STATE OF VERMONT
AGENCY OF TRANSPORTATION

PRELIMINARY INFORMATION SHEET (BRIDGE)

LRFD

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TRAFFIC DATA

YEAR	ADT	DHV	% D	% T	ADTT
2014	3700	420	55	7.0	280
2034	4000	450	55	9.5	410

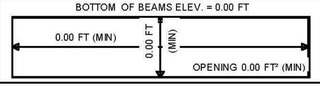
20 year ESAL for flexible pavement from 2014 to 2034 : 1621000

40 year ESAL for flexible pavement from 2014 to 2054 : 3584000

Design Speed : 25 mph

TEMPORARY BRIDGE PROFILE ALONG TEMP CL

BOTTOM OF BEAMS ELEV. = 0.00 FT



FINAL HYDRAULIC REPORT

HYDROLOGIC DATA

DATE:

DRAINAGE AREA: 70.0 SQ. MI.
CHARACTER OF TERRAIN: HILLY TO MOUNTAINOUS VALLEY SETTING
STREAM CHARACTERISTICS: STRAIGHT TO SINUOUS, ALLUVIAL, LITTLE TO NO FLOOD PLAIN
NATURE OF STREAMBED: SAND, GRAVEL, SMALL COBBLES

Q 2.33 =	2850 CFS	Q50 =	8680 CFS
Q 10 =	5170 CFS	Q 100 =	10550 CFS
Q 25 =	7070 CFS	Q 500 =	16000 CFS

DATE OF FLOOD OF RECORD: AUGUST 28, 2011
ESTIMATED DISCHARGE: 20942 CFS
WATER SURFACE ELEVATION: 414.6 FT AT GAGE STATION DOWNSTREAM OF BRIDGE
NATURAL STREAM VELOCITY: 11.2 FPS @ Q50 = 8680 CFS
ICE CONDITIONS: LIGHT TO MODERATE
DEBRIS: LIGHT TO MODERATE
DOES THE STREAM REACH MAXIMUM HIGHWATER ELEV. RAPIDLY? NO
IS ORDINARY RISE RAPID? NO
IS STAGE AFFECTED BY UPSTREAM OR DOWNSTREAM CONDITIONS? NO
IF YES, DESCRIBE N/A

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

EXISTING STRUCTURE INFORMATION

STRUCTURE TYPE: 3 SPAN STEEL GIRDER BRIDGE
YEAR BUILT: 1954
CLEAR SPAN (NORMAL TO STREAM): 157 FT
VERTICAL CLEARANCE ABOVE STREAMBED: 28.3 FT (AVG.)
WATERWAY OF FULL OPENING: 2220 SQ. FT
DISPOSITION OF STRUCTURE: REMOVE ABUTMENT BACKWALL AND SUPERSTRUCTURE
TYPE OF MATERIAL UNDER SUBSTRUCTURE: GRAVEL

WATER SURFACE ELEVATIONS AT: ONE BRIDGE LENGTH UPSTREAM

Q 2.33 =	428.7 FT	VELOCITY =	10 FT/SEC
Q 10 =	431.0 FT	"	10.7 FT/SEC
Q 25 =	432.8 FT	"	11.2 FT/SEC
Q50 =	434.0 FT	"	12.4 FT/SEC
Q 100 =	435.4 FT	"	13.6 FT/SEC

LONG TERM STREAMBED CHANGES: LITTLE CHANGE SINCE 1953 PLANS

IS THE ROADWAY OVERTOPPED BELOW Q100? NO
FREQUENCY: >Q500
RELIEF ELEVATION: +/- 448.5 FT
DISCHARGE OVER ROAD @ Q100: N/A

UPSTREAM STRUCTURE

TOWN: ROCKINGHAM DISTANCE: 0.5 MI
HIGHWAY #: T.H. # 3 (HARTLEY HILL ROAD) STRUCTURE #: 9
CLEAR SPAN: 128 FT CLEAR HEIGHT: 15.3 FT
YEAR BUILT: 2004 FULL WATERWAY: 2130 SF
STRUCTURE TYPE: WELDED PLATE GIRDER

DOWNSTREAM STRUCTURE

TOWN: ROCKINGHAM DISTANCE: 1.0 MI
HIGHWAY #: T.H. # 51 (HALL BRIDGE ROAD) STRUCTURE #: 43
CLEAR SPAN: 113 CLEAR HEIGHT: +/- 12 FT
YEAR BUILT: 1982 FULL WATERWAY: +/- 1350 SF

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	4.136	1.187					
POSTING							
OPERATING	5.36	1.54	3.72	1.84	3.67	3.21	3.21
COMMENTS:							

PROPOSED STRUCTURE

STRUCTURE TYPE: 3 SPAN PRESTRESSED NEXT D BEAM BRIDGE

CLEAR SPAN (NORMAL TO STREAM): 170.21 FT
VERTICAL CLEARANCE ABOVE STREAMBED: 28.1 FT (AVG.)
WATERWAY OF FULL OPENING: 2460 SQ FT

