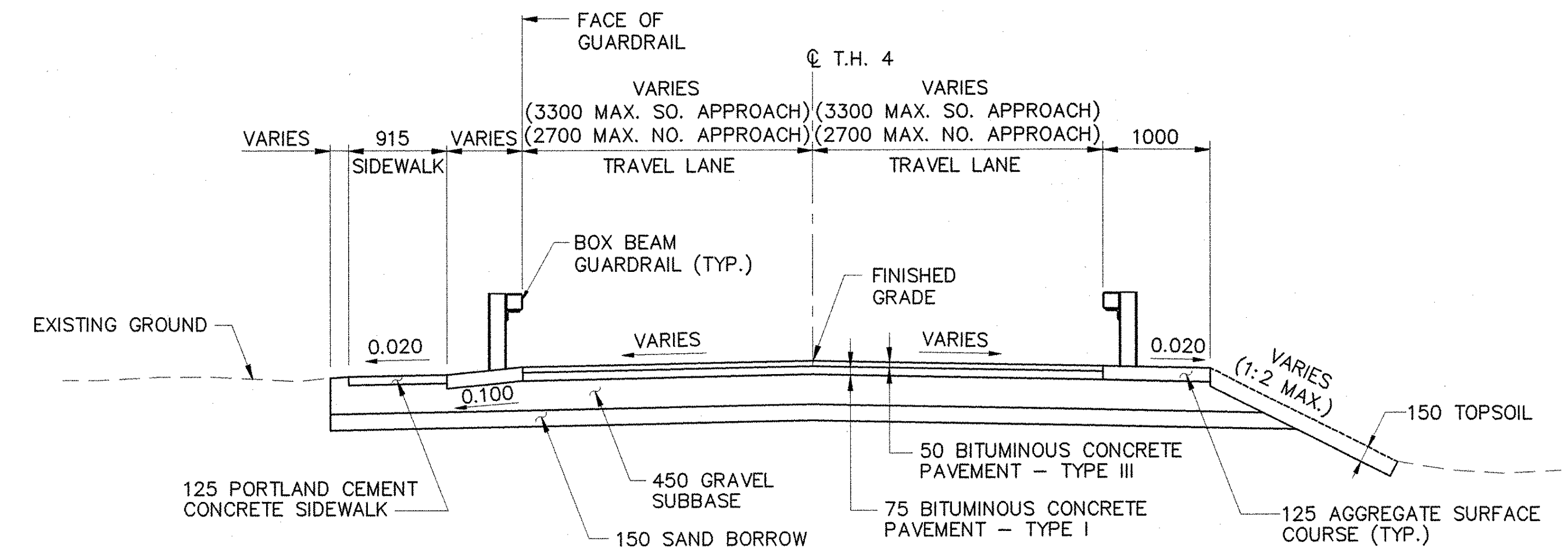


MATERIAL TOLERANCES	
MATERIAL ITEM	THICKNESS TOLERANCE (mm)
PAVEMENT	±5 (TOTAL THICKNESS)
AGGREGATE SURFACE COURSE	±15
GRAVEL	±30
SAND BORROW	±30

TYPICAL BRIDGE SECTION  
N.T.S.



TYPICAL ROADWAY SECTION  
N.T.S.

SEEDING FORMULA  
URBAN AREAS

% MASS	kg/ha	NAME	PUR %	GERM %
42.5	38.0	CREeping RED FESCUE	98	85
10.0	9.0	PERENNIAL RYE GRASS	95	90
42.5	38.0	KENTUCKY BLUE GRASS	85	85
5.0	5.0	ANNUAL RYE GRASS	95	85
100.0	90.0			

**GENERAL NOTES**

SEED MIXTURE: SHALL NOT HAVE A WEED CONTENT EXCEEDING 0.40% BY MASS AND SHALL BE FREE OF ALL NOXIOUS SEED.

SEED: TO BE APPLIED PER SEEDING FORMULAS OR AS DIRECTED BY THE ENGINEER.

FERTILIZER: FORMULA 10-20-10, TO BE USED WITH SEED, APPLIED AT THE RATE OF 560 kg/ha. (HYDRO SEEDERS MAY USE 19-19-19 FORMULA).

AGRICULTURAL LIMESTONE: TO BE APPLIED AT THE RATE OF 4500 kg/ha, OR AS DIRECTED BY THE ENGINEER.

HAY MULCH: TO BE PLACED ON EARTH SLOPES AT THE RATE OF 4500 kg/ha, OR AS DIRECTED BY THE ENGINEER.

TOPSOIL: TO BE USED WITH SEED AS INDICATED ON THE PLANS, OR AS DIRECTED BY THE ENGINEER.

MARKER POSTS: TO BE PLACED AS INDICATED OR AS DIRECTED BY THE ENGINEER.

SLOPE ROUNDING: ALL CUT SLOPES TO BE ROUNDED IN ACCORDANCE WITH STANDARD SHEET B-5M.

PAY LIMITS OF SAND BORROW: WHEN USED IN CONJUNCTION WITH UNDERDRAIN - SEE STANDARD SHEET D-2M.

