

PRELIMINARY INFORMATION SHEET (BRIDGE)

LRFD

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STANDARDS LIST

C-10	CURBING	02-11-2008
C-2A	PORTLAND CEMENT CONCRETE SIDEWALK DRIVE ENTRANCES WITH SIDEWALK ADJACENT TO CURB	10-14-2005
C-2B	PORTLAND CEMENT CONCRETE SIDEWALK DRIVE ENTRANCES WITH SIDEWALK AND GREEN STRIP	10-14-2005
C-3A	SIDEWALK RAMPS	03-10-2008
D-9	REINFORCED CONCRETE DROP INLET WITH VERTICAL CURB & THROAT ADAPTER	06-01-1994
D-15	PRECAST REINF. CONC. MH-GRATES, CAST IRON GRATE WITH FRAME, TYPE D&E	06-01-1994
D-20	HIGHWAY CROSSING SLEEVES FOR UNDERGROUND UTILITIES	03-03-2003
E-121	STANDARD SIGN PLACEMENT - CONVENTIONAL ROAD	08-08-1995
E-126B	STATE ROUTE MARKER SIGN DETAILS	08-08-1995
E-173	PULL BOXES AND JUNCTION BOXES	08-09-1995
E-191	PAVEMENT MARKING DETAILS	02-01-1999
E-193	PAVEMENT MARKING DETAILS	08-18-1995
G-1	STEEL BEAM GUARDRAIL DETAILS	06-13-1997
G-1Bm	BOX BEAM GUARDRAIL	06-13-1997
S-352A	BRIDGE RAILING, GALVANIZED STEEL TUBING/CONCRETE COMBINATION	08-22-2012
S-352B	BRIDGE RAILING, GALVANIZED STEEL TUBING/CONCRETE COMBINATION	08-22-2012
S-352C	BRIDGE RAILING, GALVANIZED STEEL TUBING/CONCRETE COMBINATION	08-22-2012
S-364C	GUARDRAIL APPROACH SECTION, GALVANIZED 3 RAIL BOX BEAM	02-10-2014
S-364D	GUARDRAIL APPROACH SECTION, GALVANIZED 3 RAIL BOX BEAM	04-23-2012
T-1	TRAFFIC CONTROL GENERAL NOTES	04-25-2016
T-10	CONVENTIONAL ROADS CONSTRUCTION APPROACH SIGNING	08-08-2012
T-40	DELINEATORS AND MILEPOSTS	01-02-2013
T-42	BRIDGE NUMBER PLAQUE	04-09-2014
T-44	MILEMARKER DETAILS - STATE & TOWN HIGHWAY	04-09-2014
T-45	SQUARE TUBE SIGN POST AND ANCHOR	01-02-2013
T-71	VERMONT REGULATORY SIGN DETAIL	04-25-2016
T-73	VERMONT REGULATORY SIGN DETAIL	04-25-2016
T-81	VERMONT WARNING SIGN DETAILS	02-12-2016
T-133	LIGHT POLE FOUNDATION DETAILS	07-25-2016
T-134	LIGHT POLE & TRANSFORMER BASE DETAILS	12-21-2015

STRUCTURES DETAILS

SD-501.00	CONCRETE DETAILS & NOTES	02-09-2012
SD-502.00	CONCRETE DETAILS & NOTES	10-10-2012
SD-516.10	BRIDGE JOINT ASPHALT PLUG	08-29-2011
SD-601.00	STRUCTURAL STEEL DETAILS AND NOTES	06-04-2010
SD-602.00	STRUCTURAL STEEL PLATE GIRDER DETAILS AND NOTES	05-02-2011
HSD-400.01	SAFETY EDGE DETAILS	03-29-2016

TRAFFIC DATA

ADT	DHV	% D	% T	ADTT	20 year ESAL for flexible pavement from 2012 to 2032	40 year ESAL for flexible pavement from 2012 to 2052
9500	1300	55	5.3	630	5,686,000	13,347,000
10400	1400	55	7.4	960		