WATER SURFACE ELEVATIONS AT: ONE BRIDGE LENGTH UPSTREAM

Q 2.33 =	428.7 FT	VELOCITY =	10.0 FT/SEC
Q 10 =	430.8 FT	"	11.1 FT/SEC
Q 25 =	432.6 FT	"	11.2 FT/SEC
Q50 =	433.9 FT	"	12.4 FT/SEC
Q 100 =	435.4 FT	"	13.6 FT/SEC

IS THE ROADWAY OVERTOPPED BELOW Q100? NO
FREQUENCY: >Q500
RELIEF ELEVATION: +/- 448.5 FT
DISCHARGE OVER ROAD @ Q100: N/A

AVERAGE LOW ELEVATION OF SUPERSTRUCTURE: 446.7
VERTICAL CLEARANCE: 12.8 FT @ Q50 = 8,680 CFS

SCOUR: CONTRACTION SCOUR FOR Q100 IS 2 FT (Q500 IS 3 FT) TOTAL PIER SCOUR FOR Q100 IS 23 FT (Q500 IS 26 FT) STONE FILL, TYPE IV AT ABUTMENTS TO BE LEFT IN PLACE.
REQUIRED CHANNEL PROTECTION: EXISTING SCOUR CRITICAL PIERS RETAINED WITHOUT ADDED REVETMENT

PERMIT INFORMATION

AVERAGE DAILY FLOW:	150 CFS	DEPTH OR ELEVATION:	
ORDINARY LOW WATER:	70 CFS	423.1 FT	
ORDINARY HIGH WATER:	1230 CFS	426.6 FT	

TEMPORARY BRIDGE REQUIREMENTS

STRUCTURE TYPE: N/A
CLEAR SPAN (NORMAL TO STREAM): N/A
VERTICAL CLEARANCE ABOVE STREAMBED: N/A
WATERWAY AREA OF FULL OPENING: N/A

ADDITIONAL INFORMATION

TRAFFIC MAINTENANCE NOTES

1. MAINTAIN SINGLE LANE ALTERNATING TRAFFIC USING PHASED CONSTRUCTION SEQUENCE
2. TEMPORARY TRAFFIC SIGNAL REQUIRED AT ROUTE 121 / OAK STREET INTERSECTION AND ON ROUTE 121 EASTERLY APPROACH

DESIGN VALUES

1.	DESIGN LIVE LOAD		HL-93
2.	FUTURE PAVEMENT	d_p:	3.0 INCH
3.	ABUTMENT BEARING TO BEARING LENGTH (THREE SPANS) (65.50 - 69.00 - 65.50) FT	L:	200.00 FT
4.		Δ:	
5.		f_y:	
6.		f'_c:	
7.		f'_{ci}:	
8.	CONCRETE, HIGH PERFORMANCE CLASS AA	f'_c:	4.0 KSI
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.	NOMINAL BEARING RESISTANCE OF SOIL	q_n:	
15.	SOIL BEARING RESISTANCE FACTOR (REFER TO AASHTO LRFD)	ϕ:	
16.	NOMINAL BEARING RESISTANCE OF ROCK	q_n:	
17.	ROCK BEARING RESISTANCE FACTOR (REFER TO AASHTO LRFD)	ϕ:	
18.	PILE RESISTANCE FACTOR	ϕ:	0.65
19.	LATERAL PILE DEFLECTION	Δ:	0.066 INCH
20.	BASIC WIND SPEED	V_{3s}:	50 MPH
21.	MINIMUM GROUND SNOW LOAD	p_g:	
22.	SEISMIC DATA PGA:	S_s:	
		S_1:	

PROJECT NAME: ROCKINGHAM
PROJECT NUMBER: BRF 0126(12)

FILE NAME: z10j072bdr_pi.xlsm
PROJECT LEADER: R. HEBERT
DESIGNED BY: D. BURHANS
PRELIMINARY INFORMATION SHEET

PLOT DATE:
DRAWN BY: T. POULIN
CHECKED BY: R. HEBERT
SHEET OF

CALDERWOOD ENGINEERING, ETC.
STRUCTURAL ENGINEERING • DETAILING SERVICES
222 RIVER RD, RICHMOND, ME 04357 PH/FX (207)737-2007/(207) 737-2008

PREPARED FOR:
COLD RIVER BRIDGES, LLC

CEE 106-BR-14

P.E. NUMBER

DATE:

	BY	DATE
DESIGN - DETAILED	ETC	2014
CHECKED - REVIEWED		
REVISION 1		
REVISION 2		
REVISION 3		
REVISION 4		
FIELD CHANGES		

VE SUPER. DESIGN
ROCKINGHAM VT. BRF 0126 (12)

PRELIMINARY INFORMATION SHEET

SHEET NUMBER

2

CALDERWOOD ENGINEERING
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