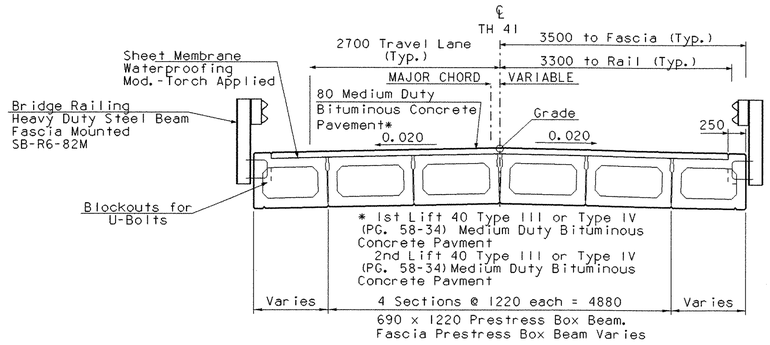
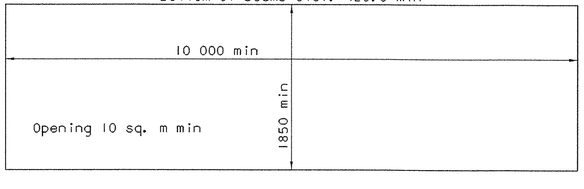


TYPICAL BRIDGE SECTION

SCALE = 1:40



TEMPORARY BRIDGE PROFILE ALONG TEMP ℄

(NOT TO SCALE)

FINAL HYDRAULICS REPORT

VAOT Metric

HYDROLOGIC DATA

DRAINAGE AREA= 12.6 sq. km
CHARACTER OF TERRAIN: Mountainous and forested
CHARACTER & TYPE OF STREAM: Perennial but flashy, straight, probably incised, and semi-alluvial
NATURE OF STREAMBED: Gravel, cobbles and a boulders

Q2.33= 6 cms
Q10= 18 cms
Q25= 26 cms
Q50= 31 cms
Q100= 36 cms
Q500= 51 cms

DATE OF FLOOD OF RECORD: Unknown
WATER SURFACE ELEV.: Unknown ESTIMATED DISCHARGE: Unknown
NATURAL STREAM VELOCITY @ Q25 = 3.0 mps
ICE CONDITIONS: Moderate DEBRIS: Moderate
DOES THE STREAM REACH MAXIMUM HIGHWATER ELEVATION RAPIDLY? Yes
IS ORDINARY RISE RAPID? Yes
IS STAGE AFFECTED BY UPSTREAM OR DOWNSTREAM CONDITIONS? No
IF YES, DESCRIBE.

WATERSHED STORAGE 1% HEADWATERS ___ UNIFORM THROUGHOUT WATERSHED X
IMMEDIATELY ABOVE SITE ___

EXISTING STRUCTURE

STRUCTURE TYPE: Single span Mabey Bridge YEAR BUILT: 1945
CLEAR SPAN (NORMAL TO STREAM): 10 m
VERTICAL CLEARANCE ABOVE STREAMBED: 3.4 m
WATERWAY OF FULL OPENING: 32 sq. m
DISPOSITION OF STRUCTURE: Remove both abutments and superstructure

TYPE OF MATERIAL UNDER SUBSTRUCTURE: Unknown

WATER SURFACE ELEV. @ Q2.33= 429.2 m VELOCITY= 1.9 mps
Q10= 429.6 m " = 2.7 mps
Q25= 429.8 m " = 3.0 mps
Q50= 429.9 m " = 3.1 mps
Q100= 430.0 m " = 3.2 mps

LONG TERM STREAM BED CHANGES: None noted

IS THE ROADWAY OVERTOPPED BELOW THE Q100? No FREQUENCY: >Q100
RELIEF ELEVATION: 431.2 DISCHARGE OVER ROAD @ Q100: 0

UPSTREAM STRUCTURE: TOWN: None DISTANCE:
HIGHWAY NO.: STRUCTURE NO.:
STRUCTURE TYPE:
CLEAR SPAN: CLEAR HEIGHT:
YEAR BUILT: FULL WATERWAY:

DOWNSTREAM STRUCTURE: TOWN: Charleston DISTANCE: 1.6 km
HIGHWAY NO.: T.H. 39 STRUCTURE NO.: 19
STRUCTURE TYPE: Single span side girder
CLEAR SPAN: 6.4 m CLEAR HEIGHT: 2.3 m
YEAR BUILT: NA FULL WATERWAY: 14 sq. m

