STATE OF VERMONT
AGENCY OF TRANSPORTATION

PRELIMINARY INFORMATION SHEET (BRIDGE)

Version
LRFD

FINAL HYDRAULIC REPORT

HYDROLOGIC DATA

Date: April 2016

DRAINAGE AREA : 5.1 sq. mi.
CHARACTER OF TERRAIN : Mountainous, mostly forested, rural
STREAM CHARACTERISTICS : Sinuous and alluvial
NATURE OF STREAMBED : Gravel and cobbles

PEAK FLOW DATA - ANNUAL EXCEEDANCE PROBABILITY (AEP)

43% =	310 cfs	2% =	1120 cfs
10% =	660 cfs	1% =	1310 cfs
4% =	890 cfs	0.2% =	1830 cfs

DATE OF FLOOD OF RECORD Unknown
ESTIMATED DISCHARGE: Unknown
WATER SURFACE ELEV.: Unknown
NATURAL STREAM VELOCITY : @ 2% AEP = 12.0 fps
ICE CONDITIONS : 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:

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

EXISTING STRUCTURE INFORMATION

STRUCTURE TYPE: CGMPPA
YEAR BUILT: 1977
CLEAR SPAN(NORMAL TO STREAM): 15' - 10"
VERTICAL CLEARANCE ABOVE STREAMBED: 10' - 8"
WATERWAY OF FULL OPENING: 132 sq. ft.
DISPOSITION OF STRUCTURE: Remove and replace
TYPE OF MATERIAL UNDER SUBSTRUCTURE: See borings

WATER SURFACE ELEVATIONS AT:

43% AEP =	494.5'	VELOCITY =	10.4 fps
10% AEP =	496.7'	"	11.0 fps
4% AEP =	498.0'	"	14.5 fps
2% AEP =	499.4'	"	15.5 fps
1% AEP =	500.4'	"	16.3 fps

LONG TERM STREAMBED CHANGES: Scour hole at outlet

IS THE ROADWAY OVERTOPPED BELOW 1% AEP: No
FREQUENCY: N/A
RELIEF ELEVATION: 511.4'
DISCHARGE OVER ROAD @ 1% AEP: None

UPSTREAM STRUCTURE

TOWN: Duxbury
HIGHWAY # : Th 37
CLEAR SPAN:
YEAR BUILT:
STRUCTURE TYPE:
DISTANCE: 1000'
STRUCTURE #: 7
CLEAR HEIGHT:
FULL WATERWAY:

DOWNSTREAM STRUCTURE

TOWN: Duxbury
HIGHWAY # :
CLEAR SPAN:
YEAR BUILT:
STRUCTURE TYPE: Confluence with Winooski River
DISTANCE: 7000'
STRUCTURE #:
CLEAR HEIGHT:
FULL WATERWAY:

PROPOSED STRUCTURE

STRUCTURE TYPE: Precast Conspan Arch

CLEAR SPAN(NORMAL TO STREAM): 28'
VERTICAL CLEARANCE ABOVE STREAMBED: ~8.5'
WATERWAY OF FULL OPENING: 195 sq. ft.

WATER SURFACE ELEVATIONS AT:

43% AEP =	493.4'	VELOCITY=	7.0 fps
10% AEP =	494.8'	"	8.7 fps
4% AEP =	495.6'	"	9.8 fps
2% AEP =	496.3'	"	10.7 fps
1% AEP =	498.8'	"	11.1 fps

IS THE ROADWAY OVERTOPPED BELOW 1% AEP: No
FREQUENCY: N/A
RELIEF ELEVATION: 511.4'
DISCHARGE OVER ROAD @ 1% AEP: None

BRIDGE LOW CHORD ELEVATION: 499.8'
FREEBOARD: @ 2% AEP = 3.5'

SCOUR: Contraction scour at 0.5% AEP = 2.0'. Design foundations to be 6.0' below streambed.
REQUIRED CHANNEL PROTECTION: Stone Fill Type IV*

PERMIT INFORMATION

AVERAGE DAILY FLOW:	-	DEPTH OR ELEVATION:
ORDINARY LOW WATER:	-	-
ORDINARY HIGH WATER:	-	-

TEMPORARY BRIDGE REQUIREMENTS

STRUCTURE TYPE: Bridge
CLEAR SPAN (NORMAL TO STREAM): Minimum clear span 35'
VERTICAL CLEARANCE ABOVE STREAMBED: Minimum low beam elev. = 495.0'
WATERWAY AREA OF FULL OPENING: 250 sq. ft. minimum

ADDITIONAL INFORMATION

*Rebuild channel through structure with E-stone type E4

TRAFFIC MAINTENANCE NOTES

1. MAINTAIN TWO-WAY TRAFFIC ON A TEMPORARY BRIDGE.
2. TRAFFIC SIGNALS ARE NOT NECESSARY.
3. SIDEWALKS ARE NOT NECESSARY
4. THE APPROACHES FOR THE TEMPORARY BRIDGE SHALL BE PAVED.

DESIGN VALUES

1. DESIGN LIVE LOAD		HL-93
2. FUTURE PAVEMENT	d_p:	3.0 INCH
3. DESIGN SPAN	L:	28.00 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:	---
10. CONCRETE, HIGH PERFORMANCE CLASS B	f'_c:	3.5 KSI
11. CONCRETE, CLASS C	f'_c:	3.0 KSI
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:	10.0 KSF
17. ROCK BEARING RESISTANCE FACTOR (REFER TO AASHTO LRFD)	ϕ:	0.45
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.		---

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 TO PROVIDE LOAD RATING (SEE GENERAL NOTES)

AS BUILT "REBAR" DETAIL

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

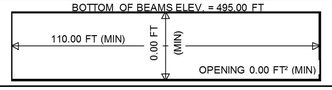
TRAFFIC DATA

YEAR	ADT	DHV	% D	% T	ADTT
2016	3800	500	54	5.7	280
2036	4300	560	54	9.6	530

20 year ESAL for flexible pavement from 2016 to 2036 : 1564000
40 year ESAL for flexible pavement from 2016 to 2056 : 3728000
Design Speed : 40 mph

TEMPORARY BRIDGE PROFILE ALONG TEMP CL

BOTTOM OF BEAMS ELEV. = 495.00 FT



PROJECT NAME: DUXBURY
PROJECT NUMBER: BF 013-4(47)

FILE NAME: r16b001pl.dgn
PROJECT LEADER: K. HIGGINS
DESIGNED BY: TYLIN
PRELIMINARY INFORMATION SHEET

PLOT DATE: 05-MAY-2016
DRAWN BY: TYLIN
CHECKED BY: TYLIN
SHEET 6 OF 19