

# PRELIMINARY INFORMATION SHEET (BRIDGE)

LRFD

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FINAL HYDRAULIC REPORT

HYDROLOGIC DATA

Date: September 2011

DRAINAGE AREA: 4.7 Sq. Miles  
 CHARACTER OF TERRAIN: Hilly - Mostly Forest  
 STREAM CHARACTERISTICS: Narrow and curving with small current  
 NATURE OF STREAMBED: Mostly gravel and cobbles

PEAK FLOW DATA

Q 2.33 = 200 CFS      Q 50 = 650 CFS  
 Q 10 = 420 CFS      Q 100 = 750 CFS  
 Q 25 = 550 CFS      Q 500 = 1000 CFS

DATE OF FLOOD OF RECORD: Aug 2011 / 1927  
 ESTIMATED DISCHARGE: Unknown  
 WATER SURFACE ELEV.: Unknown  
 NATURAL STREAM VELOCITY: Unknown  
 ICE CONDITIONS: Light  
 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: 18x7-3" Plate Arch on concrete footings  
 YEAR BUILT: 1960 - Washed out Aug. 2011  
 CLEAR SPAN(NORMAL TO STREAM): 18 ft  
 VERTICAL CLEARANCE ABOVE STREAMBED: 7.25 ft  
 WATERWAY OF FULL OPENING: Approximately 100 sq. feet  
 DISPOSITION OF STRUCTURE: Arch removed 2011-Concrete footings remove  
 TYPE OF MATERIAL UNDER SUBSTRUCTURE: Gravel

WATER SURFACE ELEVATIONS AT:

Q2.33 = N/A      VELOCITY = \_\_\_\_\_  
 Q10 = N/A      "      \_\_\_\_\_  
 Q25 = N/A      "      \_\_\_\_\_  
 Q50 = N/A      "      \_\_\_\_\_  
 Q100 = N/A      "      \_\_\_\_\_

LONG TERM STREAMBED CHANGES: \_\_\_\_\_ Unknown

IS THE ROADWAY OVERTOPPED BELOW Q100: NO  
 FREQUENCY: N/A  
 RELIEF ELEVATION: 423.9  
 DISCHARGE OVER ROAD @Q100: NA

UPSTREAM STRUCTURE

TOWN: Hubbardton      DISTANCE: 0.5 Miles +/-  
 HIGHWAY #: Town Highway 2      STRUCTURE #: No. 7  
 CLEAR SPAN: 21 Feet      CLEAR HEIGHT: 7 Feet  
 YEAR BUILT: 1938 / 1992      FULL WATERWAY: 140 Sq. Ft  
 STRUCTURE TYPE: Concrete slab

DOWNSTREAM STRUCTURE

TOWN: Lake Bomoseen      DISTANCE: 1.5 Miles +/-  
 HIGHWAY #: \_\_\_\_\_      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							
POSTING							
OPERATING							
COMMENTS:							

FABRICATOR RESPONSIBLE FOR LOAD RATING

AS BUILT "REBAR" DETAILS

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

PROPOSED STRUCTURE

STRUCTURE TYPE: New Precast Concrete Buried Frame  
 CLEAR SPAN(NORMAL TO STREAM): 32'-0"  
 VERTICAL CLEARANCE ABOVE STREAMBED: 6.0 ft (min)  
 WATERWAY OF FULL OPENING: 174 sq. ft (min)

WATER SURFACE ELEVATIONS AT:

Q2.33 = 419.0      VELOCITY = 2.5 ft/sec  
 Q10 = 419.6      "      4.4 ft/sec  
 Q25 = 419.8      "      5.4 ft/sec  
 Q50 = 420.0      "      6.2 ft/sec  
 Q100 = 420.3      "      6.9 ft/sec

IS THE ROADWAY OVERTOPPED BELOW Q100: No  
 FREQUENCY: \_\_\_\_\_  
 RELIEF ELEVATION: \_\_\_\_\_  
 DISCHARGE OVER ROAD @Q100: \_\_\_\_\_

AVERAGE LOW ELEVATION OF SUPERSTRUCTURE: 422.1  
 VERTICAL CLEARANCE: @ Q100 = 1.7 FEET

SCOUR: \_\_\_\_\_ Unknown

REQUIRED CHANNEL PROTECTION: Type I Stone Fill

PERMIT INFORMATION

AVERAGE DAILY FLOW: 10 CFS      DEPTH OR ELEVATION:  
 ORDINARY LOW WATER: 5 CFS      416.2  
 ORDINARY HIGH WATER: 200 CFS      419.0

TEMPORARY BRIDGE REQUIREMENTS

STRUCTURE TYPE: N/A - VT 30 to be closed  
 CLEAR SPAN (NORMAL TO STREAM): \_\_\_\_\_  
 VERTICAL CLEARANCE ABOVE STREAMBED: \_\_\_\_\_  
 WATERWAY AREA OF FULL OPENING: \_\_\_\_\_

ADDITIONAL INFORMATION

- THREE 60" x 60 ft HDPE TEMPORARY PIPES INSTALLED IN SEPTEMBER 2011
- TO BE REMOVED AND RETAINED BY CONTRACTOR
- EXISTING 1960 CONCRETE ARCH FOOTINGS TO BE REMOVED AS DEEMED NECESSARY

TRAFFIC MAINTENANCE NOTES

1. MAINTAIN TRAFFIC ON AN OFF SITE DETOUR.
2. TRAFFIC SIGNALS ARE NOT NECESSARY.
3. SIDEWALKS ARE NOT NECESSARY

DESIGN VALUES

1. DESIGN LIVE LOAD	HL-93
2. FUTURE PAVEMENT	d <sub>p</sub> : 3.0 INCH
3. DESIGN SPAN	L: 32'-0" FT
4. MIN. MID-SPAN POS. CAMBER @ RELEASE (PRESTRESSED UNITS)	Δ: ---
5. PRESTRESSING STRAND (0.60 INCH DIAMETER - LOW RELAX)	f <sub>y</sub> : ---
6. PRESTRESSED CONCRETE STRENGTH	f' <sub>c</sub> : ---
7. PRESTRESSED CONCRETE RELEASE STRENGTH	f' <sub>cr</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> : 4.0 KSF
16. SOIL BEARING RESISTANCE FACTOR (REFER TO AASHTO LRFD)	φ: ---
17. NOMINAL BEARING RESISTANCE OF ROCK	q <sub>n</sub> : 10.0 KSF
18. ROCK BEARING RESISTANCE FACTOR (REFER TO AASHTO LRFD)	φ: ---
19. NOMINAL AXIAL PILE RESISTANCE	q <sub>p</sub> : ---
20. PILE YIELD STRENGTH ASTM A572	f <sub>y</sub> : ---
21. PILE SIZE	φ: ---
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: ---      S <sub>1</sub> : ---

PROJECT NAME: HUBBARDTON  
 PROJECT NUMBER: ER STP 0161(26)

FILE NAME: z11c288pi.xls      PLOT DATE: 7/16/2012  
 PROJECT LEADER: M.A. COLGAN      DRAWN BY: C.L. CILLEY  
 DESIGNED BY: S.G. FARSWORTH      CHECKED BY: S.G. FARNSWORTH  
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TRAFFIC DATA

YEAR	ADT	DHV	% D	% T	ADTT	20 year ESAL for flexible pavement from 2010 to 2030 :
2012	2300	280	50	6.4	150	40 year ESAL for flexible pavement from 2010 to 2050 :
2032	2790	330	50	6.4	180	Design Speed: 50 mph