Design Speed : 30 mph

AS BUILT "REBAR" DETAILS

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

FINAL HYDRAULIC REPORT

HYDROLOGIC DATA Date: March 2015

DRAINAGE AREA : 68.1 SQUARE MILES
 CHARACTER OF TERRAIN : HILLY TO MOUNTAINOUS - MOSTLY FORESTED
 STREAM CHARACTERISTICS : SINUOUS - CHANNELIZED THROUGH THE VILLAGE
 NATURE OF STREAMBED : COBBLE GRAVEL

PEAK FLOW DATA

Q 2.33 =	3200 CFS	Q 50 =	9826 CFS
Q 10 =	5460 CFS	Q 100 =	12352 CFS
Q 25 =	7800 CFS	Q 500 =	19900 CFS

DATE OF FLOOD OF RECORD : 1927
 ESTIMATED DISCHARGE : 24000 CFS
 WATER SURFACE ELEV. : UNKNOWN
 NATURAL STREAM VELOCITY : @ Q100 = 11.8 FPS
 ICE CONDITIONS : MODERATE
 DEBRIS : MODERATE
 DOES THE STREAM REACH MAXIMUM HIGHWATER ELEV. RAPIDLY? NO
 IS ORDINARY RISE RAPID? NO
 IS STAGE AFFECTED BY UPSTREAM OR DOWNSTREAM CONDITIONS? UNKNOWN
 IF YES, DESCRIBE :

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

EXISTING STRUCTURE INFORMATION

STRUCTURE TYPE : 2 SPAN CIP T-BEAM ON CIP CONCRETE SUBSTRUCTURES
 YEAR BUILT : 1928
 CLEAR SPAN(NORMAL TO STREAM) : 2 SPAN, 32.0 FT PER SPAN (67.0 FT TOTAL)
 VERTICAL CLEARANCE ABOVE STREAMBED : 13.0 FT
 WATERWAY OF FULL OPENING : 737 SQ. FT.
 DISPOSITION OF STRUCTURE : REMOVAL AND REPLACEMENT
 TYPE OF MATERIAL UNDER SUBSTRUCTURE : TIMBER PILES

WATER SURFACE ELEVATIONS AT:

Q2.33 =	988.4 FT	VELOCITY =	7.8 FPS
Q10 =	991.1 FT	"	9.5 FPS
Q25 =	994.7 FT	"	10.3 FPS
Q50 =	995.4 FT	"	10.0 FPS
Q100 =	996.8 FT	"	10.2 FPS

LONG TERM STREAMBED CHANGES : STABLE

IS THE ROADWAY OVERTOPPED BELOW Q100: YES
 FREQUENCY: Q25
 RELIEF ELEVATION: 993.1 FT
 DISCHARGE OVER ROAD @Q100: 4952 CFS

UPSTREAM STRUCTURE

TOWN: LUDLOW DISTANCE: 1170 FT
 HIGHWAY #: TH 308 (N. DEPOT ST) STRUCTURE #: B56
 CLEAR SPAN: 28.7 FT
 YEAR BUILT: 1954 FULL WATERWAY:
 STRUCTURE TYPE: STEEL STRINGER

DOWNSTREAM STRUCTURE

TOWN: LUDLOW DISTANCE: 1380 FT
 HIGHWAY #: TH 324 (MILL ST) STRUCTURE #: B57
 CLEAR SPAN: 25 FT CLEAR HEIGHT:
 YEAR BUILT: 1929 FULL WATERWAY:
 STRUCTURE TYPE: STEEL TRUSS

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	3.77	1.64					
POSTING							
OPERATING	4.89	2.13	3.07	1.9	3.05	2.7	2.76
COMMENTS:							

* - SEE PROJECT NOTES FOR VALUES.

PILE DRIVING AND TESTING REQUIREMENTS

1. NOMINAL PILE DRIVING CAPACITY	R _{dr}	*
2. PILE TEST RESISTANCE FACTOR	φ	0.65
3. MAXIMUM PILE TIP ELEVATION	*	*
4. A MINIMUM OF 1 DYNAMIC TEST PER ABUTMENT SHALL BE PERFORMED DURING INSTALLATION. THE REBIDDING SHOULD BE CALIBRATED BY VIVACE EQUATION ANALYSIS. PILES MUST BE DRIVEN A MINIMUM OF 2' BELOW BOTTOM OF ABUTMENT REGARDLESS IF REQUIRED DRIVING RESISTANCE HAS BEEN MET.		

