

# PRELIMINARY INFORMATION SHEET (BRIDGE)

LRFD

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PLAN SHEETS

STANDARDS LIST

FINAL HYDRAULIC REPORT

HYDROLOGIC DATA

Date: 4/16/2013

DRAINAGE AREA : 3.0 sq miles  
 CHARACTER OF TERRAIN : Forested, Hilly, Mountainous  
 STREAM CHARACTERISTICS : Steep Mountainous Stream  
 NATURE OF STREAMBED : Boulders and Cobbles

PEAK FLOW DATA

Q 2.33 = 225 cfs                      Q 50 = 725 cfs  
 Q 10 = 450 cfs                      Q 100 = 850 cfs  
 Q 25 = 600 cfs                      Q 500 = 1,190 cfs

DATE OF FLOOD OF RECORD : 1927  
 ESTIMATED DISCHARGE : Unknown  
 WATER SURFACE ELEV. : Unknown  
 NATURAL STREAM VELOCITY : Q50 = 25.3 fps  
 ICE CONDITIONS : Moderate  
 DEBRIS : Moderate  
 DOES THE STREAM REACH MAXIMUM HIGHWATER ELEV. RAPIDLY? : unknown  
 IS ORDINARY RISE RAPID? : unknown  
 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 : 10.0' CMP  
 YEAR BUILT : 1962  
 CLEAR SPAN(NORMAL TO STREAM) : 10.5'  
 VERTICAL CLEARANCE ABOVE STREAMBED : 10.5'  
 WATERWAY OF FULL OPENING : 87 sq. ft.  
 DISPOSITION OF STRUCTURE : Destroyed in Irene replaced with 10' Temp. Culvert  
 TYPE OF MATERIAL UNDER SUBSTRUCTURE : See Borings

WATER SURFACE ELEVATIONS AT:

Q2.33 = 1,497.3 ft                      VELOCITY = 12.5 ft/s  
 Q10 = 1,500.9                      "      16  
 Q25 = 1,501.8                      "      17  
 Q50 = 1,502.3                      "      19  
 Q100 = 1,502.8                      "      19

LONG TERM STREAMBED CHANGES : Lateral Movement

IS THE ROADWAY OVERTOPPED BELOW Q100: Yes  
 FREQUENCY: Q10 and larger  
 RELIEF ELEVATION: 1498.3'  
 DISCHARGE OVER ROAD @Q100: 508 cfs

UPSTREAM STRUCTURE

TOWN: Rochester                      DISTANCE: 0.60 miles  
 HIGHWAY # : VT 73                      STRUCTURE #: C12E  
 CLEAR SPAN: 12'                      CLEAR HEIGHT:  
 YEAR BUILT: 1962                      FULL WATERWAY:  
 STRUCTURE TYPE: CGMPPA

DOWNSTREAM STRUCTURE

TOWN: Rochester                      DISTANCE: 1.5 miles  
 HIGHWAY # : TH 37                      STRUCTURE #: B14  
 CLEAR SPAN: 35'                      CLEAR HEIGHT:  
 YEAR BUILT: 1927                      FULL WATERWAY:  
 STRUCTURE TYPE: Concrete T-Beam

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							
POSTING							
OPERATING							
COMMENTS:	TABLE TO BE COMPLETED BY CONTRACTOR'S DESIGNER.						

FABRICATOR RESPONSIBLE FOR LOAD RATINGS

AS BUILT "REBAR" DETAILS

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 2014 to 2034 : 463000
2014	750	150	59	14.1	95	40 year ESAL for flexible pavement from 2014 to 2054 : 1032000
2034	790	160	59	19.8	140	

Design Speed : 40 mph

PROPOSED STRUCTURE

STRUCTURE TYPE: Buried Precast Concrete Structure  
 CLEAR SPAN(NORMAL TO STREAM): 28'-0"  
 VERTICAL CLEARANCE ABOVE STREAMBED: 9'-7" (crown at inlet)  
 WATERWAY OF FULL OPENING: 212.4 sf (at inlet)

WATER SURFACE ELEVATIONS AT:

