

PRELIMINARY INFORMATION SHEET (BRIDGE)

LRFD

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FINAL HYDRAULIC REPORT

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HYDROLOGIC DATA Date: June 2011

DRAINAGE AREA: 13.1 sq. mi.
 CHARACTER OF TERRAIN: Hilly, mostly forested, rural
 STREAM CHARACTERISTICS: Perennial, meandering, locally braided
 NATURE OF STREAMBED: Sand to small cobbles with some exposed ledge

PEAK FLOW DATA

Q 2.33 = 700 cfs	Q 50 = 2400 cfs
Q 10 = 1400 cfs	Q 100 = 2900 cfs
Q 25 = 1900 cfs	Q 500 = 4080 cfs

DATE OF FLOOD OF RECORD: Unknown
 ESTIMATED DISCHARGE: Unknown
 WATER SURFACE ELEV.: Unknown
 NATURAL STREAM VELOCITY: @ Q50 = 7.9 fps
 ICE CONDITIONS: Mild
 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 RR bridge abutment and roadway constrict the channel approximately 100 feet above this bridge

WATERSHED STORAGE: <1% HEADWATERS: _____
 UNIFORM: X
 IMMEDIATELY ABOVE SITE: _____

EXISTING STRUCTURE INFORMATION

STRUCTURE TYPE: Single span concrete T-beam bridge
 YEAR BUILT: 1928
 CLEAR SPAN(NORMAL TO STREAM): 37'
 VERTICAL CLEARANCE ABOVE STREAMBED: 7.9'
 WATERWAY OF FULL OPENING: 257 sq. ft.
 DISPOSITION OF STRUCTURE: Replace superstructure
 TYPE OF MATERIAL UNDER SUBSTRUCTURE: Abut #1 on ledge, abut #2 unknown

WATER SURFACE ELEVATIONS AT:

Q2.33 = 872.4'	VELOCITY = 6.2 fps
Q10 = 873.4'	" 10.5 fps
Q25 = 876.0'	" 11.8 fps
Q50 = 877.0'	" 13.1 fps
Q100 = 878.3'	" 11.2 fps

LONG TERM STREAMBED CHANGES: None noted

IS THE ROADWAY OVERTOPPED BELOW Q100: Yes
 FREQUENCY: Below the Q50
 RELIEF ELEVATION: 877.0'
 DISCHARGE OVER ROAD @Q100: 1440 cfs

PROPOSED STRUCTURE

STRUCTURE TYPE: Replace bridge deck and beams - no abutment or in stream work

CLEAR SPAN(NORMAL TO STREAM): 37'
 VERTICAL CLEARANCE ABOVE STREAMBED: 7.9'
 WATERWAY OF FULL OPENING: 257 sq. ft.

WATER SURFACE ELEVATIONS AT:

Q2.33 = 872.4'	VELOCITY = 6.2 fps
Q10 = 873.4'	" 10.5 fps
Q25 = 876.0'	" 11.8 fps
Q50 = 877.0'	" 13.1 fps
Q100 = 878.3'	" 11.2 fps

IS THE ROADWAY OVERTOPPED BELOW Q100: Yes
 FREQUENCY: Below the Q50
 RELIEF ELEVATION: 877.0'
 DISCHARGE OVER ROAD @Q100: 1440 cfs

AVERAGE LOW ELEVATION OF SUPERSTRUCTURE: 874.4'
 VERTICAL CLEARANCE: @ Q10 = 1.0'; Water into the beams at Q25

SCOUR: Scour not calculated as project is only replacing superstructure

REQUIRED CHANNEL PROTECTION: Stone Fill, Type III

PERMIT INFORMATION

AVERAGE DAILY FLOW: 35 cfs DEPTH OR ELEVATION:
 ORDINARY LOW WATER: <35 cfs 0.5'
 ORDINARY HIGH WATER: 320 cfs 2.0'

TEMPORARY BRIDGE REQUIREMENTS

STRUCTURE TYPE: None required. Road closed.
 CLEAR SPAN (NORMAL TO STREAM): _____
 VERTICAL CLEARANCE ABOVE STREAMBED: _____
 WATERWAY AREA OF FULL OPENING: _____

ADDITIONAL INFORMATION

1. BRIDGE CLOSED TO TRAFFIC

DESIGN VALUES

1. DESIGN LIVE LOAD	HL-93
2. FUTURE PAVEMENT	d _p : 0.0 INCH
3. DESIGN SPAN	L: 51.90 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' _{cr} : ---
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 : ---
12. REINFORCING STEEL	f _y : 60 KSI
13. STRUCTURAL STEEL AASHTO M270 (WEATHERING)	f _y : 50 KSI
14. SOIL UNIT WEIGHT	γ: 0.140 KCF
15. NOMINAL BEARING RESISTANCE OF SOIL	q _n : ---
16. SOIL BEARING RESISTANCE FACTOR (REFER TO AASHTO LRFD)	φ: ---
17. NOMINAL BEARING RESISTANCE OF ROCK	q _n : ---
18. ROCK BEARING RESISTANCE FACTOR (REFER TO AASHTO LRFD)	φ: ---
19. NOMINAL AXIAL PILE RESISTANCE	q _p : ---
20. PILE YIELD STRENGTH ASTM A572	f _y : ---
21. PILE SIZE	---
22. EST. PILE LENGTH	L _p : ---
23. PILE RESISTANCE FACTOR	φ: ---
24. LATERAL PILE DEFLECTION	Δ: ---
25. BASIC WIND SPEED	V _{3s} : ---
26. MINIMUM GROUND SNOW LOAD	p _g : ---
27. SEISMIC DATA	PGA: --- S: --- S ₁ : ---

UPSTREAM STRUCTURE

TOWN: Roxbury DISTANCE: 100'
 HIGHWAY #: NECR Bridge STRUCTURE #: 39
 CLEAR SPAN: 65' CLEAR HEIGHT: 26'
 YEAR BUILT: unknown FULL WATERWAY: 316.6 sq. ft.
 STRUCTURE TYPE: Single span side girder bridge

DOWNSTREAM STRUCTURE

TOWN: Granville DISTANCE: 10,990'
 HIGHWAY #: NECR Bridge STRUCTURE #: 38
 CLEAR SPAN: 70' CLEAR HEIGHT: 11.2'
 YEAR BUILT: unknown FULL WATERWAY: 764 sq. ft.
 STRUCTURE TYPE: Single span side girder bridge

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	N/A	1.24					
POSTING							
OPERATING	N/A	1.62	2.8	1.59	2.07	1.88	

COMMENTS:

PROJECT NAME: **ROXBURY**
 PROJECT NUMBER: **BHF 0187(8)**

FILE NAME: s10c420pi.dgn PLOT DATE: 9/21/2011
 PROJECT LEADER: C. P. WILLIAMS DRAWN BY: G. ROY
 DESIGNED BY: T. FILLBACH CHECKED BY: T. FILLBACH
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TRAFFIC DATA

YEAR	ADT	DHV	% D	% T	ADTT	
2012	470	55	57	4.5	35	20 year ESAL for flexible pavement from 2012 to 2032 : 109000
2032	500	55	57	7.2	55	40 year ESAL for flexible pavement from 2012 to 2052 : 258000
						Design Speed : 50 mph