

# PRELIMINARY INFORMATION SHEET (BRIDGE)

LRFD

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STANDARDS LIST

FINAL HYDRAULIC REPORT

HYDROLOGIC DATA

Date: Nov. 2012

DRAINAGE AREA : 15.8 sq. mi.  
 CHARACTER OF TERRAIN : Hilly to mountainous, mostly forested  
 STREAM CHARACTERISTICS : Straight, alluvial, steep upstream with flatter valley downstream  
 NATURE OF STREAMBED : Mostly cobbles and boulders with some gravel

PEAK FLOW DATA

Q 2.33 = 900 cfs                      Q 50 = 3000 cfs  
 Q 10 = 1900 cfs                    Q 100 = 3600 cfs  
 Q 25 = 2500 cfs                    Q 500 = 5000 cfs

DATE OF FLOOD OF RECORD : Unknown  
 ESTIMATED DISCHARGE : Unknown  
 WATER SURFACE ELEV. : Unknown  
 NATURAL STREAM VELOCITY : @ Q50 = 11.0 fps  
 ICE CONDITIONS : Heavy  
 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 : 1929  
 CLEAR SPAN(NORMAL TO STREAM) : 39'  
 VERTICAL CLEARANCE ABOVE STREAMBED : 9'  
 WATERWAY OF FULL OPENING : 300 sq. ft.  
 DISPOSITION OF STRUCTURE : Remove  
 TYPE OF MATERIAL UNDER SUBSTRUCTURE : See boring logs

WATER SURFACE ELEVATIONS AT:

Q2.33 = 997.0'                      VELOCITY = 9.2 fps  
 Q10 = 999.3'                      "                      11.6 fps  
 Q25 = 1000.3'                      "                      12.7 fps  
 Q50 = 1001.1'                      "                      13.5 fps  
 Q100 = 1003.1'                      "                      16.7 fps

LONG TERM STREAMBED CHANGES : The stream bed appears to have lowered 2' - 3' in front of the abutments since 1929, but the low point of the channel has not changed much.

IS THE ROADWAY OVERTOPPED BELOW Q100: No  
 FREQUENCY : Above Q100  
 RELIEF ELEVATION : 1002.6'  
 DISCHARGE OVER ROAD @Q100: None

UPSTREAM STRUCTURE

TOWN: Rochester                      DISTANCE: 7,500'  
 HIGHWAY # : VT 73                      STRUCTURE #: 14  
 CLEAR SPAN: 35'                      CLEAR HEIGHT: 7.5'  
 YEAR BUILT: 1927                      FULL WATERWAY: N.A.  
 STRUCTURE TYPE: Concrete T-beam bridge

DOWNSTREAM STRUCTURE

TOWN: Rochester                      DISTANCE: 450'  
 HIGHWAY # : N/A -Confluence with West Branch      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	1.92	1.00					
POSTING							
OPERATING	2.6	1.36	2.33	1.49	1.92	1.72	1.93
COMMENTS:							

AS BUILT "REBAR" DETAILS

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

\*SEE PROJECT NOTES.

PILE DRIVING AND TESTING REQUIREMENTS

- NOMINAL PILE DRIVING CAPACITY  $\phi$ : 0.65
- PILE TEST RESISTANCE FACTOR  $\phi$ : 0.65
- MAXIMUM PILE TIP ELEVATION
- A MINIMUM OF 3 DYNAMIC TESTS SHALL BE PERFORMED DURING INSTALLATION. NO LESS THAN 1 TEST SHOULD BE PERFORMED AT EACH ABUTMENT. THE REMAINING PILES SHOULD BE CALIBRATED BY WAVE EQUATION ANALYSIS.

PROPOSED STRUCTURE

STRUCTURE TYPE: Single span prestressed concrete NEXT Beam bridge

CLEAR SPAN(NORMAL TO STREAM): 60'  
 VERTICAL CLEARANCE ABOVE STREAMBED: 8'  
 WATERWAY OF FULL OPENING: 420 sq. ft.

