

MATERIAL ITEM	TOLERANCE
PAVEMENT	+/- 1/4"
SUB BASE	+/- 1"
SAND BORROW	+/- 1"

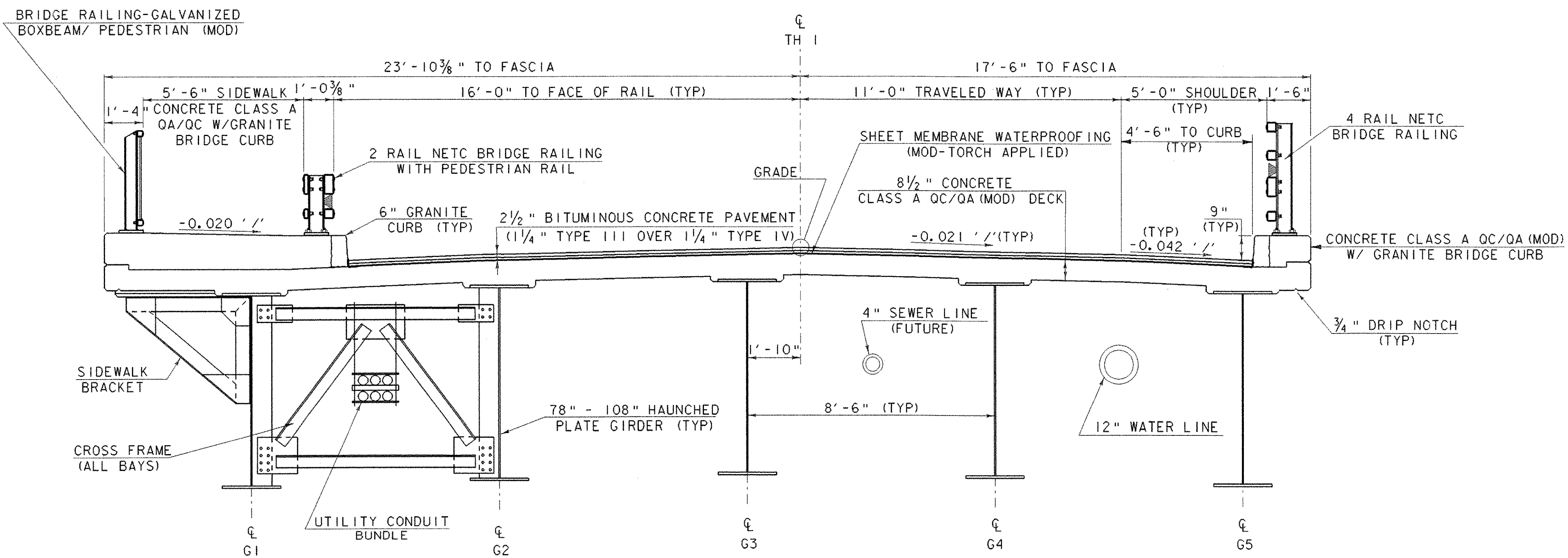
**TH 1  
ROADWAY TYPICAL SECTION**

SCALE 3/8" = 1'-0"  
1 0 1 2 3 4

**\*BITUMINOUS CONCRETE PAVEMENT**

- 1ST LIFT = 3" TYPE I
- 2ND LIFT = 2" TYPE II
- 3RD LIFT = 1 1/4" TYPE III

**NOTE:**  
THE CLEAR ZONE SHALL BE 4' OUTSIDE THE FACE OF RAIL. WHEN NO RAIL IS PRESENT THE CLEAR ZONE SHALL BE 3' OUTSIDE THE FACE OF CURB.



