



NOTE: PAVEMENT SHALL BE CONSTRUCTED IN TWO LIFTS OF 1 1/2\"/>

GENERAL NOTES

- ALL MATERIALS AND CONSTRUCTION SHALL CONFORM TO STATE OF VERMONT, AGENCY OF TRANSPORTATION, 1990 STANDARD SPECIFICATIONS FOR HIGHWAY AND BRIDGE CONSTRUCTION, AND ITS LATEST REVISIONS, AND THE 1996 AASHTO STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES, AND ITS LATEST REVISIONS.
- DESIGN IS FOR HS25-44 LOADING WITH ALLOWANCE FOR FUTURE PAVING UNLESS OTHERWISE NOTED ON THE PLANS.
- ALL STRUCTURAL STEEL SHALL BE DETAILED AND FABRICATED USING PROCEDURES AND TOLERANCES IN ACCORDANCE WITH APPLICABLE PUBLICATIONS OF THE AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC).
- WHEN NOT DETAILED ON THE PLANS, BEAMS SHALL BE CAMBERED FOR THE DEAD LOAD DEFLECTION PLUS ONE EIGHTH (1/8) INCH FOR EACH TEN FEET OF SPAN, OR FRACTION THEREOF. THE CAMBER SHALL APPROXIMATE A SIMPLE CIRCULAR CURVE FROM SUPPORT TO SUPPORT.
- ALL FIELD CONNECTIONS SHALL BE MADE WITH 7/8\"/>

16. FOR BRIDGE DECK POURS, THE MAXIMUM TIME LIMIT FOR ANY COMBINATION OF POURS DONE IN ONE DAY SHALL BE EIGHT HOURS. THERE SHALL BE A MINIMUM DELAY OF NINETY SIX HOURS BETWEEN THE COMPLETION OF ONE DAY'S POUR AND THE BEGINNING OF ANY OTHER POUR.

17. WATER REPELLENT SHALL BE APPLIED TO ALL EXPOSED CONCRETE SURFACES EXCEPT THE UNDERSIDE OF DECK BETWEEN DRIP BEADS.

18. THE FOLLOWING TABLE OF ALLOWABLE STRESSES AND WEIGHTS APPLY TO THESE PLANS FOR DESIGN PURPOSES:

CONCRETE:	f_c	= 3500 PSI
	f_t	= 1400 PSI
STRUCTURAL STEEL:	$F_a = F_b$	= 27,000 PSI
M270 - Grade 50	F_v	= 17,000 PSI
	$F_a = F_b$	= 20,000 PSI
M270 - Grade 36	F_v	= 12,000 PSI
REINFORCING STEEL:	f_s	= 24,000 PSI
Grade 60	f_t	= 20,000 PSI
SOIL: UNIT WEIGHT		= 140 PCF

- TEN CUBIC YARDS OF STONE FILL TYPE IV HAS BEEN INCLUDED IN THE PROJECT FOR CONSTRUCTION OF A FISH HABITAT BOULDER CLUSTER. THIS CLUSTER SHALL BE LOCATED IN A HIGH VELOCITY PORTION OF THE STREAM A MINIMUM OF 30 FEET DOWNSTREAM OF THE NEW BRIDGE. FINAL LOCATION OF BOULDERS TO BE AS DIRECTED BY THE ENGINEER, BASED ON THE RECOMMENDATIONS OF THE DISTRICT FISHERIES BIOLOGIST AND/OR THE AGENCY OF NATURAL RESOURCES STREAM ALTERATION ENGINEER. CLUSTER SHALL CONSIST OF THREE BOULDERS, EACH 5 FOOT TO 6 FOOT IN DIAMETER, SPACED AT 10 FEET TO 15 FEET AND BURIED 1/3 DIAMETER BELOW STREAMBED.
- ALL NEW PERMANENT FILL SLOPES WITHIN 50 FT OF THE TOP OF BANK OF THE WHITE RIVER SHALL BE REVEGETATED WITH BOTH GRUBBING MATERIAL AND PLANTING OF NATIVE RIPARIAN TREE AND BRUSH SPECIES. A COMPLETE REVEGETATION PLAN AND SCHEDULE SHALL BE DEVELOPED FOR REVIEW AND APPROVAL PRIOR TO CONSTRUCTION.

