 mph