**BRIDGE TYPICAL SECTION**

SCALE 3/8" = 1'-0"  
1 0 1 2 3 4

**FINAL HYDRAULICS REPORT**

**HYDROLOGIC DATA**

DRAINAGE AREA: 604.6 sq. mi. (1565.8 sq. km)  
 CHARACTER OF TERRAIN: Hilly to mountainous  
 CHARACTER & TYPE OF STREAM: Semi-alluvial channel with some braiding and/or anabranching, moderate relief valley  
 NATURE OF STREAMBED: Sand, gravel, cobbles, and ledge

DATE OF FLOOD OF RECORD: November 1927  
 WATER SURFACE ELEV.: 482 +/- ESTIMATED DISCHARGE: Unknown  
 NATURAL STREAM VELOCITY @ 025 = 11.4 fps (3.5 mps)  
 ICE CONDITIONS: Moderate DEBRIS: Light  
 DOES THE STREAM REACH MAXIMUM HIGHWATER ELEVATION RAPIDLY? No  
 IS ORDINARY RISE RAPID? No  
 IS STAGE AFFECTED BY UPSTREAM OR DOWNSTREAM CONDITIONS? No  
 IF YES, DESCRIBE.

WATERSHED STORAGE 1/2 HEADWATERS UNIFORM THROUGHOUT WATERSHED X IMMEDIATELY ABOVE SITE

**EXISTING STRUCTURE**

STRUCTURE TYPE: Steel truss with 3 approach spans YEAR BUILT: 1928  
 CLEAR SPAN (NORMAL TO STREAM): 175' + 3 @ 42' = 301' (92 m) total  
 VERTICAL CLEARANCE ABOVE STREAMBED: 30' (9 m)  
 WATERWAY OF FULL OPENING: 8100 sq. ft. (752 sq. m)  
 DISPOSITION OF STRUCTURE: Remove

TYPE OF MATERIAL UNDER SUBSTRUCTURE: some substructure units may be on ledge, others are unknown

WATER SURFACE ELEV.	VELOCITY
02.33= 461.9	7.6 fps (2.3 mps)
010= 467.8	10.2 fps (3.1 mps)
025= 470.6	11.4 fps (3.5 mps)
050= 472.7	11.9 fps (3.6 mps)
0100= 473.6	12.2 fps (3.7 mps)
0100= 474.6	12.2 fps (3.7 mps)

LONG TERM STREAM BED CHANGES: None noted since 1927 flood

IS THE ROADWAY OVERTOPPED BELOW THE 0100? No FREQUENCY: ---  
 RELIEF ELEVATION: 479.6 DISCHARGE OVER ROAD @ 0100: None

UPSTREAM STRUCTURE: TOWN: Royalton DISTANCE: 1.2 mi. (1.9 km)  
 HIGHWAY NO.: Railroad STRUCTURE NO.: N.A.  
 STRUCTURE TYPE: N.A.  
 CLEAR SPAN: N.A. CLEAR HEIGHT: N.A.  
 YEAR BUILT: N.A. FULL WATERWAY: N.A.  
 YEAR BUILT: N.A. FULL WATERWAY: N.A.

DOWNSTREAM STRUCTURE: TOWN: Sharon DISTANCE: 3.9 mi. (6.3 km)  
 HIGHWAY NO.: 189 STRUCTURE NO.: 17  
 STRUCTURE TYPE: 4 span plate girder  
 CLEAR SPAN: 801' (244 m) CLEAR HEIGHT: 95' (29 m)  
 YEAR BUILT: 1968 FULL WATERWAY: N/A

**DESIGN CRITERIA:**

- DESIGN LIVE LOAD AASHTO HS-25
- DESIGN SPAN 196' - 196'
- ALLOWABLE LOAD FOR SPREAD FOOTINGS ON SOIL N/A ON LEDGE 10 KSF
- ALLOWABLE LOAD FOR STEEL PILING 155 KIPS TYPE STEEL HP 14x73 ESTIMATED LENGTH 22 FT +/- (ABUTMENT #1)
- STRUCTURAL STEEL AASHTO GRADE M270 GRADE 50W
- REINFORCING STEEL GRADE 60
- CONCRETE CLASS A OC/OA (MOD) f<sub>c</sub>: 5500 PSI  
 CONCRETE CLASS B f<sub>c</sub>: 3500 PSI

