

PRELIMINARY INFORMATION SHEET (BRIDGE)

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FINAL HYDRAULIC REPORT

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DETAIL SHEETS

HSD 400.01	SAFETY EDGE DETAILS	3/29/2016
HSD 621.06	GUARDRAIL TERMINAL LABEL DETAIL	2/27/2017
SD-366.00	LONGSPAN STEEL BEAM GUARDRAIL, GALVANIZED	1/3/2014
SD-501.00	CONCRETE DETAILS AND NOTES	2/9/2012
SD-502.00	CONCRETE DETAILS AND NOTES	10/10/2012
SD-516.10	BRIDGE JOINT ASPHALTIC PLUG	8/29/2011
SD-601.00	STRUCTURAL STEEL DETAILS AND NOTES	6/4/2010
SD-602.00	STRUCTURAL STEEL PLATE GIRDER DETAILS AND NOTES	5/2/2011

STANDARDS LIST

A-61	SLOPES IN SOLID ROCK EXCAV. (ADT UNDER 400 VPD)	06-01-1994
B-71	STANDARD FOR RESIDENTIAL AND COMMERCIAL DRIVES	07-08-2005
D-1	PRECAST REINFORCED CONCRETE DROP INLET DETAILS	06-01-1994
D-4	VARIOUS DRAINAGE DETAILS	08-13-2007
D-11	STEEL OR IRON GRATES & COVERS (TYPE A)	06-01-1994
D-15	PRECAST REINF CONC. MH-GRATES, CAST IRON GRATE WITH FRAME, TYPE D & E	06-01-1994
D-30	UNDERDRAIN CONSTRUCTION DETAILS	08-13-2007
D-33	REINFORCED CONCRETE STRAIGHT HEADWALL	03-12-2007
E-121	STANDARD SIGN PLACEMENT - CONVENTIONAL ROAD	08-08-1995
E-127	ROUTE MARKINGS AT RURAL INTERSECTIONS	08-08-1995
E-136B	STATE ROUTE MARKER SIGN DETAILS	08-08-1995
F-2	CHAIN LINK FENCE, TYPE I DETAILS	06-01-1994
G-1	STEEL BEAM GUARDRAIL DETAILS (POST, DELINEATOR, TYPICALS)	03-10-2017
G-1B	BOX BEAM GUARD RAIL	06-13-1997
G-1D	STEEL BEAM GUARDRAIL DETAILS (END TERMINAL, ANCHOR, MEDIAN)	03-10-2017
G-19	GENERIC GRADING PLANS FOR GUARDRAIL END TERMINALS	11-15-2002
S-364A	BRIDGE RAILING, GALVANIZED 3 RAIL BOX BEAM	02-02-2017
S-364B	GUARDRAIL APPROACH SECTION, GALVANIZED 3 RAIL BOX BEAM	02-02-2017
S-364C	GUARDRAIL APPROACH SECTION, GALVANIZED 3 RAIL BOX BEAM	02-02-2017
S-364D	GUARDRAIL APPROACH SECTION, GALVANIZED 3 RAIL BOX BEAM	02-02-2017
T-1	TRAFFIC CONTROL GENERAL NOTES	04-25-2016
T-2	TRAFFIC SIGN GENERAL NOTES	04-25-2016
T-10	CONVENTIONAL ROADS CONSTRUCTION APPROACH SIGNING	08-06-2012
T-40	DELINEATORS AND MILEPOSTS	01-02-2013
T-42	BRIDGE NUMBER PLAQUE	04-09-2014
T-45	SQUARE TUBE SIGN POST AND ANCHOR	01-02-2013
T-56	STANDARD SIGN PLACEMENT	10-26-2015
T-70	VERMONT REGULATORY SIGN DETAILS	04-25-2016
T-71	VERMONT REGULATORY SIGN DETAILS	04-25-2016
T-92	ROUTE MARKER FRAME DETAILS	10-26-2015
T-93	DESTINATION SIGN DETAILS	10-26-2015

