

PRELIMINARY INFORMATION SHEET (BRIDGE)

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DETAIL SHEETS

SD-501.00	CONCRETE DETAILS AND NOTES	05-07-2010
SD-502.00	CONCRETE DETAILS AND NOTES	05-07-2010
HSD-621.06	GUARDRAIL TERMINAL LABEL DETAIL	11-03-2015

WATERLINE INSTALLATION SHEETS

C2-01	SITE PLAN FOR WATERLINE BYPASS	04-19-2016
C8-01	DETAILS	04-19-2016

TEMPORARY BRIDGE SHEETS

1	MABEY FOUNDATION DETAIL SHEET 1	09-02-2011
2	MABEY FOUNDATION DETAIL SHEET 2	09-02-2011

EXISTING STRUCTURE SHEETS

LAYOUT	12-01-1972
PROFILE	09-12-1974
CULVERT DETAILS	01-10-1975
INLET HEADWALL DETAILS	01-10-1975

STANDARDS LIST

B-5	SLOPE GRADING, EMBANKMENTS, MUCK	06-01-1994
B-71	STANDARD FOR RESIDENTIAL AND COMMERCIAL DRIVES	07-08-2005
E-121	STANDARD SIGN PLACEMENT - CONVENTIONAL ROAD	08-08-1995
E-175	POWER DROP STANCHIONS	06-08-2009
E-191	PAVEMENT MARKING DETAILS	02-01-1999
E-193	PAVEMENT MARKING DETAILS	08-18-1995
G-1	STEEL BEAM GUARDRAIL DETAILS (POST, DELINEATOR, TYPICALS)	02-10-2014
G-1D	STEEL BEAM GUARDRAIL DETAILS (END TERMINAL, ANCHOR, MEDIAN)	02-10-2014
G-19	GENERIC GRADING PLANS FOR GUARDRAIL END TERMINALS	11-15-2002
J-3	MAIL BOX SUPPORT DETAILS	08-07-1995
T-1	TRAFFIC CONTROL GENERAL NOTES	04-25-2016
T-2	TRAFFIC SIGN GENERAL NOTES	04-25-2016
T-10	CONVENTIONAL ROADS CONSTRUCTION APPROACH SIGNING	08-06-2012
T-17	TRAFFIC CONTROL MISCELLANEOUS DETAILS	08-06-2012
T-24	TRAFFIC CONTROL FOR MAINTENANCE PAVEMENT MARKING OPERATIONS	08-06-2012
T-28	CONSTRUCTION SIGN DETAILS	08-06-2012
T-29	CONSTRUCTION SIGN DETAILS	08-06-2012
T-30	CONSTRUCTION SIGN DETAILS	08-06-2012
T-31	CONSTRUCTION SIGN DETAILS	08-06-2012
T-35	CONSTRUCTION ZONE LONGITUDINAL DROP-OFFS	08-06-2012
T-36	CONSTRUCTION ZONE LONGITUDINAL DROP-OFFS FOR PAVING	08-06-2012
T-40	DELINEATORS AND MILEPOSTS	01-02-2013
T-42	BRIDGE NUMBER PLAQUE	04-09-2014
T-44	MILEMARKER DETAILS STATE AND TOWN HIGHWAYS	04-09-2014
T-45	SQUARE TUBE SIGN POST AND ANCHOR	01-02-2013

FINAL HYDRAULIC REPORT

HYDROLOGIC DATA

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

DOWNSTREAM STRUCTURE

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

LRFR LOAD RATING FACTORS

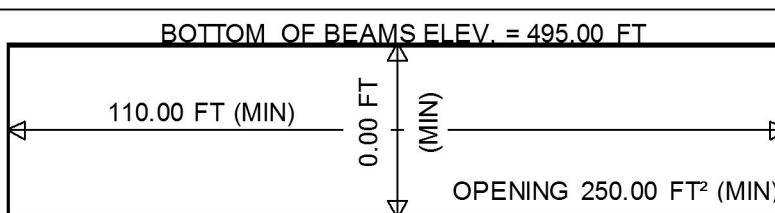
LOADING LEVELS	TRUCK						
	H-20	HL-93	3S2	6 AXLE	3A STR.	4A STR.	5A SEM
TONNAGE	20	36	36	66	30	34.5	38
INVENTORY							
POSTING							
OPERATING							
COMMENTS:							

FABRICATOR TO PROVIDE
LOAD RATING

AS BUILT "REBAR" DETAIL

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

TEMPORARY BRIDGE PROFILE ALONG TEMP CL



TRAFFIC DATA

YEAR	ADT	DHV	% D	% T	ADTT	20 year ESAL for flexible pavement from 2016 to 2036 : 1564000
2016	3800	500	54	5.7	280	40 year ESAL for flexible pavement from 2016 to 2056 : 3728000
2036	4300	560	54	9.6	530	Design Speed : 40 mph

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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 III*

PERMIT INFORMATION

AVERAGE DAILY FLOW: 10 cfs DEPTH OR ELEVATION:
 ORDINARY LOW WATER: -
 ORDINARY HIGH WATER: 135 cfs

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 E3

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 : 34.5 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.	---

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

FILE NAME: z16b001pi.dgn PLOT DATE: 5/23/2016
 PROJECT LEADER: J. OLUND DRAWN BY: S. MORGAN
 DESIGNED BY: J. OLUND CHECKED BY: J. HOWE
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