WATER SURFACE ELEVATIONS AT:

Q2.33 = 996.3'                      VELOCITY= 8.0 fps  
 Q10 = 997.9'                      "                      9.7 fps  
 Q25 = 998.7'                      "                      10.4 fps  
 Q50 = 999.3'                      "                      11.1 fps  
 Q100 = 1001.8'                      "                      12.9 fps

IS THE ROADWAY OVERTOPPED BELOW Q100: No  
 FREQUENCY : Above Q100  
 RELIEF ELEVATION : 1002.6'  
 DISCHARGE OVER ROAD @Q100: None

AVERAGE LOW ELEVATION OF SUPERSTRUCTURE : 1001.2'  
 VERTICAL CLEARANCE : @ Q50 = 1.9'

SCOUR: Total long term degradation and contraction scour up to Q100 = 2' and up to Q500 = 3'.  
 REQUIRED CHANNEL PROTECTION: Stone Fill, Type IV

PERMIT INFORMATION

AVERAGE DAILY FLOW: 30 cfs                      DEPTH OR ELEVATION:  
 ORDINARY LOW WATER: 15 cfs                      Depth = 1'  
 ORDINARY HIGH WATER: 400 cfs                      Depth = 3'

TEMPORARY BRIDGE REQUIREMENTS

STRUCTURE TYPE: No temporary bridge required.  
 CLEAR SPAN (NORMAL TO STREAM):  
 VERTICAL CLEARANCE ABOVE STREAMBED:  
 WATERWAY AREA OF FULL OPENING:

ADDITIONAL INFORMATION

TRAFFIC MAINTENANCE NOTES

- MAINTAIN TRAFFIC ON AN OFF SITE DETOUR.
- TRAFFIC SIGNALS ARE NOT NECESSARY.
- SIDEWALKS ARE NOT NECESSARY

DESIGN VALUES

- DESIGN LIVE LOAD HL-93
- FUTURE PAVEMENT  $d_p$ : 0 INCH
- DESIGN SPAN  $L$ : 64.00 FT
- MIN. MID-SPAN POS. CAMBER @ RELEASE (PRESTRESSED UNITS)  $\Delta$ : 2.00 INCH
- PRESTRESSING STRAND (0.60 INCH DIAMETER - LOW RELAX)  $f_y$ : 270 KSI
- PRESTRESSED CONCRETE STRENGTH  $f'_c$ : 9.0 KSI
- PRESTRESSED CONCRETE RELEASE STRENGTH  $f'_{ci}$ : 7.0 KSI
- CONCRETE, HIGH PERFORMANCE CLASS AA  $f'_c$ : ---
- CONCRETE, HIGH PERFORMANCE CLASS A  $f'_c$ : ---
- CONCRETE, HIGH PERFORMANCE CLASS B  $f'_c$ : KSI
- CONCRETE, CLASS C  $f'_c$ : ---
- REINFORCING STEEL  $f_y$ : 60 KSI
- STRUCTURAL STEEL AASHTO M270  $f_y$ : ---
- SOIL UNIT WEIGHT  $\gamma$ : ---
- NOMINAL BEARING RESISTANCE OF SOIL  $q_n$ : ---
- SOIL BEARING RESISTANCE FACTOR (REFER TO AASHTO LRFD)  $\phi$ : ---
- NOMINAL BEARING RESISTANCE OF ROCK  $q_n$ : ---
- ROCK BEARING RESISTANCE FACTOR (REFER TO AASHTO LRFD)  $\phi$ : ---
- NOMINAL AXIAL PILE RESISTANCE  $q_p$ : ---
- PILE YIELD STRENGTH ASTM A572  $f_y$ : 50 KSI
- PILE SIZE HP 14X 89
- EST. AVG. PILE LENGTH  $L_p$ : 30 FT
- PILE RESISTANCE FACTOR  $\phi$ : ---
- LATERAL PILE DEFLECTION  $\Delta$ : ---
- BASIC WIND SPEED  $V_{3s}$ : ---
- MINIMUM GROUND SNOW LOAD  $p_g$ : ---
- SEISMIC DATA  $PGA$ : ---  $S_s$ : ---  $S_1$ : ---

PROJECT NAME: ROCHESTER

PROJECT NUMBER: BRF 0162(16)

FILE NAME: z10c418 Pl.xls                      PLOT DATE: 8/19/2013

PROJECT LEADER: G.S. GOODRICH                      DRAWN BY: E.A. FIALA

DESIGNED BY: G.S. GOODRICH                      CHECKED BY: S.E. BURBANK

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TRAFFIC DATA

YEAR	ADT	DHV	% D	% T	ADTT	20 year ESAL for flexible pavement from 2014 to 2034 : 398000
2014	770	160	65	8.7	65	40 year ESAL for flexible pavement from 2014 to 2054 : 950000
2034	810	160	65	12.6	100	

Design Speed : 15 mph