HYDRAULIC DATA

DRAINAGE AREA 103.50 MI.
 CHARACTER OF TERRAIN MOUNTAINOUS, MODERATE RELIEF
 CHARACTER AND TYPE OF STREAM SMALL PERENNIAL BUT FLASHY
 NATURE OF STREAMBED SHALLOW SANDS AND SILTS AND SOME GRAVEL OVER BEDROCK

Q 2.33	3200 CFS	Q 50	11000 CFS
Q 10	6800 CFS	Q 100	15000 CFS
Q 25	8100 CFS	Q 500	14200 CFS

DATE OF FLOOD OF RECORD 1927 WATER SURFACE ELEVATION ESTIMATED DISCHARGE
 NATURAL STREAM VELOCITY @ Q 10 = 6.9 fps (approach section) ICE CONDITIONS MODERATE DEBRIS MODERATE
 DOES THE STREAM REACH MAX. HIGHWATER ELEVATION RAPIDLY? YES IS ORDINARY RISE RAPID? YES
 IS STAGE AFFECTED BY UPSTREAM OR DOWNSTREAM CONDITIONS? YES
 IF YES, DESCRIBE: CONFLUENCE WITH THE WHITE RIVER APPROXIMATELY 50 FT FROM DOWNSTREAM FACE OF PROPOSED STRUCTURE
 WATERSHED STORAGE 28 HEADWATERS X UNIFORM THROUGHOUT WATERSHED IMMEDIATELY ABOVE SITE

EXISTING STRUCTURE

- STRUCTURE TYPE: 3-SPAN REINFORCED CONCRETE T-BEAM YEAR BUILT: 1928
- SPAN NORMAL TO STREAM: 32'-56"-32'
- VERTICAL CLEARANCE ABOVE STREAMBED: 18.2' +/-
- WATERWAY AREA OF FULL OPENING (NORMAL TO STREAM): 1410 SF
- DISPOSITION OF STRUCTURE: SUPERSTRUCTURE AND PORTIONS OF SUBSTRUCTURE TO BE REMOVED
- TYPE OF SUBSTRUCTURE FOUNDATION MATERIAL: SPREAD FOOTINGS ON SANDY SILT AND/OR LEDGE
- WATER SURFACE ELEVATION @ Q 2.33 462.6 @ APPROACH AREA VELOCITY = 5.4 fps
 Q 10 468.4 @ 7.8 fps (6.8 fps)
 Q 25 468.4 @ 7.7 fps
 Q 50 469.6 (472.0) @ 8.3 fps (6.6 fps)
 Q 100 476.0 (472.9) @ 9.4 fps (6.7 fps)
- LONG TERM STREAM BED CHANGES: NARROW FLOOD PLAIN: ALLUVIAL
- IS THE ROADWAY OVERTOPPED BELOW THE Q100? NO FREQUENCY: **
- RELIEF ELEVATION: ** DISCHARGE OVER ROAD @ Q100:
- UPSTREAM STRUCTURE: TH 12 STR. NO. 27 DISTANCE 1.5 MILES
 SPAN: 180' CLEAR HEIGHT: 10'
- DOWNSTREAM STRUCTURE: N/A STR. NO. N/A DISTANCE
 SPAN: N/A CLEAR HEIGHT:

PROPOSED STRUCTURE

STRUCTURE GEOMETRY:

- STRUCTURE TYPE: REINFORCED CONCRETE SLAB OVER STEEL PLATE GIRDER
- CLEAR SPAN LENGTH(S) NORMAL TO STREAM: 128'
- VERTICAL CLEARANCE ABOVE STREAMBED: 18.8'
- ARE PROVISIONS TO BE MADE FOR PUBLIC UTILITIES? YES, CONDUIT IN SIDEWALK FOR FUTURE USE

HYDRAULIC DATA:

- WATERWAY AREA OF FULL OPENING (NORMAL TO STREAM): 1700 SF
- WATER SURFACE ELEVATION @ Q 2.33 462.5 @ APPROACH AREA VELOCITY = 5.6 fps
 Q 10 468.5 (466.8) @ 7.8 fps (7.3 fps)
 Q 25 468.4 @ 7.7 fps
 Q 50 469.6 (472.0) @ 8.4 fps (7.3 fps)
 Q 100 476.0 (472.9) @ 9.6 fps (6.9 fps)
- IS THE ROADWAY OVERTOPPED BELOW THE Q100? NO FREQUENCY: N/A
- RELIEF ELEVATION: N/A DISCHARGE OVER ROAD @ Q100: N/A
- AVERAGE LOW ELEVATION OF SUPERSTRUCTURE: 472.8' (LIMITED BY LOW STEEL)
- VERTICAL CLEARANCE @ Q100: 1.94 FT (-3.2 FT)
- SCORE: PRESENCE OF BEDROCK LIMITS TOTAL SCORE TO 10 FEET
- REQUIRED CHANNEL PROTECTION: STONE FILL, TYPE IV

