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STRUCTURES DETAILS

SD-501.00 CONCRETE DETAILS AND NOTES	5/7/2010
SD-502.00 CONCRETE DETAILS AND NOTES	6/4/2010
SD-601.00 STRUCTURAL STEEL DETAILS & NOTES	6/4/2010

STANDARD DRAWINGS

B-71 STANDARD FOR RESIDENTIAL AND COMMERCIAL DRIVES	7/8/2005
C-3A SIDEWALK RAMPS	3/10/2008
C-10 CURBING	2/11/2008
D-15 PRECAST REINFORCED CONCRETE CATCH BASIN W/ CAST IRON GF PRECAST REINFORCED CONCRETE MANHOLE W/ CAST IRON COVER CAST IRON GRATE WITH FRAME, TYPE D CAST IRON GRATE WITH FRAME, TYPE E	6/1/1994
E-100 CONSTRUCTION APPROACH SIGNS	1/2/2004
E-101 CONSTRUCTION SIGN DETAILS	5/30/2003
E-102 CONSTRUCTION SIGN DETAILS	6/30/2003
E-102A CONSTRUCTION SIGN DETAILS	5/1/2004
E-106 TRAFFIC CONTROL- MISCELLANEOUS DETAILS	3/1/2004
E-107 DELINEATION, BARRICADES AND DETOURS FOR CONSTRUCTION AF	6/30/2003
E-107A BREAKAWAY BARRICADE DETAILS	6/8/2009
E-108A CONSTRUCTION ZONE   LONGITUDINAL DROP OFFS   FOR PAVING	6/8/2009
E-110 MAJOR MAINTENANCE OPERATION LANE CLOSURE	8/8/1995
E-121 STANDARD SIGN PLACEMENT CONVENTIONAL ROAD	08/08/95
E-123 GUIDE SIGN PLACEMENT MISCELLANEOUS DETAILS	03/16/04
E-134 BRIDGE NUMBER PLAQUE	08/08/95
E-138 MILE MARKER DETAILS STATE & TOWN HIGHWAYS	05/30/03
E-140 REGULATORY SIGN DETAILS	08/30/96
E-170 TRAFFIC CONTROL SIGNALS PEDESTAL POST MOUNTED	11/04/99
E-171A TRAFFIC CONTROL SIGNALS GENERAL NOTES & DETAILS	08/09/95
E-171B TRAFFIC CONTROL SIGNALS MISC. DETAILS	08/09/95
E-171C TRAFFIC CONTROL SIGNALS CANTILEVER MOUNTING DETAILS	08/09/95
E-172 VEHICLE DETECTOR LOOP DETAILS	08/09/95
E-175 POWER DROP STANCHIONS	06/08/09

FINAL HYDRAULIC REPORT

**HYDROLOGIC DATA** Date: June 27, 2008

DRAINAGE AREA : 45.6 sq km  
 CHARACTER OF TERRAIN : Hilly, mostly forested  
 STREAM CHARACTERISTICS : Perennial, low to moderate relief, sinuous and equiwidth  
 NATURE OF STREAMBEDS : Small boulders, cobbles and gravel

PEAK FLOW DATA

Q 2.33 = 25.5 cms	Q 50 = 93.4 cms
Q 10 = 56.6 cms	Q 100 = 110.4 cms
Q 25 = 77.9 cms	Q 500 = 148.0 cms

DATE OF FLOOD OF RECORD : Likely September 1938  
 ESTIMATED DISCHARGE : Unknown  
 WATER SURFACE ELEV. : Unknown  
 NATURAL STREAM VELOCITY : @ Q25 = 3.4 m/s  
 ICE CONDITIONS : Light to moderate  
 DEBRIS : Moderate to heavy  
 DOES THE STREAM REACH MAXIMUM HIGHWATER ELEV. RAPIDLY? : Yes  
 IS ORDINARY RISE RAPID? : Yes  
 IS STAGE AFFECTED BY UPSTREAM OR DOWNSTREAM CONDITIONS? : Possibly  
 IF YES, DESCRIBE : Tailwater from confluence of Rock River approx. 150 m downstream may increase water surface elevations for Q100 & Q500 flows.

