

# PRELIMINARY INFORMATION SHEET



FINAL HYDRAULIC REPORT

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**LIST OF STANDARDS**

B-5M	SLOPE GRADING, EMBANKMENTS, MUCK	1/3/2000
B-71M	RESIDENTIAL AND COMMERCIAL DRIVES	3/1/2001
E-100M	CONSTRUCTION APPROACH SIGNS	5/30/2003
E-102M	CONSTRUCTION SIGN DETAILS	6/30/2003
E-106M	TRAFFIC CONTROL - MISCELLANEOUS DETAILS	6/13/1997
E-107M	DELINEATION, BARRICADES AND DETOURS FOR U-TURNS ON DIVIDED HIGHWAY	6/30/2003
E-107AM	BREAKAWAY BARRICADE DETAILS	6/13/1997
G-1M	STEEL BEAM GUARDRAIL (60MPH & OVER) HEAVY DUTY STEEL BEAM GUARDRAIL TWISTED END TERMINAL ANCHOR FOR STEEL BEAM RAIL	1/3/2000
G-1DM	STEEL BEAM GUARDRAIL (40MPH & LESS) HEAVY DUTY STEEL BEAM GUARDRAIL STEEL BEAM MEDIAN BARRIER ANCHOR FOR STEEL BEAM RAIL	1/3/2000
SB-R6-82M	BRIDGE RAILING - HEAVY DUTY STEEL BEAM	7/10/1997
T-1M	TEMPORARY EROSION CONTROL DETAILS	6/13/1997
T-2M	TEMPORARY EROSION CONTROL DETAILS	6/13/1997

**HYDROLOGIC DATA** Date: 9/30/99

DRAINAGE AREA: 3.6 sq. km  
 CHARACTER OF TERRAIN: Hilly  
 STREAM CHARACTERISTICS: Small, steep, flashy stream  
 NATURE OF STREAMBED: Cobbles, gravel, and boulders

PEAK FLOW DATA  
 Q 2.33 = 2.8 cms      Q 50 = 8.2 cms  
 Q 10 = 5.1 cms      Q 100 = 9.6 cms  
 Q 25 = 6.8 cms      Q 500 = 15.0 cms

DATE OF FLOOD RECORD: Unknown  
 ESTIMATED DISCHARGE: Unknown  
 WATER SURFACE ELEV.: Unknown  
 NATURAL STREAM VELOCITY: @ Q25 = 3.3 mps  
 ICE CONDITIONS: 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? No  
 IF YES, DESCRIBE:

WATERSHED STORAGE: 4%      HEADWATERS: UNIFORM: X  
 IMMEDIATELY ABOVE SITE:

**EXISTING STRUCTURE INFORMATION**

STRUCTURE TYPE: Concrete slab bridge  
 YEAR BUILT: 1978  
 CLEAR SPAN(NORMAL TO STREAM): 2.4 m  
 VERTICAL CLEARANCE ABOVE STREAMBED: 1.2 m  
 WATERWAY OF FULL OPENING: 2.9 sq. m  
 DISPOSITION OF STRUCTURE: Remove  
 TYPE OF MATERIAL UNDER SUBSTRUCTURE: Unknown

WATER SURFACE ELEVATIONS AT:

Q2.33 =	256.2 m	VELOCITY =	3.3 mps
Q10 =	256.7 m	"	3.9 mps
Q25 =	256.9 m	"	4.2 mps
Q50 =	257.1 m	"	4.3 mps
Q100 =	257.2 m	"	4.3 mps

LONG TERM STREAMBED CHANGES: None noted.

IS THE ROADWAY OVERTOPPED BELOW Q100: Yes  
 FREQUENCY: approximately Q15  
 RELIEF ELEVATION: 256.8  
 DISCHARGE OVER ROAD @Q100: 2.0 cms

**UPSTREAM STRUCTURE**

TOWN: Cavendish      DISTANCE: 850 m  
 HIGHWAY #: T.H. 20      STRUCTURE #: 21  
 CLEAR SPAN: 2.4 m      CLEAR HEIGHT: 1.8 m  
 YEAR BUILT: 1973      FULL WATERWAY: 3.7 sq. m  
 STRUCTURE TYPE: CGMPPA

**DOWNSTREAM STRUCTURE**

TOWN: Weathersfield      DISTANCE: 975 m  
 HIGHWAY #: VT 106      STRUCTURE #: 9  
 CLEAR SPAN: 4.3 m      CLEAR HEIGHT: 1.2 m  
 YEAR BUILT: 1924      FULL WATERWAY: 5.2 sq. m  
 STRUCTURE TYPE: Concrete slab bridge