HYDROLOGIC DATA

Date: December 2016

DRAINAGE AREA : 237.9 sq. mi.
 CHARACTER OF TERRAIN : Steeply sloped woodlands
 STREAM CHARACTERISTICS : Meandering with a wide flood plain
 NATURE OF STREAMBED : Sand and gravel

PEAK FLOW DATA

Q 2.33 =	4,500 cfs	Q 50 =	13,100 cfs
Q 10 =	8,810 cfs	Q 100 =	15,500 cfs
Q 25 =	11,200 cfs	Q 500 =	21,700 cfs

DATE OF FLOOD OF RECORD : November 1927
 ESTIMATED DISCHARGE : Unknown
 WATER SURFACE ELEV. : Unknown
 NATURAL STREAM VELOCITY : @ Q50 = 7.8 fps
 ICE CONDITIONS : Moderate
 DEBRIS : Moderate
 DOES THE STREAM REACH MAXIMUM HIGHWATER ELEV. RAPIDLY? No
 IS ORDINARY RISE RAPID? No
 IS STAGE AFFECTED BY UPSTREAM OR DOWNSTREAM CONDITIONS? No
 IF YES, DESCRIBE:

WATERSHED STORAGE : 2% HEADWATERS :
 UNIFORM : X
 IMMEDIATELY ABOVE SITE :

EXISTING STRUCTURE INFORMATION

STRUCTURE TYPE : Single Span Thru Truss - Now a Mabey Truss
 YEAR BUILT : 1928, Maybe Truss installed between 2007 and 2009
 CLEAR SPAN(NORMAL TO STREAM) : 108 ft.
 VERTICAL CLEARANCE ABOVE STREAMBED : 26 ft.
 WATERWAY OF FULL OPENING : 2,075 sq. ft.
 DISPOSITION OF STRUCTURE : Removal
 TYPE OF MATERIAL UNDER SUBSTRUCTURE : Refer to borings

WATER SURFACE ELEVATIONS AT:

Q2.33 =	642.9'	VELOCITY =	7.5 fps
Q10 =	648.0'	"	8.4 fps
Q25 =	649.3'	"	9.9 fps
Q50 =	650.4'	"	10.9 fps
Q100 =	651.4'	"	12.4 fps

LONG TERM STREAMBED CHANGES : Unknown

IS THE ROADWAY OVERTOPPED BELOW Q100 : Yes
 FREQUENCY : At Q100
 RELIEF ELEVATION : 651.9'
 DISCHARGE OVER ROAD @Q100 : 15 cfs

UPSTREAM STRUCTURE

TOWN : Wolcott DISTANCE : 22,800 ft.
 HIGHWAY # : TH 38 STRUCTURE # : Br. 25
 CLEAR SPAN : 112 ft. CLEAR HEIGHT : 15 ft.
 YEAR BUILT : 1996 FULL WATERWAY : 1,650 sq. ft.
 STRUCTURE TYPE : Single Span Steel Girder

DOWNSTREAM STRUCTURE

TOWN : Morristown DISTANCE : 12,320 ft.
 HIGHWAY # : VT 100 STRUCTURE # : Br. 215
 CLEAR SPAN : 125 ft. CLEAR HEIGHT : 15 ft.
 YEAR BUILT : 1926 FULL WATERWAY : 2,250 sq. ft.
 STRUCTURE TYPE : Single Span Thru Truss

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	3.6	1.22					
POSTING							
OPERATING	4.66	1.58	2.68	1.63	3.14	2.77	2.66
COMMENTS:							

PROPOSED STRUCTURE

STRUCTURE TYPE : Three-Span Steel Girder
 CLEAR SPAN(NORMAL TO STREAM) : ~220 ft.
 VERTICAL CLEARANCE ABOVE STREAMBED : ~23 ft.
 WATERWAY OF FULL OPENING : 2,700 sq. ft.