ALLOWABLE STRESSES:

- DESIGN LIVE LOAD AASHTO: HS25
- ALLOWABLE LOAD FOR SPREAD FOOTINGS ON SOIL: ON LEDGE
- ALLOWABLE LOAD FOR PILING: 8000 PSI TYPE HP ESTIMATED LENGTH 21 1/2
- ALLOWABLE STRESS FOR STRUCTURAL STEEL AASHTO M 270 GR50 PAINTED TENSION 27 KSI
- ALLOWABLE STRESS FOR REINFORCING STEEL GRADE 60 TENSION 24000 PSI COMPRESSION 20000 PSI
- ALLOWABLE STRESS FOR CONCRETE CLASS A f_c : 4000 PSI f_t : 1400 PSI
 CLASS B f_c : 3500 PSI f_t : 1400 PSI
 SILICA FUME f_c : 5000 PSI f_t : 2000 PSI

TRAFFIC MAINTENANCE:

- IS TRAFFIC TO BE MAINTAINED? YES IF YES, ON EXISTING STRUCTURE OR ON TEMPORARY BRIDGE X
- TEMPORARY BRIDGE REQUIREMENTS: ONE OR TWO WAY TWO WAY TRAFFIC CONTROL SIGNALS REQUIRED NO
 MINIMUM CLEAR SPAN 85' MINIMUM CLEAR HEIGHT 14.00' MINIMUM WATERWAY AREA 1000 SF
 ARE SIDEWALKS REQUIRED? NO IF SO, ON WHAT SIDE?
 PERMIT INFORMATION:
 AVERAGE DAILY FLOW: 212 cfs ORDINARY LOW WATER: 95 cfs DEPTH: 2 ft
 ORDINARY HIGH WATER: 1373 cfs DEPTH: 6 ft

NOTES:
 FOR WATER SURFACE ELEVATION AND VELOCITY DATA, THE FIRST NUMBER SHOWN IS THE LOW FLOW ON THE WHITE RIVER CASE. THE SECOND NUMBER (IN PARENTHESES) IS FOR THE HIGH FLOW ON THE WHITE RIVER CASE.

ADDITIONAL DESIGN CONSIDERATIONS

- WATER SURFACE ELEVATION FOR FLOOD OF RECORD IS UNKNOWN.
- PLANS FOR EXISTING BRIDGE INDICATE A "HIGH WATER ELEVATION" OF APPROXIMATELY 471, WHICH PROBABLY REPRESENTS THE 1925 FLOOD (LESSER EVENT THAN THE 1927 FLOOD.)
- FOR HIGH FLOW ON THE WHITE RIVER CASE (COINCIDENT FLOODS), OVERTOPPING OCCURS OF THE EXISTING STRUCTURE FOR THE 100 YEAR EVENT. THE WATER SURFACE ELEVATION IS 477.04 WITH 74 SF OF ROADWAY WEIR FLOW AT A MAXIMUM DEPTH OF 10 INCHES.
- CONFLUENCE WITH WHITE RIVER IS IMMEDIATELY DOWNSTREAM OF BRIDGE.

LOAD RATING (TONS) (LOAD FACTOR)	
RATING LEVEL	TRUCK
INVENTORY	H HS 3S2 6 AXLE 3A STR 4A STR 5A SEM
POSTED	
OPERATING	

STATE OF VERMONT AGENCY OF TRANSPORTATION

Town Of ROYALTON Bridge No. 21
 Highway No. VT. Route 14 Log Sta. Surv. Sta.
 VT. Route 14 over the First Branch of the White River
PRELIMINARY INFORMATION
 Designed By E. M. STUMPH Drawn By G. F. BONIN
 Checked By Date Bridge Design Supervisor Date
 PROJECT ROYALTON PROJECT NO. BRS 0147(5) S
 I.G.C. Info.
R.O.W. SHEET 9 OF 14 SHEETS



91298PI (1-1) 91298