STATE OF VERMONT
AGENCY OF TRANSPORTATION

PRELIMINARY INFORMATION SHEET

Metric

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LIST OF STANDARDS

A-61M	Standard Typical for Slopes in Solid Rock Excavation, Drilling and Blasting of Solid Rock Subgrade	6/13/1997
B-5M	Embankment of Earth Slope, Embankment of Rock Slope, Muck Excavation, Typical Slope Rounding	1/3/2000
D-1M	Precast Reinforced Pipe Drop Inlet With Cast Iron Grate	6/13/1997
D-2M	C.R.M. Headwalls, Underdrain; C.R.M. Headwalls and Retaining Walls; Riprap Light Type Slope Headwall; Reinforced Concrete Headwall, Underdrain and Carrier Pipe Construction Details	6/13/1997
E-100	Construction Approach Signs	1/2/2004
E-101	Construction Sign Details	5/30/2003
E-102A	Construction Sign Details	5/1/2004
E-102	Construction Sign Details	6/30/2003
E-107A	Breakaway Barricade Details	8/8/1995
E-107	Delineation, Barricades and Detours for Construction Areas	6/30/2003
E-150	Warning Sign Details	5/1/2004
E-152	Warning Sign Details	5/1/2004
E-160	Flanged Channel Steel Sign Post	5/20/1999
E-164	Square Steel Sign Post	6/13/1997
G-1dM	Steel Beam Guardrail Approach End Terminal, Steel Beam Guardrail Trailing End Terminal, Anchor for Steel Beam Guardrail, Steel Beam Median Barrier	1/3/2000
G-1M	Steel Beam Guardrail with Steel Posts, Steel Beam Guardrail with Wood Posts	1/3/2000
SB-R6-82M	Bridge Railing Heavy Duty Steel Beam (Type A, Type B, Type C and Type D), Bridge Railing Heavy Duty Steel Beam with Box Beam Hand Rail (Type E)	7/10/1997

FINAL HYDRAULIC REPORT

HYDROLOGIC DATA

Date: 3/14/02

DRAINAGE AREA : 8.6 sq. km
CHARACTER OF TERRAIN : Mountainous and forested
STREAM CHARACTERISTICS : Perennial, flashy, steep, incised, non-alluvial, and sinuous
NATURE OF STREAMBED : Mostly ledge with some boulders, cobbles and gravel.

PEAK FLOW DATA

Q 2.33 =	6.5 cms	Q 50 =	23.8 cms
Q 10 =	14.2 cms	Q 100 =	27.8 cms
Q 25 =	19.8 cms	Q 500 =	45 .0 cms

DATE OF FLOOD OF RECORD : unknown
ESTIMATED DISCHARGE: unknown
WATER SURFACE ELEV.: unknown
NATURAL STREAM VELOCITY : @ Q25 = 6.4 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 pony truss with wood deck.
YEAR BUILT: 1901
CLEAR SPAN(NORMAL TO STREAM): 10.5 m
VERTICAL CLEARANCE ABOVE STREAMBED: 2.7 m (Low beam elev. 255.9m)
WATERWAY OF FULL OPENING: 32.9 sq. m
DISPOSITION OF STRUCTURE: Remove
TYPE OF MATERIAL UNDER SUBSTRUCTURE: Ledge

WATER SURFACE ELEVATIONS AT:

Q2.33 =	254.0 m *	VELOCITY =	6.4 mps **
Q10 =	254.4 m	"	6.9 mps
Q25 =	254.5 m	"	7.3 mps
Q50 =	254.7 m	"	7.4 mps
Q100 =	254.8 m	"	7.6 mps

LONG TERM STREAMBED CHANGES: None expected due to the presence of ledge.

IS THE ROADWAY OVERTOPPED BELOW Q100: No
FREQUENCY: Above Q100
RELIEF ELEVATION: 256.7 m
DISCHARGE OVER ROAD @Q100: None

UPSTREAM STRUCTURE

TOWN: (There is no upstream structure)
HIGHWAY # :
CLEAR SPAN:
YEAR BUILT:
STRUCTURE TYPE:
DISTANCE:
STRUCTURE #:
CLEAR HEIGHT:
FULL WATERWAY:

DOWNSTREAM STRUCTURE

TOWN: Montgomery
HIGHWAY # : VT 118
CLEAR SPAN: 16.2 m
YEAR BUILT: 1961
STRUCTURE TYPE: Single span bridge with steel beams and concrete deck.
DISTANCE: 250 m
STRUCTURE #: 11
CLEAR HEIGHT: 2.4 m
FULL WATERWAY: 16.2 sq. m

LOAD FACTOR LOAD RATING (METRIC TONNES)