WATER SURFACE ELEVATIONS AT:

Q2.33 =	643.0'	VELOCITY =	7.4 fps
Q10 =	647.9'	"	7.5 fps
Q25 =	649.1'	"	8.4 fps
Q50 =	650.0'	"	8.9 fps
Q100 =	650.9'	"	9.8 fps

IS THE ROADWAY OVERTOPPED BELOW Q100 : No
 FREQUENCY : N/A
 RELIEF ELEVATION : 659.7'
 DISCHARGE OVER ROAD @Q100 : N/A

AVERAGE LOW ELEVATION OF SUPERSTRUCTURE : 651.0' between Pier 2 & Abut 2
 VERTICAL CLEARANCE : @ Q50 = 1.0'

SCOUR : Contraction scour = 0.5' at Q100 and 1.0' at Q500.
 Pier scour = 14.0' at Q100 and 15.0' at Q500.

REQUIRED CHANNEL PROTECTION : Stone Fill, Type IV

PERMIT INFORMATION

AVERAGE DAILY FLOW : 500 cfs DEPTH OR ELEVATION :
 ORDINARY LOW WATER : 220 cfs Elev = 638'
 ORDINARY HIGH WATER : 1930 cfs Elev = 641'

TEMPORARY BRIDGE REQUIREMENTS

STRUCTURE TYPE : N/A
 CLEAR SPAN (NORMAL TO STREAM) :
 VERTICAL CLEARANCE ABOVE STREAMBED :
 WATERWAY AREA OF FULL OPENING :

ADDITIONAL INFORMATION

Final hydraulics for the existing bridge is for the original truss bridge that has been removed.
 The current temporary Mabey bridge has not been analyzed.

TRAFFIC MAINTENANCE NOTES

1. MAINTAIN TWO-WAY TRAFFIC ON THE EXISTING STRUCTURE.
2. TRAFFIC SIGNALS ARE NOT NECESSARY.
3. SIDEWALKS ARE NOT NECESSARY

DESIGN VALUES

1. DESIGN LIVE LOAD	HL-93
2. FUTURE PAVEMENT	dp: ---
3. ABUTMENT BEARING TO BEARING LENGTH (THREE SPANS)	L: 221.00 FT (30.50 - 160.00 - 30.50) 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 : 3.0 KSI
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 : ---
15. SOIL BEARING RESISTANCE FACTOR (REFER TO AASHTO LRFD)	φ: ---
16. NOMINAL BEARING RESISTANCE OF ROCK	q _n : 70.0 KSF
17. ROCK BEARING RESISTANCE FACTOR (REFER TO AASHTO LRFD)	φ: 0.45

18. PILE RESISTANCE FACTOR	φ: 0.50
19. LATERAL PILE DEFLECTION	Δ: ---
20. BASIC WIND SPEED	V _{3s} : 100 MPH
21. MINIMUM GROUND SNOW LOAD	p _g : ---
22. SEISMIC DATA	PGA : 0.09 S _s : 19 %g S _r : 6 %g

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

PROJECT NAME : MORRISTOWN
 PROJECT NUMBER : BRS 0240(3)S/STP HES 030-2(28)

FILE NAME : s78f329pi.xls PLOT DATE : 1/7/2017
 PROJECT LEADER : C. CARLSON DRAWN BY : G. ROKES
 DESIGNED BY : C. BURRALL CHECKED BY : J. LACROIX
 PRELIMINARY INFORMATION SHEET 1 SHEET 2 OF 175

TRAFFIC DATA

YEAR	ADT	DHV	% D	% T	ADTT
2018	3200	480	62	2	190
2038	3600	540	62	3.2	340

AS BUILT "REBAR" DETAIL

20 year ESAL for flexible pavement from 2018 to 2038 : 1239000		
LEVEL I	LEVEL II	LEVEL III
TYPE:	TYPE:	TYPE:
GRADE:	GRADE:	GRADE:
40 year ESAL for flexible pavement from 2018 to 2058 : 3106000		
TYPE:	TYPE:	TYPE:
GRADE:	GRADE:	GRADE:
Design Speed : 40 mph		