STATE OF VERMONT
AGENCY OF TRANSPORTATION

PRELIMINARY INFORMATION SHEET (BRIDGE) - RAILROAD CULVERT C06470

Version
LRFD

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FOR INDEX OF SHEETS AND VAOT STANDARD SHEETS, SEE SHEET 2.

STANDARDS LIST

FINAL HYDRAULIC REPORT

HYDROLOGIC DATA

Date: November 2014

DRAINAGE AREA : 0.8 sq. mi.
CHARACTER OF TERRAIN : Hilly to mountainous, mostly forested with some open areas
STREAM CHARACTERISTICS : Small, intermittent, sinuous
NATURE OF STREAMBED : Gravel, cobbles and sand

PEAK FLOW DATA

Q 2.33 =	70 cfs	Q 50 =	185 cfs
Q 10 =	130 cfs	Q 100 =	205 cfs
Q 25 =	160 cfs	Q 500 =	270 cfs

DATE OF FLOOD OF RECORD : Unknown
ESTIMATED DISCHARGE: Unknown
WATER SURFACE ELEV.: Unknown
NATURAL STREAM VELOCITY : @ Q50 = 8.1 fps
ICE CONDITIONS : Moderate
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: This site may be in the Otter Creek floodplain. Floodwaters from that river may affect this site.

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

EXISTING STRUCTURE INFORMATION

STRUCTURE TYPE: 3' wide X 4' high Stone Box Culvert
YEAR BUILT: Unknown
CLEAR SPAN(NORMAL TO STREAM): 3'
VERTICAL CLEARANCE ABOVE STREAMBED: 4'
WATERWAY OF FULL OPENING: 12.0 sq. ft. total
DISPOSITION OF STRUCTURE: Remove and replace with a new structure
TYPE OF MATERIAL UNDER SUBSTRUCTURE: Unknown

WATER SURFACE ELEVATIONS AT:

Q2.33 =	582.9'	VELOCITY =	9.1 fps *
Q10 =	586.4'	"	10.6 fps *
Q25 =	586.6'	"	10.8 fps
Q50 =	586.7'	"	11.3 fps
Q100 =	586.8'	"	11.7 fps

LONG TERM STREAMBED CHANGES: None noted.

IS THE ROADWAY OVERTOPPED BELOW Q100: Yes
FREQUENCY: Below Q10
RELIEF ELEVATION: 586.0'
DISCHARGE OVER ROAD @Q100: 97 cfs

UPSTREAM STRUCTURE

TOWN: Wallingford DISTANCE:
HIGHWAY # : US Route 7 STRUCTURE #: 73A
CLEAR SPAN: 8'-0" CLEAR HEIGHT: 4'-6"
YEAR BUILT: New FULL WATERWAY: 36 sf
STRUCTURE TYPE: Concrete Box Culvert

DOWNSTREAM STRUCTURE

TOWN: N/A DISTANCE:
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:	TABLE TO BE COMPLETED BY CONTRACTOR'S DESIGNER						

PROPOSED STRUCTURE

STRUCTURE TYPE: BOX CULVERT

CLEAR SPAN(NORMAL TO STREAM): 8.0'
VERTICAL CLEARANCE ABOVE STREAMBED: 4.5'
WATERWAY OF FULL OPENING: 36 sq. ft.

WATER SURFACE ELEVATIONS AT:

Q2.33 =	580.1'	VELOCITY=	6.6 fps *
Q10 =	581.3'	"	8.1 fps *
Q25 =	581.8'	"	8.6 fps *
Q50 =	582.2'	"	9.0 fps *
Q100 =	582.5'	"	9.4 fps *

IS THE ROADWAY OVERTOPPED BELOW Q100: No
FREQUENCY: Above Q100
RELIEF ELEVATION: 586.0'
DISCHARGE OVER ROAD @Q100: None

AVERAGE LOW ELEVATION OF SUPERSTRUCTURE: 582.9' at the inlet
VERTICAL CLEARANCE: @ Q50 = -0.6'

SCOUR:

REQUIRED CHANNEL PROTECTION: Stone Fill, Type III

PERMIT INFORMATION

AVERAGE DAILY FLOW:	2 cfs	DEPTH OR ELEVATION:
ORDINARY LOW WATER:	1 cfs	Depth < 0.1'
ORDINARY HIGH WATER:	24 cfs	Depth = 1'

TEMPORARY BRIDGE REQUIREMENTS

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

ADDITIONAL INFORMATION

Hydraulics at this site may be affected by tailwater due to the Otter Creek. The unnamed stream is anticipated to peak prior to the Otter Creek, therefore this report does not consider Otter Creek tailwater in predicting water surface elevations. Water surface elevations may be higher than reported if tailwater conditions exist.

DESIGN VALUES

1. DESIGN LIVE LOAD		COOP. E80
2. FUTURE PAVEMENT	d_p:	3.0 INCH
3. DESIGN SPAN	L:	8.00 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'_{ci}:	- - -
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:	- - -
11. CONCRETE, CLASS C	f'_c:	- - -
12. REINFORCING STEEL	f_y:	60 KSI
13. STRUCTURAL STEEL AASHTO M270	f_y:	- - -
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:	- - -
19. LATERAL PILE DEFLECTION	Δ:	- - -
20. BASIC WIND SPEED	V_{3s}:	- - -
21. MINIMUM GROUND SNOW LOAD	p_g:	- - -
22. SEISMIC DATA PGA: 0	S_s:	- - -
	S_1:	- - -
23.		- - -
24.		- - -
25.		- - -
26.		- - -

AS BUILT "REBAR" DETAIL

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

TRAFFIC DATA

YEAR	ADT	DHV	% D	% T	ADTT
0	0	0	0	0	0
XXXX	0	0	0	0	0

20 year ESAL for flexible pavement from XXXX to XXXX : 0
40 year ESAL for flexible pavement from XXXX to XXXX : 0
Design Speed : 0 mph

SEE SHEET 3 FOR CULVERT DESIGN CRITERIA

PROJECT NAME: **WALLINGFORD**
PROJECT NUMBER: **ER CULV(39)**

FILE NAME: **z_RR wallingford_pi.xls**
PROJECT LEADER: **G. BOGUE**
DESIGNED BY: **T. KNIGHT**
PRELIMINARY INFORMATION SHEET - C06470

PLOT DATE: 3/3/2016
DRAWN BY: **L. BUXTON**
CHECKED BY: **G. BOGUE**
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