WATERSHED STORAGE: 1% HEADWATERS: \_\_\_\_\_  
 UNIFORM:  X  
 IMMEDIATELY ABOVE SITE: \_\_\_\_\_

**EXISTING STRUCTURE INFORMATION**

STRUCTURE TYPE: 2 span steel beam bridge with concrete deck  
 YEAR BUILT: 1945  
 CLEAR SPAN(NORMAL TO STREAM): 34.9 m (2 equal spans)  
 VERTICAL CLEARANCE ABOVE STREAMBED: 5.9 m (ave. low beam = 198.12 m)  
 WATERWAY OF FULL OPENING: 127 sq. m ±  
 DISPOSITION OF STRUCTURE: Remove and replace with a new bridge  
 TYPE OF MATERIAL UNDER SUBSTRUCTURE: unknown, E. abut. likely on ledge

WATER SURFACE ELEVATIONS AT:

Q2.33 = 193.9 m	VELOCITY = 2.6 m/s
Q10 = 194.3 m	" 3.2 m/s
Q25 = 194.6 m	" 3.4 m/s
Q50 = 194.7 m	" 3.5 m/s
Q100 = 194.9 m	" 3.7 m/s

LONG TERM STREAMBED CHANGES: None noted

IS THE ROADWAY OVERTOPPED BELOW Q100: No  
 FREQUENCY: > Q100  
 RELIEF ELEVATION: 198.6 m  
 DISCHARGE OVER ROAD @Q100: None

**UPSTREAM STRUCTURE**

TOWN: Marlboro DISTANCE: 3050 m  
 HIGHWAY #: TH 1 STRUCTURE #: BR 7  
 CLEAR SPAN: 17.7 m CLEAR HEIGHT: 2.4 m  
 YEAR BUILT: 1930 FULL WATERWAY: Unknown  
 STRUCTURE TYPE: Steel beam bridge with concrete deck

**DOWNSTREAM STRUCTURE**

TOWN: N/A (Rock River Confluence) DISTANCE: \_\_\_\_\_  
 HIGHWAY #: \_\_\_\_\_ STRUCTURE #: \_\_\_\_\_  
 CLEAR SPAN: \_\_\_\_\_ CLEAR HEIGHT: \_\_\_\_\_  
 YEAR BUILT: \_\_\_\_\_ FULL WATERWAY: \_\_\_\_\_  
 STRUCTURE TYPE: \_\_\_\_\_

**LRFR - LOAD RATING (METRIC TONS)**

LOADING LEVELS	TRUCK					
	M	MS	3S2	6 AXLE	3A. STR.	5A. SEMI
INVENTORY	32	53				
POSTED	45	74	80	88	89	85
OPERATING		88	95	107	81	83

**TRAFFIC DATA**

YEAR	ADT	DHV	% D	% T	ADTT
2006	1400	200	58	3	60
2026	1800	250	58	5	110

20 year ESAL for flexible pavement from 2006 to 2026 : 209,000  
 40 year ESAL for flexible pavement from 2006 to 2046 : 542,000  
 Design Speed : 40 km/h

**PROPOSED STRUCTURE**

STRUCTURE TYPE: Single span steel girder bridge with concrete deck

CLEAR SPAN(NORMAL TO STREAM): 27.5 m (35 m along road)  
 VERTICAL CLEARANCE ABOVE STREAMBED: 5.6 m  
 WATERWAY OF FULL OPENING: 117 sq. m ±

WATER SURFACE ELEVATIONS AT:

Q2.33 = 193.9 m	VELOCITY = 2.6 m/s
Q10 = 194.3 m	" 3.3 m/s
Q25 = 194.6 m	" 3.5 m/s
Q50 = 194.7 m	" 3.7 m/s
Q100 = 194.9 m	" 3.8 m/s

IS THE ROADWAY OVERTOPPED BELOW Q100: No  
 FREQUENCY: > Q100  
 RELIEF ELEVATION: 198.8 m  
 DISCHARGE OVER ROAD @Q100: None

AVERAGE LOW ELEVATION OF SUPERSTRUCTURE: 197.8 m  
 VERTICAL CLEARANCE: @Q25 = 3.2 m

SCOUR: Q100 Contraction scour = 1.4 m or to ledge

REQUIRED CHANNEL PROTECTION: Stone Fill, Type III

**PERMIT INFORMATION**

AVERAGE DAILY FLOW: 1 cms DEPTH OR ELEVATION: \_\_\_\_\_  
 ORDINARY LOW WATER: 0.5 cms < 1m  
 ORDINARY HIGH WATER: 1.1 cms 1m