Q2.33 = 1,492.5 ft                      VELOCITY= 14.0 ft/s  
 Q10 = 1,493.0                      "      15.4  
 Q25 = 1,493.3                      "      16.1  
 Q50 = 1,493.5                      "      16.5  
 Q100 = 1,493.7                      "      16.9

IS THE ROADWAY OVERTOPPED BELOW Q100: No  
 FREQUENCY: n/a  
 RELIEF ELEVATION: 1498.3'  
 DISCHARGE OVER ROAD @Q100: 0 cfs

AVERAGE LOW ELEVATION OF SUPERSTRUCTURE: 1,498.1 ft (crown of inlet)  
 VERTICAL CLEARANCE: @ Q50 = 4.6 ft (crown at inlet)

SCOUR: Footings are bearing on bedrock

REQUIRED CHANNEL PROTECTION: Stone Fill, Type IV

PERMIT INFORMATION

AVERAGE DAILY FLOW: 7 cfs                      DEPTH OR ELEVATION:  
 ORDINARY LOW WATER: 2 cfs                      0.5 ft  
 ORDINARY HIGH WATER: 100 cfs                      2.0 ft

TEMPORARY BRIDGE REQUIREMENTS

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

ADDITIONAL INFORMATION

Any temporary culvert/structure used to divert Brandon Brook shall be 8'-0" in diameter or provide 50.3 sq. ft. of waterway area minimum.

TRAFFIC MAINTENANCE NOTES

1. MAINTAIN TRAFFIC ON AN OFF SITE DETOUR.
2. TRAFFIC SIGNALS ARE NOT NECESSARY.
3. SIDEWALKS ARE NOT NECESSARY.
4. SEE PROJECT NOTES FOR CONTRACTOR OPTION FOR PROVIDING ALTERNATING ONE-WAY TRAFFIC PRIOR TO COMPLETION OF NEW STRUCTURE.

DESIGN VALUES

1. DESIGN LIVE LOAD	HL-93
2. FUTURE PAVEMENT	d <sub>p</sub> : 3.0 INCH
3. DESIGN SPAN	L: 28.00 FT
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> : ---
9. CONCRETE, HIGH PERFORMANCE CLASS A	f' <sub>c</sub> : ---
10. CONCRETE, HIGH PERFORMANCE CLASS B	f' <sub>c</sub> : 3.5 KSI
11. CONCRETE, CLASS C	f' <sub>c</sub> : ---
12. REINFORCING STEEL	f <sub>y</sub> : 60 KSI
13. STRUCTURAL STEEL AASHTO M270	f <sub>y</sub> : ---
14. SOIL UNIT WEIGHT	γ: 0.140 KCF
15. NOMINAL BEARING RESISTANCE OF SOIL	q <sub>n</sub> : ---
16. SOIL BEARING RESISTANCE FACTOR (REFER TO AASHTO LRFD)	φ: ---
17. NOMINAL BEARING RESISTANCE OF ROCK	q <sub>n</sub> : 70 KSI
18. ROCK BEARING RESISTANCE FACTOR (REFER TO AASHTO LRFD)	φ: 0.45
19. NOMINAL AXIAL PILE RESISTANCE	q <sub>p</sub> : ---
20. PILE YIELD STRENGTH ASTM A572	f <sub>y</sub> : ---
21. PILE SIZE	---
22. EST. PILE LENGTH	L <sub>p</sub> : ---
23. PILE RESISTANCE FACTOR	φ: ---
24. LATERAL PILE DEFLECTION	Δ: ---
25. BASIC WIND SPEED	V <sub>3s</sub> : ---
26. MINIMUM GROUND SNOW LOAD	p <sub>g</sub> : ---
27. SEISMIC DATA	PGA: --- S <sub>s</sub> : --- S <sub>1</sub> : ---

PROJECT NAME: ROCHESTER

PROJECT NUMBER: ER STP 0162(19)

FILE NAME: z11c334pi                      PLOT DATE: 8/19/2013  
 PROJECT LEADER: S.E. BURBANK                      DRAWN BY: B.J. MASSE  
 DESIGNED BY: G.S. GOODRICH                      CHECKED BY: S.E. BURBANK  
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