

PRELIMINARY INFORMATION SHEET (BRIDGE)

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FINAL HYDRAULIC REPORT

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STANDARDS LIST

C-2A	PORTLAND CEMENT CONCRETE SIDEWALK DRIVE ENTRANCES WITH SIDEWALK A	10-14-2005
C-2B	PORTLAND CEMENT CONCRETE SIDEWALK DRIVE ENTRANCES WITH SIDEWALK A	10-14-2005
C-3A	SIDEWALK RAMPS	03-10-2008
C-3B	SIDEWALK RAMPS AND MEDIAN ISLANDS	03-10-2008
C-10	CURBING	02-11-2008
D-15	PRECAST REINF CONC. MH-GRATES, CAST IRON GRATE WITH FRAME, TYPE D & E	06-01-1994
E-144	REGULATORY SIGN DETAILS	03-29-1999
E-171A	TRAFFIC CONTROL SIGNALS GENERAL NOTES & DETAILS	08-09-1995
E-171B	TRAFFIC CONTROL SIGNALS MISC. DETAILS	08-09-1995
E-175	POWER DROP STANCHIONS	06-08-2009
G-1B	BOX BEAM GUARD RAIL	06-01-1994
S-352A	BRIDGE RAILING, GALVANIZED STEEL TUBING/CONCRETE COMBINATION	08-22-2012
S-352B	BRIDGE RAILING, GALVANIZED STEEL TUBING/CONCRETE COMBINATION	08-22-2012
S-352C	BRIDGE RAILING, GALVANIZED STEEL TUBING/CONCRETE COMBINATION	08-22-2012
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-21	TEMPORARY TRAFFIC CONTROL FOR THREE LANE ROADWAY CLOSURE	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-31	CONSTRUCTION SIGN DETAILS	08-06-2012
T-35	CONSTRUCTION ZONE LONGITUDNAL DROP OFFS	08-06-2012
T-36	CONSTRUCTION ZONE LONGITUDNAL DROP OFFS FOR PAVING	08-06-2012
T-42	BRIDGE NUMBER PLAQUE	04-09-2014
T-45	SQUARE TUBE SIGN POST AND ANCHOR	01-02-2013

HYDROLOGIC DATA

Date: January 2014

DRAINAGE AREA : 52.8 sq. mi.
 CHARACTER OF TERRAIN : Hilly to mountainous, a mixture of forested and open land
 STREAM CHARACTERISTICS : Semi-alluvial, sinuous, floodplain - wide upst and narrow dnst
 NATURE OF STREAMBED : Gravel, cobbles and some ledge

PEAK FLOW DATA

Q 2.33 =	2500 cfs	Q 50 =	6060 cfs
Q 10 =	4100 cfs	Q 100 =	7150 cfs
Q 25 =	5200 cfs	Q 500 =	9680 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? No
 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 steel beam bridge
 YEAR BUILT : 1944, reconstructed 1973
 CLEAR SPAN(NORMAL TO STREAM): Two 67' spans = 134' total
 VERTICAL CLEARANCE ABOVE STREAMBED : 27'
 WATERWAY OF FULL OPENING : 2050 sf
 DISPOSITION OF STRUCTURE : Remove and replace
 TYPE OF MATERIAL UNDER SUBSTRUCTURE : See record plans & borings

WATER SURFACE ELEVATIONS AT:

Q2.33 =	692.9'	VELOCITY =	7.1 fps
Q10 =	696.0'	"	7.3 fps
Q25 =	697.3'	"	8.2 fps
Q50 =	698.3'	"	8.8 fps
Q100 =	699.5'	"	9.4 fps

LONG TERM STREAMBED CHANGES : 1' to 2' of scour through the bridge.
 No other changes noted.

IS THE ROADWAY OVERTOPPED BELOW Q100: No
 FREQUENCY: Above Q100
 RELIEF ELEVATION: 710.5'
 DISCHARGE OVER ROAD @Q100: none

UPSTREAM STRUCTURE

TOWN: N.A. - River divides
 DISTANCE: _____
 HIGHWAY #: _____
 CLEAR SPAN: _____
 YEAR BUILT: _____
 STRUCTURE TYPE: _____

DOWNSTREAM STRUCTURE

TOWN: Stowe
 DISTANCE: 3500'
 HIGHWAY #: T.H. 5
 STRUCTURE #: 4
 CLEAR SPAN: 70'
 CLEAR HEIGHT: 15'
 YEAR BUILT: 1940
 FULL WATERWAY: N/A
 STRUCTURE TYPE: 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	4.24	1.19					
POSTING							
OPERATING	3.26	1.55	2.83	1.72	2.91	2.57	2.55
COMMENTS:							

AS BUILT "REBAR" DETAIL		
LEVEL I	LEVEL II	LEVEL III
TYPE: _____	TYPE: _____	TYPE: _____
GRADE: _____	GRADE: _____	GRADE: _____

