

# PRELIMINARY INFORMATION SHEET (BRIDGE)

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FINAL HYDRAULIC REPORT

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C-2A	PORTLAND CEMENT CONC. SDWLK DRIVE ENTRANCES W/SDWLK ADJ. TO CURB	10-14-2005
C-2B	PORTLAND CEMENT CONC. SDWLK DRIVE ENTRANCES W/SDWLK & GREEN STRIP	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-6	REINFORCED CONCRETE DROP INLET W/GRATE (DITCHES)	06-01-1994
D-9	REINFORCED CONCRETE DROP INLET WITH VERTICAL CURB & THROAT ADAPTER	06-01-1994
D-11	STEEL OR IRON GRATES & COVERS (TYPE A)	06-01-1994
D-13	CONCRETE CATCH BASIN	01-03-2000
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-131B	BICYCLE GUIDE SIGN DETAILS	05-30-2003
E-136B	STATE ROUTE MARKER SIGN DETAILS	08-08-1995
E-145A	REGULATORY SIGN DETAILS - LANE USE CONTROL SIGNS	12-23-1994
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HYDROLOGIC DATA

Date: March 2014

DRAINAGE AREA : 180 sq. mi.  
 CHARACTER OF TERRAIN : Rural village setting with moderate to steep slopes  
 STREAM CHARACTERISTICS : Incised, alluvial and sinuous channel with steep banks  
 NATURE OF STREAMBED : Mostly silt and sand with cobbles. See boring logs

PEAK FLOW DATA

Q 2.33 =	3,700 cfs	Q 50 =	10,300 cfs
Q 10 =	6,830 cfs	Q 100 =	12,000 cfs
Q 25 =	8,730 cfs	Q 500 =	16,500 cfs

DATE OF FLOOD OF RECORD : November 1927  
 ESTIMATED DISCHARGE : Unknown  
 WATER SURFACE ELEV. : Unknown  
 NATURAL STREAM VELOCITY : @ Q50 = 5.1 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? Yes  
 IF YES, DESCRIBE : Upstream ponds and reservoirs provide storage and reduce peak flood flows

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

EXISTING STRUCTURE INFORMATION

STRUCTURE TYPE : Two-span steel beam bridge  
 YEAR BUILT : 1936  
 CLEAR SPAN(NORMAL TO STREAM) : 59.5' + 59.4' = 118.9' total  
 VERTICAL CLEARANCE ABOVE STREAMBED : 18.3'  
 WATERWAY OF FULL OPENING : 2,174 sq. ft.  
 DISPOSITION OF STRUCTURE : Remove and replace without pier  
 TYPE OF MATERIAL UNDER SUBSTRUCTURE : See boring logs

WATER SURFACE ELEVATIONS AT:

Q2.33 =	660.3'	VELOCITY =	2.5 fps
Q10 =	661.4'	"	4.1 fps
Q25 =	662.9'	"	4.6 fps
Q50 =	665.1'	"	4.6 fps
Q100 =	666.4'	"	5.0 fps

LONG TERM STREAMBED CHANGES:

IS THE ROADWAY OVERTOPPED BELOW Q100 : No  
 FREQUENCY : N/A  
 RELIEF ELEVATION : 671.4'  
 DISCHARGE OVER ROAD @Q100 : None

UPSTREAM STRUCTURE

TOWN : East Montpelier DISTANCE : 13,213'  
 HIGHWAY # : US 2 STRUCTURE # : 74  
 CLEAR SPAN : 130' CLEAR HEIGHT : 26.2'  
 YEAR BUILT : 1930 FULL WATERWAY : 2207 sq. ft.  
 STRUCTURE TYPE : 3 span concrete T-beam bridge

DOWNSTREAM STRUCTURE

TOWN : East Montpelier DISTANCE : 7,046'  
 HIGHWAY # : US 2 STRUCTURE # : 70  
 CLEAR SPAN : 108' CLEAR HEIGHT : 17'  
 YEAR BUILT : 1984 FULL WATERWAY : 1,860 sq. ft.  
 STRUCTURE TYPE : Steel plate girder bridge

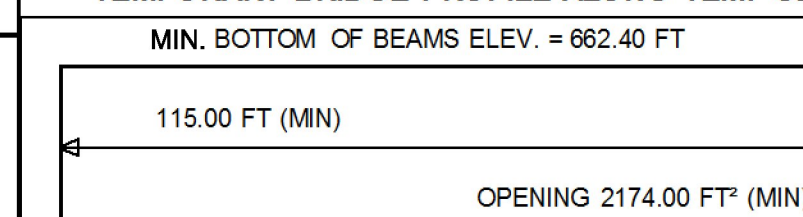
LRFR LOAD RATING FACTORS

LOADING LEVELS	TRUCK						
	H-20	HL-93	SS2	6 AXLE	3A. STR.	4A. STR.	5A. SEM
TONNAGE	20	36	36	66	30	34.5	38
INVENTORY	1.63	1.28					
POSTING							
OPERATING	2.11	1.66	3.24	1.83	2.72	2.54	2.85
COMMENTS:							

AS BUILT "REBAR" DETAIL

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

TEMPORARY BRIDGE PROFILE ALONG TEMP CL



FOR TRAFFIC DATA INFORMATION REFER TO THE FOLLOWING SHEET: VT 14 & US 2 TRAFFIC DATA TRD 1

TRAFFIC DATA

YEAR	ADT	DHV	% D	% T	ADTT	Design Speed
0	0	0	0	0	0	0 mph
0	0	0	0	0	0	0 mph
0	0	0	0	0	0	0 mph

20 year EGAL for flexible pavement from 0 to 0 : 0  
 40 year EGAL for flexible pavement from 0 to 0 : 0  
 Design Speed : 0 mph

PROPOSED STRUCTURE

STRUCTURE TYPE : Three span cantilever  
 CLEAR SPAN(NORMAL TO STREAM) : 114'  
 VERTICAL CLEARANCE ABOVE STREAMBED : 17.3' at center  
 WATERWAY OF FULL OPENING : 2475 sq. ft.

