

PRELIMINARY INFORMATION SHEET (BRIDGE)

LRFD

INDEX OF SHEETS

FINAL HYDRAULIC REPORT

PLAN SHEETS

1	TITLE SHEET
2	PRELIMINARY INFORMATION SHEET
3 - 4	TYPICAL BRIDGE SECTIONS SHEETS 1-2
5 - 6	TYPICAL ROADWAY SECTIONS SHEETS 1-2
7 - 8	TYPICAL EARTHWORK SECTIONS SHEETS 1-2
9 - 10	GENERAL NOTES SHEETS 1-2
11 - 13	QUANTITY SHEETS 1-3
14	CONVENTIONAL SYMBOLOLOGY LEGEND SHEET
15 - 16	TIE SHEETS 1-2
17 - 18	LAYOUT SHEETS 1-2
19 - 20	US 2 PROFILE AND BANKING DIAGRAM SHEETS 1-2
21	TYPICAL DETOUR SECTION SHEET
22 - 25	PHASED TRAFFIC CONTROL SHEETS SPLIT PHASE 1 AND 2
26 - 27	TEMPORARY DETOUR PROFILE SHEETS 1-2
28 - 29	PHASED TEMPORARY TRAFFIC SIGNAL SHEETS SPLIT PHASE 1 AND 2
30	TRAFFIC CONTROL PLAN
31	SIGN DETAIL SHEET
32	BORING INFORMATION SHEET
33 - 40	BORING LOGS SHEETS 1-8
41	PLAN AND ELEVATION
42	SLOPE STABILIZATION PILES SHEET
43 - 44	ARCH AND WINGWALL DETAILS SHEETS 1-2
45 - 46	SUBSTRUCTURE DETAILS SHEETS 1-2
47 - 48	SUBSTRUCTURE REINFORCING SHEETS 1-2
49	REINFORCING STEEL SCHEDULE
50 - 54	ROADWAY CROSS SECTIONS SHEETS 1-5
55 - 58	TEMPORARY DETOUR CROSS SECTIONS SHEETS 1-4
59 - 61	CHANNEL CROSS SECTIONS SHEET 1-3
62	EROSION CONTROL NARRATIVE
63 - 64	EPSC EXISTING PLAN SHEETS 1-2
65 - 66	EPSC CONSTRUCTION PLAN SHEETS 1-2
67 - 68	EPSC FINAL PLAN SHEETS 1-2
69 - 71	EPSC DETAILS SHEETS 1-3
72	ROW DETAIL SHEET
73 - 74	ROW LAYOUT SHEETS 1-2

STANDARDS LIST

B-5	SLOPE GRADING, EMBANKMENTS, MUCK	06-01-1994
B-71	STANDARD FOR RESIDENTIAL AND COMMERCIAL DRIVES	07-08-2005
D-30	UNDERDRAIN CONSTRUCTION DETAILS	08-13-2007
E-119	UTILITY WORK ZONE	03-01-2004
E-121	STANDARD SIGN PLACEMENT - CONVENTIONAL ROAD	08-08-1995
E-123	GUIDE SIGN PLACEMENT - MISCELLANEOUS DETAILS	03-16-2004
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, MEDIUM)	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	08-06-2012
T-17	TRAFFIC CONTROL MISCELLANEOUS DETAILS	08-06-2012
T-24	TRAFFIC CONTROL FOR MAINTENANCE PAVEMENT MARKING OPERATION	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-45	SQUARE TUBE SIGN POST AND ANCHOR	01-02-2013

STRUCTURES DETAILS

SD-501.00	CONCRETE DETAILS AND NOTES	02-09-2012
SD-502.00	CONCRETE DETAILS AND NOTES	10-10-2012

NOTE:
THE TEMPORARY BRIDGE AS SHOWN IN THE TEMPORARY BRIDGE PROFILE ALONG TEMP CL DETAIL BELOW WAS DESIGNED FOR TRAFFIC CONTROL PURPOSES ONLY AND WILL MORE THAN MEET THE MINIMUM TEMPORARY BRIDGE HYDRAULIC REQUIREMENTS SPECIFIED ON THIS SHEET. AN ALTERNATE METHOD OF BYPASSING STREAM FLOW THROUGH THE PROJECT AREA WILL BE REQUIRED FOR THE DURATION OF THE PROJECT AND SHALL BE DESIGNED BY THE CONTRACTOR TO MEET THE MINIMUM REQUIREMENTS SPECIFIED IN THE VTRANS HYDRAULICS MANUAL.