**TRAFFIC MAINTENANCE:**

- IS TRAFFIC TO BE MAINTAINED? YES IF YES, ON EXISTING STRUCTURE YES OR ON TEMPORARY BRIDGE YES (SEE TEMP. DETOUR SHEET)
- TEMPORARY BRIDGE REQUIREMENTS: ONE OR TWO WAY TWO TRAFFIC CONTROL SIGNALS REQUIRED NO  
 MINIMUM CLEAR SPAN (NORMAL TO STREAM): 100' (30.5 m) minimum for approach span  
 VERTICAL CLEARANCE ABOVE STREAMBED: BOTTOM OF STEEL = 474.0 (MINIMUM)  
 ARE SIDEWALKS REQUIRED? YES IF SO, ON WHAT SIDE? DOWNSTREAM (SEE NOTES ON SHEET 14)

**LOAD FACTOR LOAD RATING (TONS)**

LOADING LEVELS (LOAD FACTOR)	TRUCK						
	H	HS	3S2	6 AXLE	3A. STR.	4A. STR.	5A. SEMI
INVENTORY A=2.17; B=1.00	31	56					
POSTED A=1.55; B=1.40	44	79	105		94	95	102
OPERATING A=1.30; B=1.67		95	125	133	112	113	

STRENGTH RF =  $\frac{0.95 M_N - 1.3 M_{DL}}{A \times M_{LL+1}}$  SERVICEABILITY RF =  $B \left[ \frac{0.95 F_y S_{LL+1} - M_{DL} S_{PK}}{1.67 M_{LL+1}} - M_{SDL} \frac{S_{LL+1}}{S_{SK}} \right]$

**TRAFFIC DATA**

YEAR	ADT	DHV	% D	% T	ADTT
2000	3640	505	52	4	255
2020	4920	660	52	4	350

18 kip ESAL for flexible pavement from 2000 to 2020: 3,008,000  
 18 kip ESAL for flexible pavement from 2000 to 2040: 7,457,000  
 Design speed: 25 MPH

**PROPOSED STRUCTURE**

STRUCTURE TYPE: Two span plate girder bridge  
 CLEAR SPAN (NORMAL TO STREAM): 2 spans 188' = 374' (114 m) total  
 VERTICAL CLEARANCE ABOVE STREAMBED: 26' (8 m)  
 WATERWAY OF FULL OPENING: 8500 sq. ft. (790 sq. m)

WATER SURFACE ELEV.	VELOCITY
02.33= 461.7	7.6 fps (2.3 mps)
010= 467.3	10.2 fps (3.1 mps)
025= 469.9	11.4 fps (3.5 mps)
050= 471.9	11.9 fps (3.6 mps)
0100= 473.9	11.9 fps (3.7 mps)

IS THE ROADWAY OVERTOPPED BELOW THE 0100? No FREQUENCY: ---  
 RELIEF ELEVATION: 480.3 DISCHARGE OVER ROAD @ 0100: None

AVERAGE LOW ELEVATION OF SUPERSTRADE: 476.1  
 VERTICAL CLEARANCE @ 0100 = 2.2 ft. (0.7 m)

SCOUR: Total 0100 scour depth at pier = 15 ft. (4.6 m), except in ledge

**PERMIT INFORMATION**

AVERAGE DAILY FLOW: 1270 cfs (36 cms)  
 ORDINARY LOW WATER: 540 cfs (15 cms) ELEV.: 454.0  
 ORDINARY HIGH WATER: 5600 cfs (159 cms) ELEV.: 458.0

**ADDITIONAL COMMENTS**

**STATE OF VERMONT  
AGENCY OF TRANSPORTATION**

Town Of **ROYALTON** Bridge No. **3**  
 Highway No. **TH 1** Log Sta.   
 Surv. Sta.

**TH OVER THE WHITE RIVER**

**PRELIMINARY INFORMATION SHEET**

Designed By **W.B. SYMONDS** Drawn By **W.B. SYMONDS**  
 Checked By **C.P. WILLIAMS** Date **9/96** Bridge Design Supervisor   
 Date **9/00**

PROJECT **ROYALTON** PROJECT NO. **BRZ 1444(22)**

I.G.C. Info. **M:\89\099\Structures\sj099pl.dgn** s\j099pl  
 Bridge Sheet No.  Sheet **3** of **118**