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LIST OF STANDARDS

- | | |
|-----------|----------|
| B-5M | 01/03/00 |
| B-71 | 07/08/05 |
| E-100 | 01/02/04 |
| E-101 | 05/30/03 |
| E-102 | 06/30/03 |
| E-102A | 05/01/04 |
| E-107 | 06/30/03 |
| E-121 | 08/08/95 |
| E-138 | 05/30/03 |
| E-141 | 09/20/95 |
| E-143 | 06/15/04 |
| E-160 | 05/20/99 |
| E-164 | 05/20/99 |
| G-1M | 01/03/00 |
| G-1DM | 01/03/00 |
| J-3M | 6/13/97 |
| SB-R6-82M | 7/10/97 |

FINAL HYDRAULIC REPORT

HYDROLOGIC DATA Date: 6/3/99

DRAINAGE AREA : 26.4 sq km
 CHARACTER OF TERRAIN : Mountainous, Rolling Hills, Forested
 STREAM CHARACTERISTICS : Meandering, Perennial
 NATURE OF STREAMBED : Gravel, Cobble to Ledge

PEAK FLOW DATA

Q 2.33 =	14.2 cms	Q 50 =	48.1 cms
Q 10 =	28.3 cms	Q 100 =	56.6 cms
Q 25 =	39.6 cms	Q 500 =	75.3 cms

DATE OF FLOOD RECORD : Unknown
 ESTIMATED DISCHARGE : N/A
 WATER SURFACE ELEV. : N/A
 NATURAL STREAM VELOCITY : @ Q25 = 3.4 mps
 ICE CONDITIONS : Moderate
 DEBRIS : Moderate
 DOES THE STREAM REACH MAXIMUM HIGHWATER ELEV. RAPIDLY? Yes
 IS ORDINARY RISE RAPID? Yes
 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: Single Span Steel Beam Bridge with Timber Deck
 YEAR BUILT: 1919
 CLEAR SPAN(NORMAL TO STREAM): 7.0 m
 VERTICAL CLEARANCE ABOVE STREAMBED: 3.0 m
 WATERWAY OF FULL OPENING: 19.4 sq m
 DISPOSITION OF STRUCTURE: Remove
 TYPE OF MATERIAL UNDER SUBSTRUCTURE: Ledge

WATER SURFACE ELEVATIONS AT:

Q2.33 =	308.7 m	VELOCITY =	2.7 mps
Q10 =	309.3 m	"	3.4 mps
Q25 =	309.7 m	"	3.8 mps
Q50 =	310.0 m	"	4.1 mps
Q100 =	310.4 m	"	3.7 mps

LONG TERM STREAMBED CHANGES: None

IS THE ROADWAY OVERTOPPED BELOW Q100: Yes
 FREQUENCY: Above Q50
 RELIEF ELEVATION: 310.0 m
 DISCHARGE OVER ROAD @Q100: 8.0 cms

UPSTREAM STRUCTURE

TOWN: Vershire DISTANCE: 0.43 km
 HIGHWAY #: VT 113 STRUCTURE #: Bridge 11
 CLEAR SPAN: 4.6 m CLEAR HEIGHT: 3.5 m
 YEAR BUILT: 1928 FULL WATERWAY: Unknown
 STRUCTURE TYPE: Single Span Bridge

DOWNSTREAM STRUCTURE

TOWN: Vershire DISTANCE: 0.24 km
 HIGHWAY #: VT 113 STRUCTURE #: Bridge 17
 CLEAR SPAN: 17.1 m CLEAR HEIGHT: 4.3 m
 YEAR BUILT: 1938 FULL WATERWAY: Unknown
 STRUCTURE TYPE: Single Span Bridge

LOAD FACTOR - LOAD RATING (METRIC TONS)

LOADING LEVELS	TRUCK						
	M	M5	352	8 AXLE	3A. STR.	4A. STR.	5A. SEMI
INVENTORY	26	41					
POSTED	36	58	73		43	44	72
OPERATING		69	87	79	51	52	

