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STANDARDS

A-62M	6-13-97	E-100A*	1-2-04	E-153*	5-01-04
B-5M	1-3-00	E-101*	5-30-03	E-154*	5-01-04
B-11M	6-13-97	E-102*	6-30-03	E-155*	5-01-04
B-71M	2-1-04	E-102A*	5-1-04	E-160*	5-20-99
C-1M	1-3-00	E-106*	3-1-04	E-164*	5-20-99
C-2AM	1-3-00	E-107*	6-30-03	E-173*	8-9-95
C-3AM	9-1-04	E-107A*	8-8-95	E-175*	11-17-93
C-3BM	9-1-04	E-108*	8-18-95	E-180A*	8-9-95
D-2M	6-13-97	E-110*	8-8-95	E-180B*	8-9-95
D-3M	6-13-97	E-119*	3-01-04	E-181*	8-9-95
D-4M	6-13-97	E-121*	8-8-95	E-191*	2-1-99
D-6M	6-13-97	E-123*	3-16-04	E-192*	10-12-00
D-11M	6-13-97	E-124*	8-8-95	E-193*	8-18-95
D-13M	1-3-00	E-141*	9-20-95	F-2M	1-3-00
D-15M	6-13-97	E-142*	9-20-95	G-1M	1-3-00
D-16M	6-13-97	E-143*	6-15-04	G-1DM	1-3-00
D-17M	6-13-97	E-144*	3-29-99	G-4M	6-13-97
D-20*	3-3-03	E-146*	9-20-95	G-16M	6-13-97
D-22M	6-13-97	E-150*	5-01-04	G-18M	6-13-97
E-100*	1-2-04				

* INDICATES ENGLISH STANDARD USED.

LOAD LEVELS (LOAD FACTOR)	TRUCK (TONNES)						
	M (a)	MS	3S2	6 AXLE	3A. STR.	4A. STR.	5A. SEMI
INVENTORY A1 = 1.3, A2 = 2.17	38	54					
POSTED A1 = 1.3, A2 = 1.55	52	75	87		58	60	75
OPERATING A1 = 1.3, A2 = 1.3		84	96	111	65	68	

RF = $\frac{C - A1 DL}{A2 (LL+I)}$ C = ϕMn FLEXURE
 C = ϕVn SHEAR

STRESS LEVELS	TRUCK (TONNES)						
	M (a)	MS	3S2	6 AXLE	3A. STR.	4A. STR.	5A. SEMI
INVENTORY *	37	55					
POSTED **	39	59	67		55	56	63
OPERATING ***		60	68	81	56	57	

* INVENTORY STRESSES *** OPERATING STRESSES
 BOX BEAM TENSION 3.34 MPa BOX BEAM TENSION 4.17 MPa
 BOX BEAM COMPRESSION 17.9 MPa BOX BEAM COMPRESSION 24.6 MPa
 OVERLAY COMPRESSION 11.0 MPa OVERLAY COMPRESSION 15.2 MPa

** POSTED STRESSES (a) LANE LOADING CONTROLS
 BOX BEAM TENSION 3.72 MPa
 BOX BEAM COMPRESSION 22.0 MPa
 OVERLAY COMPRESSION 13.5 MPa

RATING NOTES:
 1. ALL VALUES REPRESENT MULTIPLE LANE LOADING.
 2. SPAN 8 BOX BEAMS CONTROL WORKING STRESS RATING FOR ALL TRUCKS.
 3. SPANS 2-7 SOLID SLABS CONTROL LOAD FACTOR RATING FOR ALL TRUCKS EXCEPT 6 AXLE, FOR WHICH SPAN 8 BOX BEAMS CONTROL.

FINAL HYDRAULICS REPORT



HYDROLOGIC DATA *

DRAINAGE AREA= _____
 CHARACTER OF TERRAIN= _____
 CHARACTER & TYPE OF STREAM= _____
 NATURE OF STREAMBED= ROCK GORGE
 Q2.33= _____ Q50= _____
 Q10= _____ Q100= _____
 Q25= _____ Q500= _____
 DATE OF FLOOD OF RECORD= NOVEMBER 1927 (Q500)
 WATER SURFACE ELEV. @ ESTIMATED DISCHARGE= _____
 NATURAL STREAM VELOCITY @ Q= _____
 ICE CONDITIONS= _____ DEBRIS= _____
 DOES THE STREAM REACH MAXIMUM HIGHWATER ELEVATION RAPIDLY?
 IS ORDINARY RISE RAPID?
 IS STAGE AFFECTED BY UPSTREAM OR DOWNSTREAM CONDITIONS? YES
 IF YES, DESCRIBE. UPSTREAM: WINOOSKI GORGE;
DOWNSTREAM: DAM
 WATERSHED STORAGE HEADWATERS UNIFORM THROUGHOUT WATERSHED
 IMMEDIATELY ABOVE SITE

