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FINAL HYDRAULICS REPORT

AASHTO Metric

HYDROLOGIC DATA

DRAINAGE AREA= 205.6 sq. km.
CHARACTER OF TERRAIN: Hilly to mountainous
CHARACTER & TYPE OF STREAM: Perennial, sinuous, alluvial, not braided or anabranched
NATURE OF STREAMBED: Sandy Gravel, Some Cobbles & Small Boulders

Q2.33= 68 cms Q50= 203 cms
Q10= 135 cms Q100= 243 cms
Q25= 175 cms Q500= 340 cms

DATE OF FLOOD OF RECORD: Unknown
WATER SURFACE ELEV.: Unknown ESTIMATED DISCHARGE: Unknown
NATURAL STREAM VELOCITY @ Q50 = 2.7 mps
ICE CONDITIONS: Moderate to heavy DEBRIS: Moderate
DOES THE STREAM REACH MAXIMUM HIGHWATER ELEVATION RAPIDLY? No
IS ORDINARY RISE RAPID? No
IS STAGE AFFECTED BY UPSTREAM OR DOWNSTREAM CONDITIONS? Yes
IF YES, DESCRIBE: Dams located approximately 150 m upstream and 165 m downstream may effect stage.
WATERSHED STORAGE 1% HEADWATERS ____ UNIFORM THROUGHOUT WATERSHED X
IMMEDIATELY ABOVE SITE ____

EXISTING STRUCTURE

STRUCTURE TYPE: Two Span Steel Beam Bridge YEAR BUILT: 1938
CLEAR SPAN (NORMAL TO STREAM): 2 Spans @ approx. 17.56 m = 35.1 m
VERTICAL CLEARANCE ABOVE STREAMBED: 5 m (ave. low beam = 172.7 m)
WATERWAY OF FULL OPENING: 117.3 sq. m
DISPOSITION OF STRUCTURE: Remove

TYPE OF MATERIAL UNDER SUBSTRUCTURE: See Boring Information

WATER SURFACE ELEV. @ Q2.33= 170.4 m VELOCITY= 1.4 m/s
Q10= 171.1 m " = 2.1 m/s
Q25= 171.4 m " = 2.4 m/s
Q50= 171.6 m " = 2.6 m/s
Q100= 171.8 m " = 2.9 m/s

LONG TERM STREAM BED CHANGES: Approx. 1m scour through the bridge area

IS THE ROADWAY OVERTOPPED BELOW THE Q100? No FREQUENCY: Above Q100
RELIEF ELEVATION= 173.47 DISCHARGE OVER ROAD @ Q100= NONE

UPSTREAM STRUCTURE: TOWN: Tunbridge DISTANCE: 3 km
HIGHWAY NO.: TH 25 STRUCTURE NO.: 31
STRUCTURE TYPE: Steel Pony Truss with Wooden Deck
CLEAR SPAN: 21.3 m CLEAR HEIGHT: 4.6 m
YEAR BUILT: 1889 FULL WATERWAY: Unknown

DOWNSTREAM STRUCTURE: TOWN: Tunbridge DISTANCE: 213 M
HIGHWAY NO.: TH 2 STRUCTURE NO.: 5
STRUCTURE TYPE: Single Span Covered Bridge
CLEAR SPAN: Approx. 19.2 m CLEAR HEIGHT: Unknown
YEAR BUILT: 2000 FULL WATERWAY: Unknown

PROPOSED STRUCTURE

STRUCTURE TYPE: Two Span Steel Beam Bridge

CLEAR SPAN (NORMAL TO STREAM): 2 Spans @ 17.56 m = 35.1 m
VERTICAL CLEARANCE ABOVE STREAMBED: 4.3 m (ave. low beam = 172.05 m)
WATERWAY OF FULL OPENING: 97.4 sq. m.

WATER SURFACE ELEV. @ Q2.33= 170.4 m VELOCITY= 1.4 m/s
Q10= 171.1 m " = 2.0 m/s
Q25= 171.4 m " = 2.4 m/s
Q50= 171.5 m " = 2.6 m/s
Q100= 171.8 m " = 2.9 m/s

IS THE ROADWAY OVERTOPPED BELOW THE Q100? No FREQUENCY: Above Q100
RELIEF ELEVATION: 173.48 m DISCHARGE OVER ROAD @ Q100= None

AVERAGE LOW ELEVATION OF SUPERSTRUCTURE: 172.05 m
VERTICAL CLEARANCE @ Q50 = 0.5 m

SCOUR: 0.2 m Contraction Scour + 2.1 m Pier Scour = 2.3 m total @ Q500
REQUIRED CHANNEL PROTECTION: Stone Fill, Type IV

PERMIT INFORMATION

AVERAGE DAILY FLOW: 4.6 cms
ORDINARY LOW WATER: 2.1 cms DEPTH: 1.1 m
ORDINARY HIGH WATER: 29.2 cms DEPTH: 1.8 m

ADDITIONAL COMMENTS

AASHTO Metric

DESIGN CRITERIA:
1. DESIGN LIVE LOAD AASHTO
2. DESIGN SPAN
3. ALLOWABLE LOAD FOR SPREAD FOOTINGS ON SOIL N/A ON LEDGE
4. ALLOWABLE LOAD FOR PILING N/A TYPE N/A ESTIMATED LENGTH N/A
5. ALLOWABLE STRESS FOR STRUCTURAL STEEL AASHTO TENSION
6. ALLOWABLE STRESS FOR REINFORCING STEEL GRADE 400 TENSION
7. ALLOWABLE STRESS FOR CONCRETE CLASS f'c fc
CLASS f'c fc

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 OR TWO WAY Two Way TRAFFIC CONTROL SIGNALS REQUIRED NO
MINIMUM CLEAR SPAN (NORMAL TO STREAM): 33 m VERTICAL CLEARANCE ABOVE STREAMBED: Min. Low Beam Elev. = 171.45 m
WATERWAY OF FULL OPENING= 78.8 sq. m.
ARE SIDEWALKS REQUIRED? IF SO, ON WHAT SIDE?
STRUCTURE TYPE:

STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of TUNBRIDGE	Bridge No. BR.4
Highway No. VT. RTE. 110	Log Sta. / Surv. Sta.
VT 110 OVER FIRST BRANCH OF WHITE RIVER	
PRELIMINARY INFORMATION	
Designed By	Drawn By L. BULLOCK
Checked By Date	Bridge Design Supervisor A. PORTALUPI Date
PROJECT TUNBRIDGE	PROJECT NO. BRS 0169(6)
I.G.C. Info. /84e063/structures/se063pl.dgn se063pl	
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