LOADING LEVELS (LOAD FACTOR)	TRUCK						
	M	MS	3S2	6 AXLE	3A.STR.	4A.STR.	5A.SEMI
INVENTORY A=2.17; B=1.00	57	79					
POSTED A=1.55; B=1.40	80	111	130		102	105	120
OPERATING A=1.30; B=1.67		133	155	182	122	125	

STRENGTH RF = $\frac{\phi M_N - 1.3\, M_{DL}}{A \times M_{LL+I}}$ SERVICEABILITY RF = $B\left[\frac{.95\, F_y S_{LL+I} - M_{DL}\frac{S_{LL+I}}{S_{DL}} - M_{SDL}\frac{S_{LL+I}}{S_{SDL}}}{1.67\, M_{LL+I}}\right]$

TRAFFIC DATA

YEAR	ADT	DHV	% D	% T	ADTT
1995	50	10	0	<1	<1
2015	60	10	0	<1	<1

20 year ESAL for flexible pavement from 1999 to 2019 : <50,000
40 year ESAL for flexible pavement from 1999 to 2039 : <50,000
Design Speed : 30 km/h

PROPOSED STRUCTURE

STRUCTURE TYPE: Single span bridge with steel girders and concrete deck.

CLEAR SPAN(NORMAL TO STREAM): 25.9 m
VERTICAL CLEARANCE ABOVE STREAMBED: 5.5 m
WATERWAY OF FULL OPENING: 75.0 sq. m

WATER SURFACE ELEVATIONS AT:

Q2.33 =	254.0 m *	VELOCITY=	6.4 mps **
Q10 =	254.4 m	"	6.9 mps
Q25 =	254.5 m	"	7.3 mps
Q50 =	254.7 m	"	7.4 mps
Q100 =	254.8 m	"	7.6 mps

IS THE ROADWAY OVERTOPPED BELOW Q100: No
FREQUENCY: Above Q100
RELIEF ELEVATION: 257.8 m
DISCHARGE OVER ROAD @Q100: None

AVERAGE LOW ELEVATION OF SUPERSTRUCTURE: 256.8 m
VERTICAL CLEARANCE: @ Q100 = 2.0 m

SCOUR: None. The bridge spans the entire channel and abutments are poured on ledge.
REQUIRED CHANNEL PROTECTION: Stone Fill, Type II is adequate as shown.

PERMIT INFORMATION

		DEPTH OR ELEVATION:
AVERAGE DAILY FLOW:	0.2 cms	
ORDINARY LOW WATER:	0.1 cms	less than 0.2 m
ORDINARY HIGH WATER:	2.8 cms	0.6 m

TEMPORARY BRIDGE REQUIREMENTS

STRUCTURE TYPE: Traffic will be maintained on the existing bridge.
CLEAR SPAN (NORMAL TO STREAM):
VERTICAL CLEARANCE ABOVE STREAMBED:
WATERWAY AREA OF FULL OPENING:

ADDITIONAL INFORMATION

*Water surface elevations for both existing and proposed bridges are reported at a location about 10.0 m upstream of the existing bridge. Water surface elevations will be lower at the bridges, especially at the proposed bridge where the channel bottom is much lower.
**Velocities reported are the highest through the bridge area.

DESIGN CRITERIA

1. DESIGN LIVE LOAD AASHTO MS 22.50
2. DESIGN SPAN 26.500m
3. ALLOWABLE LOAD FOR SPREAD FOOTINGS ON SOIL 120 kPa
   ON LEDGE 480 kPa
4. ALLOWABLE LOAD FOR PILING N/A
   TYPE N/A
   ESTIMATED LENGTH N/A
5. STRUCTURAL STEEL AASHTO M270/M270M GRADE 345W
6. REINFORCING STEEL GRADE 420
7. ALLOWABLE STRESS FOR CONCRETE
   HIGH PERFORMANCE CLASS A f'c: 30 Mpa
   HIGH PERFORMANCE CLASS B f'c: 25 Mpa
8. SOIL UNIT WEIGHT 22 KN/m³
9. DESIGN LOAD FOR SPREAD FOOTINGS ON LEDGE 380 kPa

TRAFFIC MAINTENANCE

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

PROJECT NAME: MONTGOMERY
PROJECT NUMBER: BRO 1448(20)

FILE NAME: /TransFANS/94j124/sj124pi.xls
PROJECT MANAGER: R. WHITCOMB
DESIGNED BY: C. CARLSON
PRELIMINARY INFORMATION SHEET
PLOT DATE: 4/20/2005
DRAWN BY: J. GILMORE
CHECKED BY: C. CARLSON