TRAFFIC DATA

YEAR	ADT	DHV	% D	% T	ADTT	20 year ESAL for flexible pavement from 2015 to 2035 : 2566000
2015	8200	1100	53	4.3	340	40 year ESAL for flexible pavement from 2015 to 2055 : 6385000
2035	9200	1200	53	6.8	600	Design Speed : 25 mph

PROPOSED STRUCTURE

STRUCTURE TYPE: New single span steel girder bridge

CLEAR SPAN(NORMAL TO STREAM): 123'
 VERTICAL CLEARANCE ABOVE STREAMBED: 24'
 WATERWAY OF FULL OPENING: 1900 sf per

WATER SURFACE ELEVATIONS AT:

Q2.33 =	692.6'	VELOCITY=	6.9 fps
Q10 =	695.8'	"	6.9 fps
Q25 =	697.1'	"	7.8 fps
Q50 =	698.0'	"	8.3 fps
Q100 =	699.2'	"	8.8 fps

IS THE ROADWAY OVERTOPPED BELOW Q100: No
 FREQUENCY: Above Q100
 RELIEF ELEVATION: 710.5'
 DISCHARGE OVER ROAD @Q100: none

AVERAGE LOW ELEVATION OF SUPERSTRUCTURE: 707.4'
 VERTICAL CLEARANCE: @Q50 = 9.4'

SCOUR: Contraction scour calculated as 3' at Q100 and 7' at Q500. Scour may be less where ledge is present.
 REQUIRED CHANNEL PROTECTION: Stone Fill, Type IV

PERMIT INFORMATION

AVERAGE DAILY FLOW: 110 cfs
 ORDINARY LOW WATER: 50 cfs
 ORDINARY HIGH WATER: 1100 cfs
 DEPTH OR ELEVATION:
 Depth = 2.0'
 Depth = 6.0'

TEMPORARY BRIDGE REQUIREMENTS

STRUCTURE TYPE: No temporary bridge.
 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. SEE TRAFFIC CONTROL PLAN FOR TRAFFIC SIGNAL DETAILS.

DESIGN VALUES

1. DESIGN LIVE LOAD	HL-93
2. FUTURE PAVEMENT	dp: 3.0 INCH
3. DESIGN SPAN	L: 130.00 FT
4. MIN. MID-SPAN POS. CAMBER @ RELEASE (PRESTRESSED UNITS)	Δ: ---
5. PRESTRESSING STRAND (0.60 INCH DIAMETER - LOW RELAX)	fy: 270 KSI
6. PRESTRESSED CONCRETE STRENGTH	f'c: ---
7. PRESTRESSED CONCRETE RELEASE STRENGTH	f'ci: ---
8. CONCRETE, HIGH PERFORMANCE CLASS AA	f'c: 4.0 KSI
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: 3.0 KSI
12. REINFORCING STEEL	fy: 60 KSI
13. STRUCTURAL STEEL AASHTO M270 (WEATHERING)	fy: 50 KSI
14. SOIL UNIT WEIGHT	γ: 0.140 KCF
15. NOMINAL BEARING RESISTANCE OF SOIL	qn: 4.0 KSF
16. SOIL BEARING RESISTANCE FACTOR (REFER TO AASHTO LRFD)	φ: 0.45
17. NOMINAL BEARING RESISTANCE OF ROCK	qn: ---
18. ROCK BEARING RESISTANCE FACTOR (REFER TO AASHTO LRFD)	φ: ---
19. NOMINAL AXIAL PILE RESISTANCE	qp: 564.0 KIPS
20. PILE YIELD STRENGTH ASTM A572	fy: 50 KSI
21. PILE SIZE	HP 12X 84
22. EST. PILE LENGTHS (TWO SUBSTRUCTURES) (ABUTMENT 1 = 11 AND ABUTMENT 2 = 20) FT	Lp: _____
23. PILE RESISTANCE FACTOR	φ: 0.70
24. LATERAL PILE DEFLECTION	Δ: 0.76 INCH
25. BASIC WIND SPEED	V3s: ---
26. MINIMUM GROUND SNOW LOAD	pg: ---
27. SEISMIC DATA	PGA: 15%g Ss: --- Si: ---

PROJECT NAME: **STOWE**
 PROJECT NUMBER: **BRF 0235 (11)**
 FILE NAME: s87e052pi.dgn
 PROJECT LEADER: C. CARLSON
 DESIGNED BY: D. PETERSON
 PRELIMINARY INFORMATION SHEET
 PLOT DATE: 7/17/2014
 DRAWN BY: M. LONGSTREET
 CHECKED BY: J. LACROIX
 SHEET 2 OF 64

1. NOMINAL PILE DRIVING CAPACITY $f_{pd} = 564.00$ KIP
 2. PILE TEST RESISTANCE FACTOR $\phi = 0.7$
 3. MAXIMUM PILE TIP ELEVATION NA
 4. PRE-EXCAVATED INTEGRAL ABUTMENT PILES. MIN. 3'-0" INTO SOLID ROCK. SAND FILL AROUND PILE IN CAVITY.