TACK COAT: EMULSIFIED ASPHALT IS TO BE APPLIED AT THE RATE OF 0.07 L/m<sup>2</sup> BETWEEN SUCCESSIVE COURSES OF PAVEMENT AS DIRECTED BY THE ENGINEER.

HYDROLOGIC DATA

DRAINAGE AREA= 215 km<sup>2</sup>  
 CHARACTER OF TERRAIN: HILLY TO MOUNTAINOUS, WITH FLOODPLAIN DEVELOPMENT  
 CHARACTER & TYPE OF STREAM: SMALL, MEANDERING, ALLUVIAL, NON-INCISED FLOODPLAIN, WITH PERENNIAL BUT FLASHY FLOW HABIT  
 NATURE OF STREAMBED: SAND, GRAVEL, AND SMALL COBBLES

Q2.33= 88 cms      Q50= 345 cms  
 Q10= 195 cms      Q100= 427 cms  
 Q25= 280 cms      Q500= 671 cms

DATE OF FLOOD OF RECORD: NOVEMBER 1927, JULY 1973  
 WATER SURFACE ELEV.: UNKNOWN ESTIMATED DISCHARGE: UNKNOWN  
 NATURAL STREAM VELOCITY @ Q25 2.5 mps  
 ICE CONDITIONS: MODERATE TO HEAVY DEBRIS: LIGHT TO MODERATE  
 DOES THE STREAM REACH MAXIMUM HIGHWATER ELEVATION RAPIDLY? YES  
 IS ORDINARY RISE RAPID? YES  
 IS STAGE AFFECTED BY UPSTREAM OR DOWNSTREAM CONDITIONS? YES  
 IF YES, DESCRIBE: CVPS DAM 925 m DOWNSTREAM

WATERSHED STORAGE \_\_\_\_\_ HEADWATERS X UNIFORM THROUGHOUT WATERSHED IMMEDIATELY ABOVE SITE X

EXISTING STRUCTURE

STRUCTURE TYPE: PARKER PONY TRUSS YEAR BUILT: 1905  
 CLEAR SPAN (NORMAL TO STREAM): 29 m  
 VERTICAL CLEARANCE ABOVE STREAMBED: 3.5 m (SEE NOTE 3)  
 WATERWAY OF FULL OPENING: 120 m<sup>2</sup>  
 DISPOSITION OF STRUCTURE: REHABILITATE

TYPE OF MATERIAL UNDER SUBSTRUCTURE: UNKNOWN (PLANS OF THE EXISTING MASONRY ABUTMENTS AND SUBSURFACE CONDITIONS WERE UNAVAILABLE)

WATER SURFACE ELEV. Q2.33= 271.39 VELOCITY= 1.67 mps  
 (SEE NOTE 2) Q10= 272.42 " = 2.55 mps  
 Q25= 273.00 " = 3.24 mps  
 Q50= 273.43 " = 3.85 mps  
 Q100= 273.95 " = 4.45 mps

LONG TERM STREAM BED CHANGES: UNKNOWN  
 IS THE ROADWAY OVERTOPPED BELOW THE Q100? NO FREQUENCY: > Q100  
 RELIEF ELEVATION: 273.10 DISCHARGE OVER ROAD @ Q100: N/A

UPSTREAM STRUCTURE: TOWN: CAVENDISH DISTANCE: 2.6 km  
 HIGHWAY NO.: GREEN MOUNTAIN R.R. STRUCTURE NO.: 130  
 STRUCTURE TYPE: THROUGH TRUSS  
 CLEAR SPAN: 41.5 m CLEAR HEIGHT: 3.5 m  
 YEAR BUILT: 1893 FULL WATERWAY: 115 m<sup>2</sup>

DOWNSTREAM STRUCTURE: TOWN: CAVENDISH DISTANCE: 0.9 km  
 HIGHWAY NO.: CVPS DAM STRUCTURE NO.:  
 STRUCTURE TYPE:  
 CLEAR SPAN: CLEAR HEIGHT:  
 YEAR BUILT: FULL WATERWAY:

DESIGN CRITERIA:  
 1. DESIGN LIVE LOAD AASHTO M18 (POSTING)  
 2. DESIGN SPAN  
 3. ALLOWABLE LOAD FOR SPREAD FOOTINGS ON SOIL ON LEDGE  
 4. ALLOWABLE LOAD FOR PILING TYPE ESTIMATED LENGTH  
 5. ALLOWABLE STRESS FOR STRUCTURAL STEEL AASHTO M270 GRADE 345 TENSION 189 MPa  
 6. ALLOWABLE STRESS FOR REINFORCING STEEL GRADE 400 TENSION 160 MPa  
 7. ALLOWABLE STRESS FOR CONCRETE, HIGH PERFORMANCE CLASS A f<sub>c</sub> 30 MPa f<sub>c</sub> 12 MPa