COMMENTS: RF=0M_N - 1.3M_{DL} / A X M_{LL+1}

TRAFFIC DATA

YEAR	ADT	DHV	% D	% T	ADTT
1996	10	5	0	<1	1
2016	15	5	0	<1	1

20 year ESAL for flexible pavement from 0 to 0 : 0
 20 year ESAL for flexible pavement from 0 to 0 : 0
 Design Speed : 25 km/h

PROPOSED STRUCTURE

STRUCTURE TYPE: Single Span Concrete Bridge
 CLEAR SPAN(NORMAL TO STREAM): 8.5 m
 VERTICAL CLEARANCE ABOVE STREAMBED: 3.2 m
 WATERWAY OF FULL OPENING: 26.2 sq m

WATER SURFACE ELEVATIONS AT:

Q2.33 =	308.5 m	VELOCITY =	2.6 mps
Q10 =	309.0 m	"	3.2 mps
Q25 =	309.4 m	"	3.6 mps
Q50 =	309.7 m	"	3.8 mps
Q100 =	310.0 m	"	4.0 mps

IS THE ROADWAY OVERTOPPED BELOW Q100: No
 FREQUENCY: N/A
 RELIEF ELEVATION: 310.1 m
 DISCHARGE OVER ROAD @Q100: None

AVERAGE LOW ELEVATION OF SUPERSTRUCTURE: 310.3 m
 VERTICAL CLEARANCE: @ Q100 = 0.3 m

SCOUR: None - Footings to be founded on sound ledge.

REQUIRED CHANNEL PROTECTION: Type IV

PERMIT INFORMATION

AVERAGE DAILY FLOW:	0.6 cms	DEPTH OR ELEVATION:	
ORDINARY LOW WATER:	0.3 cms		0.1 m
ORDINARY HIGH WATER:	6.1 cms		0.3 m

TEMPORARY BRIDGE REQUIREMENTS

STRUCTURE TYPE: Single Span Bridge
 CLEAR SPAN (NORMAL TO STREAM): 7.0 m (minimum)
 VERTICAL CLEARANCE ABOVE STREAMBED: Low Beam Elev.=309.0 m (min.)
 WATERWAY AREA OF FULL OPENING: 13.5 sq m (minimum)

ADDITIONAL INFORMATION

* Temporary Bridge Low Beam elevation of 309.0 m is based on the temporary being constructed approximately 10 m downstream of the existing structure, and being removed before winter.

DESIGN CRITERIA

1. DESIGN LIVE LOAD AASHTO MS 22.5
2. DESIGN SPAN 9.85m
3. ALLOWABLE LOAD FOR SPREAD FOOTINGS ON SOIL NA
ON LEDGE 500 kPa
4. ALLOWABLE LOAD FOR PILING NA
TYPE NA
- ESTIMATED LENGTH NA
5. STRUCTURAL STEEL AASHTO GRADE NA
6. REINFORCING STEEL GRADE 420
7. CONCRETE CLASS HPC A f'c : 30 Mpa
CONCRETE CLASS HPC B f'c : 25 Mpa
8. SOIL UNIT WEIGHT 22.00 Kn/m³
9. DESIGN LOAD FOR SPREAD FOOTINGS ON LEDGE 265 kPa

TRAFFIC MAINTENANCE

1. IS TRAFFIC TO BE MAINTAINED? YES
 IF YES, ON EXISTING STRUCTURE NO
 OR ON TEMPORARY BRIDGE YES
2. TEMPORARY BRIDGE REQUIREMENTS: ONE OF TWO WAY ONE WAY
 TRAFFIC CONTROL SIGNALS REQUIRED NO
 MINIMUM CLEAR SPAN (NORMAL TO STREAM):
 WATERWAY OF FULL OPENING:
 VERTICAL CLEARANCE ABOVE STREAMBED:
 ARE SIDEWALKS REQUIRED? NO
 IF SO, ON WHAT SIDE?
 STRUCTURE TYPE:

PROJECT NAME: VERSHIRE

PROJECT NUMBER: BRO 1444 (32)

FILE NAME: pw93j027/s93j02xls.dgn PLOT DATE: 12/21/2005
 PROJECT LEADER: C.P.WILLIAMS DRAWN BY: P.K.PERRY
 DESIGNED BY: P.K.PERRY CHECKED BY: K.M.HIGGINS
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