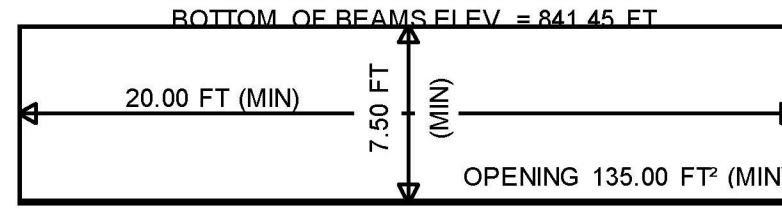
AS BUILT "REBAR" DETAIL		
LEVEL I	LEVEL II	LEVEL III
TYPE:	TYPE:	TYPE:
GRADE:	GRADE:	GRADE:

TRAFFIC DATA

YEAR	ADT	DHV	% D	% T	ADTT
2014	2600	320	57	11.9	400
2024	2700	330	57	13.7	480

20 year ESAL for flexible pavement from 2014 to 2034 : 4615000
40 year ESAL for flexible pavement from 2014 to 2054 : 10053000
Design Speed : 50 mph

TEMPORARY BRIDGE PROFILE ALONG TEMP CL



HYDROLOGIC DATA

Date: JUNE 3, 2013

DRAINAGE AREA : 3.2 SQ. MI
CHARACTER OF TERRAIN : HILLY TO MOUNTAINOUS
STREAM CHARACTERISTICS : SINUOUS ALLUVIAL CHANNEL
NATURE OF STREAMBED : FINE SAND & SILTS W/ RIFFLE/POOL BED MORPHOLOGY

PEAK FLOW DATA

Q 2.33 =	130 CFS	Q 50 =	470 CFS
Q 10 =	300 CFS	Q 100 =	550 CFS
Q 25 =	400 CFS	Q 500 =	710 CFS

DATE OF FLOOD OF RECORD : AUGUST 2011 (TROPICAL STORM IRENE)

ESTIMATED DISCHARGE : UNKNOWN
WATER SURFACE ELEV. : UNKNOWN
NATURAL STREAM VELOCITY : @ Q50 = 10.0 FPS
ICE CONDITIONS : HEAVY
DEBRIS : HEAVY
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 : 30-INCH IRON PIPE WITH 27-INCH EXT. AND 4X4 BOX EXT.
YEAR BUILT : UNKNOWN
CLEAR SPAN(NORMAL TO STREAM) : 27 INCH
VERTICAL CLEARANCE ABOVE STREAMBED : 27 INCH
WATERWAY OF FULL OPENING : 4 SQ. FT.
DISPOSITION OF STRUCTURE : REMOVAL
TYPE OF MATERIAL UNDER SUBSTRUCTURE : SEE BORINGS

WATER SURFACE ELEVATIONS AT:

Q2.33 =	*	VELOCITY =	*
Q10 =	*	"	*
Q25 =	*	"	*
Q50 =	*	"	*
Q100 =	*	"	*

LONG TERM STREAMBED CHANGES : UPSTREAM CHANNEL IS SIGNIFICANTLY WIDER THAN THE DOWNSTREAM CHANNEL AND HAS A LARGE SCOUR HOLE.

IS THE ROADWAY OVERTOPPED BELOW Q100 : *
FREQUENCY : *
RELIEF ELEVATION : 855.3 FT
DISCHARGE OVER ROAD @Q100 : *

UPSTREAM STRUCTURE

TOWN : GULDHALL DISTANCE : 1.7 MI
HIGHWAY # : MORIN ROAD STRUCTURE # : UNKNOWN
CLEAR SPAN : UNKNOWN CLEAR HEIGHT : UNKNOWN
YEAR BUILT : UNKNOWN FULL WATERWAY : UNKNOWN
STRUCTURE TYPE : UNKNOWN

DOWNSTREAM STRUCTURE

TOWN : LUNENBURG DISTANCE : 0.1 MI
HIGHWAY # : N/A STRUCTURE # : N/A
CLEAR SPAN : N/A CLEAR HEIGHT : N/A
YEAR BUILT : N/A FULL WATERWAY : N/A
STRUCTURE TYPE : N/A DUE TO CONFLUENCE WITH CONNECTICUT 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:							

* LRFR LOAD RATING FACTORS TABLE TO BE COMPLETED BY CONTRACTOR'S DESIGNER.