**LOAD FACTOR LOAD RATING (METRIC TONNES)**

LOADING LEVELS	TRUCK						
	M	MS	3S2	6 AXLE	3A. STR.	4A. STR.	SA SEMI
INVENTORY	29	48					
POSTED	41	67	85		50	51	85
OPERATING		80	101	92	59	61	

**TRAFFIC DATA**

YEAR	ADT	DHV	% D	% T	ADTT
2000	150	20	60	7	10
2020	200	30	60	7	15

20 year ESAL for flexible pavement      2000 to 2020 : 117,000  
 40 year ESAL for flexible pavement      2000 to 2040 : 266,000  
 Design Speed : 40 km/h

**PROPOSED STRUCTURE**

STRUCTURE TYPE: Concrete slab bridge  
 CLEAR SPAN(NORMAL TO STREAM): 5.8 m  
 VERTICAL CLEARANCE ABOVE STREAMBED: 1.7 m  
 WATERWAY OF FULL OPENING: 8.3 sq. m  
 WATER SURFACE ELEVATIONS AT:  
 Q2.33 = 256.1 m      VELOCITY = 3.0 mps  
 Q10 = 256.3 m      "      3.5 mps  
 Q25 = 256.4 m      "      3.8 mps  
 Q50 = 256.5 m      "      4.0 mps  
 Q100 = 256.6 m      "      4.1 mps

IS THE ROADWAY OVERTOPPED BELOW Q100: No  
 FREQUENCY: > Q100  
 RELIEF ELEVATION: 256.9  
 DISCHARGE OVER ROAD @Q100: None

AVERAGE LOW ELEVATION OF SUPERSTRUCTURE: 257.3 at inlet  
 VERTICAL CLEARANCE: @ Q100 = 0.7 m  
 SCOUR: 0.6 m total scour, due mostly to the channel alignment, up to a Q100

REQUIRED CHANNEL PROTECTION: Stone Fill, Type III

**PERMIT INFORMATION**

AVERAGE DAILY FLOW:	0.1 cms	DEPTH OR ELEVATION:	
ORDINARY LOW WATER:	0.03 cms		0.1 m
ORDINARY HIGH WATER:	1.2 cms		0.3 m

**TEMPORARY BRIDGE REQUIREMENTS**

STRUCTURE TYPE: Town highway 32 will be closed to thru traffic during construction.  
 CLEAR SPAN (NORMAL TO STREAM):  
 VERTICAL CLEARANCE ABOVE STREAMBED:  
 WATERWAY AREA OF FULL OPENING:

**ADDITIONAL INFORMATION**

THE PEDESTRIAN BRIDGE SHALL HAVE A MINIMUM VERTICAL CLEARANCE OF 0.7 METERS AND ABUTMENTS SHALL BE LOCATED ABOVE ORDINARY HIGH WATER. THE BRIDGE SHALL PROVIDE A MINIMUM WATERWAY AREA OF 2.0 SQ. METERS.

**DESIGN CRITERIA**

1. DESIGN LIVE LOAD AASHTO	MS 22.5
2. DESIGN SPAN	8.984m
3. ALLOWABLE LOAD FOR SPREAD FOOTINGS ON SOIL ON LEDGE	250 kPa
4. ALLOWABLE LOAD FOR PILING	N/A
TYPE	N/A
ESTIMATED LENGTH	N/A
5. STRUCTURAL STEEL AASHTO GRADE	N/A
6. REINFORCING STEEL GRADE	420
7. CONCRETE CLASS A (HPC-A)	f'c : 30 Mpa
CONCRETE CLASS B (HPC-B)	f'c : 25 Mpa
8. SOIL UNIT WEIGHT	22 KN/m³
9. DESIGN LOAD FOR SPREAD FOOTINGS ON SOIL	250 kPa

**TRAFFIC MAINTENANCE**

1. IS TRAFFIC TO BE MAINTAINED? NO  
 IF YES, ON EXISTING STRUCTURE N/A  
 OR ON TEMPORARY BRIDGE N/A

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

PROJECT NAME: WEATHERSFIELD  
 PROJECT NUMBER: TH3 9514  
 FILE NAME: 195j2841structuresj284pi.xls      PLOT DATE: 11/25/2003  
 PROJECT LEADER: ROGER WHITCOMB      DRAWN BY: G.ROY  
 DESIGNED BY: J.LACROIX      CHECKED BY: T.A.SUMNER  
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