EXISTING STRUCTURE *

STRUCTURE TYPE: REINFORCED CONCRETE ARCH YEAR BUILT: 1913
 CLEAR SPAN (NORMAL TO STREAM): 28.5 m
 VERTICAL CLEARANCE ABOVE STREAMBED: 29.6 m
 WATERWAY OF FULL OPENING: N/A
 DISPOSITION OF STRUCTURE: HISTORICAL ARCH TO BE REMOVED
 TYPE OF MATERIAL UNDER SUBSTRUCTURE: LEDGE
 WATER SURFACE ELEV. @ Q2.33= _____ VELOCITY= _____
 Q10= 62.2 m " " _____
 Q25= _____ " " _____
 Q50= 63.6 m " " _____
 Q100= 64.6 m " " _____
 LONG TERM STREAM BED CHANGES: UNKNOWN
 IS THE ROADWAY OVERTOPPED BELOW THE Q100? NO FREQUENCY: _____
 RELIEF ELEVATION: _____ DISCHARGE OVER ROAD @ Q100: _____
 UPSTREAM STRUCTURE: TOWN: _____ DISTANCE: _____
 HIGHWAY NO.: _____ STRUCTURE NO.: _____
 STRUCTURE TYPE: _____
 CLEAR SPAN: _____ CLEAR HEIGHT: _____
 YEAR BUILT: FULL WATERWAY
 DOWNSTREAM STRUCTURE: TOWN: _____ DISTANCE: _____
 HIGHWAY NO.: _____ STRUCTURE NO.: _____
 STRUCTURE TYPE: _____
 CLEAR SPAN: _____ CLEAR HEIGHT: _____
 YEAR BUILT: FULL WATERWAY

PROPOSED STRUCTURE

STRUCTURE TYPE: REINFORCED CONCRETE ARCH
 CLEAR SPAN (NORMAL TO STREAM): 35.7 m BETWEEN ARCH FOUNDATIONS
 VERTICAL CLEARANCE ABOVE STREAMBED: _____
 WATERWAY OF FULL OPENING: _____
 WATER SURFACE ELEV. @ Q2.33= _____ VELOCITY= _____
 Q10= 62.2 m " " _____
 Q25= _____ " " _____
 Q50= 63.6 m " " _____
 Q100= 64.6 m " " _____
 IS THE ROADWAY OVERTOPPED BELOW THE Q100? NO FREQUENCY: _____
 RELIEF ELEVATION: _____ DISCHARGE OVER ROAD @ Q100: _____
 AVERAGE LOW ELEVATION OF SUPERSTRUCTURE: BOTTOM ARCH FOOTING 65.5 m
 VERTICAL CLEARANCE @ Q= _____
 SCOUR: ARCH PIER FOUNDATIONS ON LEDGE
 REQUIRED CHANNEL PROTECTION: _____

PERMIT INFORMATION

AVERAGE DAILY FLOW: _____
 ORDINARY LOW WATER: _____ DEPTH: _____
 ORDINARY HIGH WATER: _____ DEPTH: _____

* ADDITIONAL COMMENTS

1. HYDRAULIC AND HYDROLOGIC INFORMATION IS FROM THE FEMA FLOOD INSURANCE STUDY FOR THE TOWN OF COLCHESTER, SEPTEMBER 1, 1981 AND THE CITY OF SOUTH BURLINGTON, SEPTEMBER 16, 1980. ADDITIONAL ANALYSES WERE NOT CONDUCTED AT THIS SITE.
2. ALL WATER SURFACE ELEVATIONS ARE BASED ON NGVD 1929 WHICH IS 0.13 m HIGHER THAN NAVD 88.



DESIGN CRITERIA:

1. DESIGN LIVE LOAD AASHTO MS 22.5
 2. DESIGN SPAN 17.835 m, 6 @ 6.250 m, 31.095 m
 3. ALLOWABLE LOAD FOR SPREAD FOOTINGS ON SOIL 190 KPa ON LEDGE 950 KPa
 4. ALLOWABLE LOAD FOR PILING 356 kN TYPE HP 310 x 110 ESTIMATED LENGTH 10.0 m
 5. STRUCTURAL STEEL N/A
 6. REINFORCING STEEL GRADE 420
 7. CONCRETE CLASS AA f'_c 30 MPa CONCRETE HIGH PERFORMANCE CLASS AA f'_c 30 MPa
 CLASS A f'_c 30 MPa HIGH PERFORMANCE CLASS A f'_c 30 MPa
 CLASS B f'_c 25 MPa HIGH PERFORMANCE CLASS B f'_c 25 MPa
- TRAFFIC MAINTENANCE:
 1. IS TRAFFIC TO BE MAINTAINED? YES IF YES, ON EXISTING STRUCTURE YES OR ON TEMPORARY BRIDGE _____
 2. TEMPORARY BRIDGE REQUIREMENTS: ONE OR TWO WAY _____ TRAFFIC CONTROL SIGNALS REQUIRED _____ NO
 MINIMUM CLEAR SPAN (NORMAL TO STREAM): _____ VERTICAL CLEARANCE ABOVE STREAMBED: _____
 WATERWAY OF FULL OPENING: _____
 ARE SIDEWALKS REQUIRED? _____ IF SO, ON WHAT SIDE? _____
 STRUCTURE TYPE: _____

TRAFFIC DATA - TH 4/3

2004 ADT = 7500	2024 ADT = 10,000	2004-2024 ESAL'S 1,554,000
2004 DHV = 940	2024 DHV = 1115	2004-2024 ESAL'S 3,645,000
2004 ADTT = 225	2024 ADTT = 300	DESIGN SPEED = 50 KM/H
2024 XD = 65		
2024 XT = 3		

POSTED SPEED = 40 km/hr

STATE OF VERMONT
 AGENCY OF TRANSPORTATION

Town Of COLCHESTER-SOUTH BURLINGTON Bridge No. 6
 Highway No. TH 4/3 Log Sta. _____
 Surv. Sta. _____
TH 4/3 OVER WINOOSKI RIVER & N.E. C.R.
PRELIMINARY INFORMATION SHEET
 Designed By M.A. COLGAN Drawn By B.J. MASSE
 Checked By S.M. GUNN Date 4/05 Bridge Design Supervisor S.M. GUNN Date 4/05
 PROJECT COLCHESTER-SOUTH BURLINGTON PROJECT NO. BRM 5600 (6) S C/2
 I.G.C. Info. _____
 Bridge Sheet No. ZD139P1 Sheet 2 of 124