PILE DRIVING AND TESTING REQUIREMENTS

1. NOMINAL PILE DRIVING CAPACITY Rev: 150.00 KIP
2. PILE TEST RESISTANCE FACTOR φ: VARIES
3. MAXIMUM PILE TIP ELEVATION

PROPOSED STRUCTURE

STRUCTURE TYPE : PRECAST CONCRETE ARCH ON MAT FOUNDATION

CLEAR SPAN(NORMAL TO STREAM) : 20 FT
VERTICAL CLEARANCE ABOVE STREAMBED : 7.5 FT
WATERWAY OF FULL OPENING : 115 SF

WATER SURFACE ELEVATIONS AT:

Q2.33 =	836.3 FT	VELOCITY =	5.8 FPS
Q10 =	838.1 FT	"	8.7 FPS
Q25 =	839.0 FT	"	9.9 FPS
Q50 =	839.6 FT	"	10.1 FPS
Q100 =	840.2 FT	"	10.5 FPS

IS THE ROADWAY OVERTOPPED BELOW Q100 : NO
FREQUENCY : N/A
RELIEF ELEVATION : 856.1 FT
DISCHARGE OVER ROAD @Q100 : N/A

AVERAGE LOW ELEVATION OF SUPERSTRUCTURE : 840.2 FT OUTLET (841.5 FT INLET)
VERTICAL CLEARANCE : @ Q50 = 1.2 FT AT OUTLET (1.9 FT AT INLET)

SCOUR : CONTRACTION SCOUR 1 FT

REQUIRED CHANNEL PROTECTION : TYPE IV STONE FILL

PERMIT INFORMATION

AVERAGE DAILY FLOW : 30 CFS DEPTH OR ELEVATION:
ORDINARY LOW WATER : 15 CFS 834.7 FT
ORDINARY HIGH WATER : 55 CFS 835.2 FT

TEMPORARY BRIDGE REQUIREMENTS

STRUCTURE TYPE : TEMPORARY BRIDGE (SEE NOTE ON PI SHEET)
CLEAR SPAN (NORMAL TO STREAM) : 4 FT
VERTICAL CLEARANCE ABOVE STREAMBED : 838.1 FT AT INLET
WATERWAY AREA OF FULL OPENING : 46 SF

ADDITIONAL INFORMATION

* THE EXISTING CULVERT IS SEVERELY UNDERSIZED AND HEC-RAS MODEL DOES NOT ACCURATELY REFLECT EXISTING CONDITIONS. THE ONLY TIME THE ROAD HAS BEEN OVERTOPPED ACCORDING TO LOCAL OBSERVATIONS WAS DURING TROPICAL STORM IRENE.

TRAFFIC MAINTENANCE NOTES

1. MAINTAIN ONE-WAY TRAFFIC ON A TEMPORARY BRIDGE.
2. INSTALL AND MAINTAIN TRAFFIC SIGNALS.
3. SIDEWALKS ARE NOT NECESSARY
4. THE APPROACHES FOR THE TEMPORARY BRIDGE SHALL BE PAVED.
5. PHASED CONSTRUCTION IS REQUIRED.

DESIGN VALUES

1. DESIGN LIVE LOAD	HL-93
2. FUTURE PAVEMENT	d _p : 8.0 INCH
3. DESIGN SPAN	L: 20.00 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' _{cr} : ---
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 : ---
12. REINFORCING STEEL	f _y : 60 KSI
13. STRUCTURAL STEEL AASHTO M270	f _y : ---
14. SOIL UNIT WEIGHT	γ: 0.125 KCF
15. NOMINAL BEARING RESISTANCE OF SOIL	q _n : 2.5 KSF
16. SOIL BEARING RESISTANCE FACTOR (REFER TO AASHTO LRFD)	φ: 0.45
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 : ---
20. PILE YIELD STRENGTH ASTM A572	f _y : 50 KSI
21. PILE SIZE	HP 14X 89
22. EST. PILE LENGTHS (THREE SLOPE OFFSET LOCATIONS) (SLOPE 35.3° RT = 33, SLOPE 41.4° RT = 30 AND SLOPE 45.4° RT = 27) FT	L _p : ---
23. PILE RESISTANCE FACTOR	φ: ---
24. LATERAL PILE DEFLECTION	Δ: 2.42 INCH
25. BASIC WIND SPEED	V _{3s} : ---
26. MINIMUM GROUND SNOW LOAD	p _g : ---
27. SEISMIC DATA	PGA: 8 %g S _s : 18 %g S _t : 5 %g

PROJECT NAME : LUNENBURG
PROJECT NUMBER : NH CULV(27)

FILE NAME : llb294/cos/zllb294pl.dgn PLOT DATE : 8/24/2015
PROJECT LEADER : J. BYATT DRAWN BY : S. BEAUMONT
DESIGNED BY : S. BEAUMONT CHECKED BY : J. BYATT
PRELIMINARY INFORMATION SHEET SHEET 2 OF 74