PROPOSED STRUCTURE

STRUCTURE TYPE: SINGLE SPAN CIP CONCRETE/STEEL COMPOSITE SUPERSTRUCTURE ON INTEGRAL ABUTMENTS

CLEAR SPAN(NORMAL TO STREAM): 83.0 FT
 VERTICAL CLEARANCE ABOVE STREAMBED: 12.7 FT
 WATERWAY OF FULL OPENING: 815 SQ. FT.

WATER SURFACE ELEVATIONS AT:

Q2.33 =	988.3 FT	VELOCITY =	7.2 FPS
Q10 =	991.0 FT	"	8.4 FPS
Q25 =	994.4 FT	"	9.4 FPS
Q50 =	995.1 FT	"	9.6 FPS
Q100 =	996.6 FT	"	9.9 FPS

IS THE ROADWAY OVERTOPPED BELOW Q100: YES
 FREQUENCY: Q25
 RELIEF ELEVATION: 993.1 FT
 DISCHARGE OVER ROAD @Q100: 4441 CFS

AVERAGE LOW ELEVATION OF SUPERSTRUCTURE: 992.0
 VERTICAL CLEARANCE: @ Q50 = -3.1 FT

SCOUR: CONTRACTION SCOUR @ Q100 = 2.2-FT
 CONTRACTION SCOUR @ Q200 = 2.4-FT
 REQUIRED CHANNEL PROTECTION: STONE FILL, TYPE III*

PERMIT INFORMATION

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

TEMPORARY BRIDGE REQUIREMENTS

STRUCTURE TYPE: NO TEMPORARY BRIDGE PROPOSED
 CLEAR SPAN (NORMAL TO STREAM): N/A
 VERTICAL CLEARANCE ABOVE STREAMBED: N/A
 WATERWAY AREA OF FULL OPENING: N/A

ADDITIONAL INFORMATION

* - HYDRAULICS REPORT RECOMMENDS TYPE IV, BUT DUE TO SITE CONSTRAINTS USE STONE FILL TYPE III

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 _p : 3.0 INCH
3. DESIGN SPAN	L: 105.50 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'c _r : ---
8. SPECIAL PROVISION (HIGH PERFORMANCE CONCRETE, RAPID SET)	f'c: 5.0 KSI
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 : 50 KSI
14. SOIL UNIT WEIGHT	γ: 0.140 KCF
15. NOMINAL BEARING RESISTANCE OF SOIL	q _n : ---
16. SOIL BEARING RESISTANCE FACTOR (REFER TO AASHTO LRFD)	φ: ---
17. NOMINAL BEARING RESISTANCE OF ROCK	q _n : ---
18. ROCK BEARING RESISTANCE FACTOR (REFER TO AASHTO LRFD)	φ: ---
19. NOMINAL AXIAL PILE RESISTANCE	q _p : 328.0 KIPS
20. PILE YIELD STRENGTH ASTM A572	f _y : 50 KSI
21. PILE SIZE	HP 14X89
22. EST. PILE LENGTH	L _p : 54.0 FT
23. PILE RESISTANCE FACTOR	φ: 1.00
24. LATERAL PILE DEFLECTION	Δ: --- INCH
25. BASIC WIND SPEED	V _{3s} : ---
26. MINIMUM GROUND SNOW LOAD	p _g : ---
27. SEISMIC DATA	PGA: --- S _s : --- S _t : ---

PROJECT NAME: LUDLOW
 PROJECT NUMBER: BRF 025-1(42)

CALDERWOOD ENGINEERING, ETC.
 STRUCTURAL ENGINEERING • DETAILING SERVICES
 222 RIVER RD, RICHMOND, ME 04357 PH/FX (207)737-2007/(207)737-2008
 PREPARED FOR: GOLD RIVER BRIDGES, LLC
 CEE 16-16-COLD RIVER BRIDGES

VE SUPER DESIGN
 LUDLOW VT. BRF 025-1(42)
 PRELIMINARY INFORMATION SHEET

DESIGN/REVIEW: TDC
 CHECKED/REVIEWED: TDC
 REVISIONS: 1 TDC, 2 TDC, 3 TDC, 4 TDC
 FIELD CHANGES: TDC

DATE: MAR 2017
 P.E. NUMBER: 8711

SHEET NUMBER: 2
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