WATER SURFACE ELEVATIONS AT:

Q2.33 =	660.3'	VELOCITY =	2.4 fps
Q10 =	661.4'	"	3.9 fps
Q25 =	662.9'	"	4.3 fps
Q50 =	665.1'	"	4.2 fps
Q100 =	666.3'	"	4.5 fps

IS THE ROADWAY OVERTOPPED BELOW Q100 : No  
 FREQUENCY : N/A  
 RELIEF ELEVATION : 671.4'  
 DISCHARGE OVER ROAD @Q100 : None

AVERAGE LOW ELEVATION OF SUPERSTRUCTURE : 666.4'  
 VERTICAL CLEARANCE : @ Q50 = 1.3'

SCOUR : The Q100 contraction scour depth is 3 ft & the pier scour is 14 ft. The structure is free standing to a combined scour depth of 17 ft. Abut. slopes are to be protected w/stone fill.  
 REQUIRED CHANNEL PROTECTION : Stone Fill, Type IV

PERMIT INFORMATION

AVERAGE DAILY FLOW : 370 cfs DEPTH OR ELEVATION :  
 ORDINARY LOW WATER : 170 cfs Elevation 650.2'  
 ORDINARY HIGH WATER : 1930cfs Elevation 653.4'

TEMPORARY BRIDGE REQUIREMENTS

STRUCTURE TYPE : Bridge \*  
 CLEAR SPAN (NORMAL TO STREAM) : 115'  
 VERTICAL CLEARANCE ABOVE STREAMBED : Bottom of bridge elev. 662.4' min.  
 WATERWAY AREA OF FULL OPENING : 2,174 sq. ft. minimum

ADDITIONAL INFORMATION

\* The temporary bridge shall be designed to resist ice forces if it is to remain in service over the winter

TRAFFIC MAINTENANCE NOTES

1. REFER TO SPECIAL PROVISIONS FOR SPECIAL CONSTRUCTION REQUIREMENTS REGARDING MAINTENANCE OF TRAFFIC.

DESIGN VALUES

1. DESIGN LIVE LOAD	HL-93
2. FUTURE PAVEMENT	dp: ---
3. DESIGN SPAN	L: VARIES
4. MIN. MID-SPAN POS. CAMBER @ RELEASE (PRESTRESSED UNITS)	Δ: ---
5. PRESTRESSING STRAND	f <sub>y</sub> : ---
6. PRESTRESSED CONCRETE STRENGTH	f' <sub>c</sub> : ---
7. PRESTRESSED CONCRETE RELEASE STRENGTH	f' <sub>ci</sub> : ---
8. CONCRETE, HIGH PERFORMANCE CLASS AA	f' <sub>c</sub> : 4.0 KSI
9. CONCRETE, HIGH PERFORMANCE CLASS A	f' <sub>c</sub> : 4.0 KSI
10. CONCRETE, HIGH PERFORMANCE CLASS B	f' <sub>c</sub> : 3.5 KSI
11. CONCRETE, CLASS C	f' <sub>c</sub> : 3.0 KSI
12. REINFORCING STEEL	f <sub>y</sub> : 60 KSI
13. STRUCTURAL STEEL AASHTO M270 (WEATHERING)	f <sub>y</sub> : 50 KSI
14. NOMINAL BEARING RESISTANCE OF SOIL	q <sub>n</sub> : ---
15. SOIL BEARING RESISTANCE FACTOR (REFER TO AASHTO LRFD)	φ: ---
16. NOMINAL BEARING RESISTANCE OF ROCK	q <sub>n</sub> : ---
17. ROCK BEARING RESISTANCE FACTOR (REFER TO AASHTO LRFD)	φ: ---
18. PILE RESISTANCE FACTOR	φ: ---
19. LATERAL PILE DEFLECTION	Δ: ---
20. BASIC WIND SPEED	V <sub>3s</sub> : ---
21. MINIMUM GROUND SNOW LOAD	pg: ---
22. SEISMIC DATA	PGA: --- S <sub>s</sub> : --- S <sub>1</sub> : ---
23.	---
24.	---
25.	---
26.	---

REVISIONS

03.21.17	STANDARDS UPDATED
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PROJECT NAME : EAST MONTPELIER  
 PROJECT NUMBER : BRF 037-1(7)

FILE NAME : z98b252pi.xls PLOT DATE : 3/21/2017  
 PROJECT LEADER : T. Knight DRAWN BY : L. Buxton  
 DESIGNED BY : T. Knight CHECKED BY : G. Bogue  
 PRELIMINARY INFORMATION SHEET SHEET 2 OF 158