STATE OF VERMONT
AGENCY OF TRANSPORTATION

PRELIMINARY INFORMATION SHEET

Metric

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LIST OF STANDARDS

B-5	06/01/94
B-71	07/08/05
D-13	01/03/00
E-100	01/02/04
E-101	05/30/03
E-102	05/30/03
E-102A	05/01/04
E-107	06/30/03
E-107A	08/08/95
E-108	08/08/95
E-110	08/08/95
E-121	08/08/95
E-134	08/08/95
E-136A	08/08/95
E-138	05/30/03
E-160	05/20/99
E-193	08/18/95
G-1BM	06/13/97

FINAL HYDRAULIC REPORT

HYDROLOGIC DATA

Date: April 2004

DRAINAGE AREA : 432 sq. km
CHARACTER OF TERRAIN : Wide valley at site, with a hilly to mountainous watershed.
STREAM CHARACTERISTICS : Incised, alluvial and sinuous channel with steep eroding banks.
NATURE OF STREAMBED : Mostly sand and silt. See boring logs.

PEAK FLOW DATA

Q 2.33 =	95 cms	Q 50 =	327 cms
Q 10 =	200 cms	Q 100 =	385 cms
Q 25 =	269 cms	Q 500 =	573 cms

DATE OF FLOOD OF RECORD : November 1927
ESTIMATED DISCHARGE: Unknown
WATER SURFACE ELEV.: Approximately 207.0 m, per record plans.
NATURAL STREAM VELOCITY : @ Q50 = 1.7 mps
ICE CONDITIONS : Moderate to heavy
DEBRIS: Moderate
DOES THE STREAM REACH MAXIMUM HIGHWATER ELEV. RAPIDLY? Yes
IS ORDINARY RISE RAPID? Yes
IS STAGE AFFECTED BY UPSTREAM OR DOWNSTREAM CONDITIONS? Yes
IF YES, DESCRIBE: Upstream ponds and reservoirs provide storage and reduce peak flood flows.

WATERSHED STORAGE: 3.0%
HEADWATERS:
UNIFORM: X
IMMEDIATELY ABOVE SITE:

EXISTING STRUCTURE INFORMATION

STRUCTURE TYPE: 3 span contrete T-beam bridge
YEAR BUILT: 1930
CLEAR SPAN(NORMAL TO STREAM): 11.7 m + 16.2 m + 11.7 m = 39.6 m total
VERTICAL CLEARANCE ABOVE STREAMBED: 8.0 m (209.4m - 199.4m)
WATERWAY OF FULL OPENING: 205 sq. m
DISPOSITION OF STRUCTURE: Remove and replace
TYPE OF MATERIAL UNDER SUBSTRUCTURE: See boring logs.

WATER SURFACE ELEVATIONS AT:

Q2.33 =	202.4 m	VELOCITY =	2.9 mps
Q10 =	204.6 m	"	2.3 mps
Q25 =	205.1 m	"	2.6 mps
Q50 =	205.5 m	"	2.9 mps
Q100 =	205.9 m	"	3.1 mps

LONG TERM STREAMBED CHANGES: There is some scour through the bridge area and at the piers. Sheet piling has been placed around one pier due to scour problems.

IS THE ROADWAY OVERTOPPED BELOW Q100: No
FREQUENCY: Above Q100
RELIEF ELEVATION: 207.8 m, on the easterly approach.
DISCHARGE OVER ROAD @Q100: None

UPSTREAM STRUCTURE

TOWN:	East Montpelier	DISTANCE:	1.8 km
HIGHWAY # :	T.H. 30	STRUCTURE #:	CB 22
CLEAR SPAN:	17.7 m	CLEAR HEIGHT:	4.4 m
YEAR BUILT:	1851	FULL WATERWAY:	77 sq. m
STRUCTURE TYPE:	Single span covered bridge.		

DOWNSTREAM STRUCTURE

TOWN:	East Montpelier	DISTANCE:	4.0 km
HIGHWAY # :	VT 14	STRUCTURE #:	68
CLEAR SPAN:	36.3 m	CLEAR HEIGHT:	6.0 m
YEAR BUILT:	1936	FULL WATERWAY:	146 sq. m
STRUCTURE TYPE:	Two span steel beam bridge.		