**TEMPORARY BRIDGE REQUIREMENTS**

STRUCTURE TYPE: Single span bridge  
 CLEAR SPAN (NORMAL TO STREAM): 23 m minimum  
 VERTICAL CLEARANCE ABOVE STREAMBED: Elevation 195.0 m minimum  
 WATERWAY AREA OF FULL OPENING: 48 sq. m minimum

**ADDITIONAL INFORMATION**

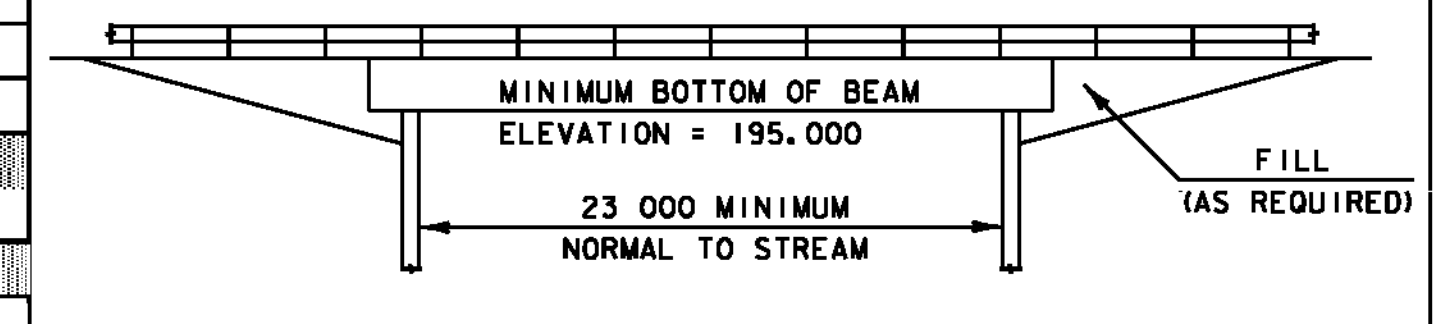
The 23 m minimum temporary bridge span is based on no fill material being placed in front of the abutments. If fill is placed in front of the abutments, the span will need to be increased.

**DESIGN CRITERIA**

1 DESIGN LIVE LOAD AASHTO : LRFD HL-93  
 2 DESIGN SPAN : 36.000 m  
 3 NOMINAL BEARING RESISTANCE ON SOIL : N/A  
 ON LEDGE : 1 500 kPa (31 ksf)  
 4 FACTORED DESIGN LOAD FOR PILING : 1 692 kN (380 kip) Strength I  
 TYPE : STEEL PILING HP 310x110 (HP 12x74) Fy = 345 kPa (50 ksi)  
 ESTIMATED LENGTH : 23 m (75 ft)  
 5 STRUCTURAL STEEL AASHTO M270M/M270 GRADE : 345W  
 6 REINFORCING STEEL GRADE : 420 Mpa  
 7 CONCRETE, HIGH PERFORMANCE CLASS A fc : 30 Mpa  
 CONCRETE, HIGH PERFORMANCE CLASS B fc : 25 Mpa  
 8 DESIGN SOIL UNIT WEIGHT : 22.00 kN/m³ (140 pcf)  
 9 DESIGN LOAD FOR SPREAD FOOTINGS ON SOIL : 245 kPa (5 ksf)

**TRAFFIC MAINTENANCE**

1 IS TRAFFIC TO BE MAINTAINED YES  
 IF YES, ON EXISTING STRUCTURE NO  
 OR ON TEMPORARY BRIDGE? TEMPORARY WITH PAVED APPROACHES  
 ONE OR TWO-WAY TRAVEL? ONE-WAY  
 2. TRAFFIC CONTROL SIGNALS REQUIRED? YES  
 3. ARE SIDEWALKS REQUIRED? NO  
 IF SO, ON WHAT SIDE? N/A



**TEMPORARY BRIDGE DETOUR DETAIL**  
(NOT TO SCALE)

PROJECT NAME: NEWFANE  
 PROJECT NUMBER: BRF 0106 (3)S  
 FILE NAME: s96j280pi.dgn PLOT DATE: 29-JUL-2011  
 PROJECT MANAGER: C. CARLSON DRAWN BY: C. MOONEY  
 DESIGNED BY: T. LACKEY CHECKED BY: G. SWEENEY  
 PRELIMINARY INFORMATION SHEET SHEET 2 OF 70