PROPOSED STRUCTURE

STRUCTURE TYPE: Single span prestressed concrete girders and deck

CLEAR SPAN (NORMAL TO STREAM): 14 m
VERTICAL CLEARANCE ABOVE STREAMBED: 2.7 m
WATERWAY OF FULL OPENING: 29 sq. m

WATER SURFACE ELEV. @ Q2.33= 429.2 m VELOCITY= 1.9 mps
Q10= 429.6 m " = 2.7 mps
Q25= 429.8 m " = 3.0 mps
Q50= 429.9 m " = 3.1 mps
Q100= 430.0 m " = 3.2 mps

IS THE ROADWAY OVERTOPPED BELOW THE Q100? No FREQUENCY: >Q100
RELIEF ELEVATION: 431.2 DISCHARGE OVER ROAD @ Q100: 0

AVERAGE LOW ELEVATION OF SUPERSTRUCTURE: 430.1
VERTICAL CLEARANCE @ Q25 = 0.3 m (0.1 m at Q100)

SCOUR: 0.3 m of contraction scour at Q100 and Q500
REQUIRED CHANNEL PROTECTION: Stone Fill, Type III

PERMIT INFORMATION

AVERAGE DAILY FLOW: 0.3 cms
ORDINARY LOW WATER: 0.1 cms DEPTH: 0.1 m
ORDINARY HIGH WATER: 2.4 cms DEPTH: 0.3 m

DESIGN CRITERIA:
1. DESIGN LIVE LOAD AASHTO HL-93
2. DESIGN SPAN 15.9 m
3. ALLOWABLE LOAD FOR SPREAD FOOTINGS ON SOIL ___ ON LEDGE ___
4. ULTIMATE PILE CAPACITY 2730 KN ALLOWABLE LOAD 1210 KN TYPE 310HP110
MAX DRIVING LENGTH 14 (EST.)
5. PILE STEEL AASHTO GRADE 50 ksi
6. REINFORCING STEEL GRADE 400
7. CONCRETE CLASS HPC-A f'c 35 MPa
CLASS HPC-B f'c 25 MPa

TRAFFIC MAINTENANCE:
1. IS TRAFFIC TO BE MAINTAINED? Yes IF YES, ON EXISTING STRUCTURE N/A OR ON TEMPORARY BRIDGE Yes*
2. TEMPORARY BRIDGE REQUIREMENTS: ONE OR TWO WAY One TRAFFIC CONTROL SIGNALS REQUIRED No
MINIMUM CLEAR SPAN (NORMAL TO STREAM): 10 m minimum VERTICAL CLEARANCE ABOVE STREAMBED: Bottom of beams elev. 429.6 min.
WATERWAY OF FULL OPENING: 10 sq. m minimum
ARE SIDEWALKS REQUIRED? No IF SO, ON WHAT SIDE?
*STRUCTURE TYPE: Relocate existing modular bridge for use as Temporary Bridge

LOAD RATING (TONS)

LOADING LEVELS (LOAD FACTOR)	TRUCK						
	M	MS	3S2	6 AXLE	3A.STR.	4A.STR.	5A.SEMI
INVENTORY $A=2.17$, $f_{ALLOW}=0.5\sqrt{f'c}$	27	34					
POSTED $A=1.55$, $f_{ALLOW}=0.53\sqrt{f'c}$	38	48	67		42	43	57
OPERATING $A=1.30$, $f_{ALLOW}=0.6\sqrt{f'c}$		56	78	81	48	50	

CONTROLLING CASE $RF = \frac{\phi M_N - 1.3\,M_{DL}}{A \times M_{LL+I}}$ FOR SECTION STRENGTH OR $RF = \frac{f_{PE} - f_{DL} - f_{(ALLOW)}}{f_{LL+I}}$ FOR BOTTOM STRESS

TRAFFIC DATA

YEAR	ADT	DHV	% D	% T	% ADTT
1998	100	15		<1	3
2018	140	20		<1	5

ESAL for flexible pavement from 1998 to 2018: 28,000
ESAL for flexible pavement from 1998 to 2038: 81,000
Design speed: 50km/h

STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of **Charleston**	Bridge No. **16**
Highway No. **TH 41**	Log Sta. / Surv. Sta.
Preliminary Information Sheet	
TH41 Br 16 Over Mad Brook	
Designed By G.Colgrove	Drawn By G.Colgrove
Checked By S.Scribner Date	Bridge Design Supervisor M. EVANS MONGEON Date
PROJECT **Charleston**	PROJECT NO. **BRO 1449(22)**
I.G.C. Info. IP_PWP:dms02605\sJ051pl.dgn	sJ051pl.1
Bridge Sheet No.	Sheet 3 of 50