LRFR - LOAD RATING FACTORS

LOADING LEVELS	TRUCK					
	HL-93	3S2	6 AXLE	3A. STR.	4A. STR.	5A. SEMI
INVENTORY	1.34					
OPERATING	1.75	2.87	1.73	2.92	2.58	2.57

TRAFFIC DATA

YEAR	ADT	DHV	% D	% T	ADTT
2005	8400	1000	60	4	480
2025	11100	1200	60	4	740

20 year ESAL for flexible pavement from 2005 to 2025 : 5,300,000
40 year ESAL for flexible pavement from 2005 to 2045 : 13,889,000
Design Speed : 80 km/h

PROPOSED STRUCTURE

STRUCTURE TYPE: Single span plate girder bridge.

CLEAR SPAN(NORMAL TO STREAM): 35.0 m
VERTICAL CLEARANCE ABOVE STREAMBED: 7.5 m (206.9 m - 199.4 m)
WATERWAY OF FULL OPENING: 198 sq. m

WATER SURFACE ELEVATIONS AT:

Q2.33 =	202.2 m	VELOCITY=	2.3 mps
Q10 =	204.4 m	"	1.9 mps
Q25 =	204.9 m	"	2.2 mps
Q50 =	205.3 m	"	2.4 mps
Q100 =	205.7 m	"	2.7 mps

IS THE ROADWAY OVERTOPPED BELOW Q100: No
FREQUENCY: Above Q100
RELIEF ELEVATION: 207.9 m, on the easterly approach.
DISCHARGE OVER ROAD @Q100: None

AVERAGE LOW ELEVATION OF SUPERSTRUCTURE: 206.9 m
VERTICAL CLEARANCE: @ Q100 = 1.2 m

SCOUR: Calculated contraction scour depths are 0.5 m at Q100 and 1.0 m at Q500. Abutments will be founded on piles and protected with stone fill.
REQUIRED CHANNEL PROTECTION: Stone Fill, Type IV

PERMIT INFORMATION

AVERAGE DAILY FLOW:	5 cms	DEPTH OR ELEVATION:
ORDINARY LOW WATER:	3 cms	Elevation 200.8 m
ORDINARY HIGH WATER:	40 cms	Elevation 202.0 m

TEMPORARY BRIDGE REQUIREMENTS

STRUCTURE TYPE: Single span bridge, downstream of existing bridge. *
CLEAR SPAN (NORMAL TO STREAM): 34 m minimum**
VERTICAL CLEARANCE ABOVE STREAMBED: Bottom of beam elev. 205.3m min.
WATERWAY AREA OF FULL OPENING: 140 sq. m minimum

ADDITIONAL INFORMATION

*The temporary bridge should be designed to resist high water and ice forces. The superstructure should be anchored and vented.
**The channel banks are steep and potentially unstable. The abutments should be far enough back from the banks to not cause a bank failure and to ensure the stability of the abutments.

DESIGN CRITERIA

1. DESIGN LIVE LOAD AASHTO HL 93
2. DESIGN SPAN 37.0m
3. ALLOWABLE LOAD FOR SPREAD FOOTINGS ON SOIL N/A
   ON LEDGE N/A
4. ALLOWABLE LOAD FOR PILING SEE GENERAL NOTES (SHEET 3)
   TYPE HP 310 X 125
   ESTIMATED LENGTH 32-39m
5. STRUCTURAL STEEL AASHTO M270M/M270 GRADE 345W
6. REINFORCING STEEL GRADE 525 (STAINLESS), 420 (BLACK)
7. CONCRETE, HIGH PERFORMANCE CLASS A fc: N/A
   CONCRETE, HIGH PERFORMANCE CLASS B fc: 25 Mpa
   CONCRETE, HIGH PERFORMANCE - NO SILICA FUME fc: 30 Mpa
8. DESIGN SOIL UNIT WEIGHT 22.00 kN/m³
9. DESIGN LOAD FOR SPREAD FOOTINGS ON SOIL ------

TRAFFIC MAINTENANCE

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

PROJECT NAME: EAST MONTPELIER
PROJECT NUMBER: BRF 028-3(36)

FILE NAME: /98b254/str/sb254pi.xls
PROJECT MANAGER: K. HIGGINS
DESIGNED BY: J. LACROIX
PRELIMINARY INFORMATION SHEET

PLOT DATE: 2/3/2009
DRAWN BY: R. PELLETT
CHECKED BY: J. LACROIX