TRAFFIC MAINTENANCE:  
 1. IS TRAFFIC TO BE MAINTAINED? YES IF YES, ON EXISTING STRUCTURE NO OR ON TEMPORARY BRIDGE YES - CURRENTLY IN USE (EXISTING BRIDGE IS CLOSED TO TRAFFIC)  
 2. TEMPORARY BRIDGE REQUIREMENTS: ONE OR TWO WAY - TRAFFIC CONTROL SIGNALS REQUIRED -  
 MINIMUM CLEAR SPAN (NORMAL TO STREAM): VERTICAL CLEARANCE ABOVE STREAMBED:  
 WATERWAY OF FULL OPENING:  
 ARE SIDEWALKS REQUIRED? - IF SO, ON WHAT SIDE?  
 STRUCTURE TYPE: -

LOAD RATING (METRIC TONNES)

STRESS LEVELS (WORKING STRESS)	TRUCK						
	M	MS	3S2	6 AXLE	3A.STR.	4A.STR.	5A.SEM
INVENTORY 0.55 Fy = 114 MPa	12.2						
POSTED 0.67 Fy = 139 MPa	17.9						
OPERATING 0.75 Fy = 155 MPa	22.3						

TRAFFIC DATA  
 DESIGN SPEED = 40 KM/H 2023 ADTT = 20  
 2003 ADT = 380 %D = 55  
 2003 DHV = 50 %T = 6  
 2003 ADTT = 15 2003-2023 ESAL'S = 57,000  
 2023 ADT = 520 2003-2043 ESAL'S = 133,000  
 2023 DHV = 75

PROPOSED STRUCTURE

STRUCTURE TYPE: PARKER PONY TRUSS  
 CLEAR SPAN (NORMAL TO STREAM): 29 m  
 VERTICAL CLEARANCE ABOVE STREAMBED: 3.7 m (SEE NOTE 3)  
 WATERWAY OF FULL OPENING: 120 m<sup>2</sup> (SEE NOTE 4)

WATER SURFACE ELEV. Q2.33= 271.39 VELOCITY= 1.67 mps  
 (SEE NOTE 2) Q10= 272.42 " = 2.55 mps  
 Q25= 273.00 " = 3.24 mps  
 Q50= 273.43 " = 3.85 mps  
 Q100= 273.95 " = 4.45 mps

IS THE ROADWAY OVERTOPPED BELOW THE Q100? NO FREQUENCY: > Q100  
 RELIEF ELEVATION: 273.14 DISCHARGE OVER ROAD @ Q100: N/A

AVERAGE LOW ELEVATION OF SUPERSTRUCTURE: 272.77 (SEE NOTE 3)  
 VERTICAL CLEARANCE @ Q25 0.37 m (SEE NOTE 3)  
 SCOUR: 2.3 m (SEE NOTE 5)  
 REQUIRED CHANNEL PROTECTION: STONE FILL TYPE IV

PERMIT INFORMATION

AVERAGE DAILY FLOW: 5.0 cms  
 ORDINARY LOW WATER: 2.3 cms DEPTH: EL. 269.38  
 ORDINARY HIGH WATER: 37.6 cms DEPTH: EL. 270.22

ADDITIONAL COMMENTS

1. PEAK DISCHARGES FOR 10 YEAR, 50 YEAR, 100 YEAR AND 500 YEAR EVENTS WERE OBTAINED FROM FIS (APRIL 1981) AND 2.33 AND 25 YEAR EVENTS WERE APPROXIMATED USING GRAPHICAL METHODS.
2. WATER SURFACE ELEVATIONS AND VELOCITIES ARE PROVIDED AT A SECTION 25.3 m UPSTREAM OF THE EXISTING BRIDGE. VELOCITIES ARE PROVIDED AT THE BRIDGE.
3. THE AVERAGE LOW ELEVATION OF THE SUPERSTRUCTURE, AND VERTICAL CLEARANCE AT Q25 IS BASED ON THE BOTTOM CHORD ELEVATIONS.
4. WATERWAY OPENING FOR THE PROPOSED STRUCTURE CONSIDERED THE ESTIMATED LOCATION OF THE PROPOSED NEW STRINGERS, AND NEW BRIDGE PROFILE.
5. CLEAR WATER CONTRACTION SCOUR WAS BASED ON BED MATERIAL OF VERY COARSE GRAVEL TO SMALL COBBLES (D50 = 76 mm)
6. HYDRAULICS CONSIDERED CONSTRUCTING AFFECTS OF UPSTREAM BUILDING.

STATE OF VERMONT  
AGENCY OF TRANSPORTATION

Town Of CAVENDISH Bridge No. 12  
 Log Sta.  
 Highway No. T.H. 4 Surv. Sta.

T.H. 4 OVER BLACK RIVER

PRELIMINARY INFORMATION SHEET

Designed By S.M. GUNN Drawn By M.M. LANDREY  
 Checked By Date Bridge Design Supervisor  
 T.S. BRYANT 1/04 S.W. JOHNSON Date 1/04  
 PROJECT CAVENDISH PROJECT NO. BHO 1442 (22)

VANASSE HANGEN BRUSTLIN, INC.

I.G.C. Info.  
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