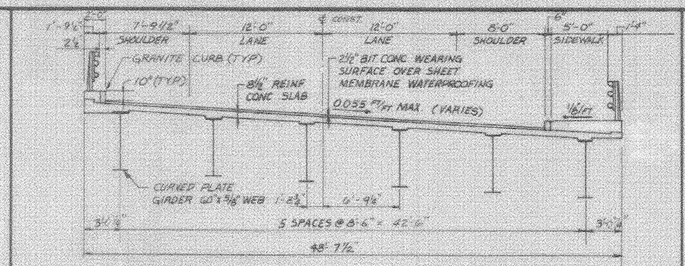
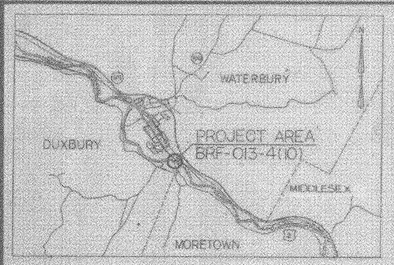
NEW HIGHWAY SECTION — BRIDGE APPROACHES



BRIDGE TYPICAL SECTION

SCALE 3/16"=1'-0"

* EXCEPT FROM STA. 14+25 TO STA. 14+82.29 SEE BR 108



PROJECT LOCATION

0.5 0

SCALE IN MILES

LIST OF BRIDGE SHEETS

BR100	PRELIMINARY INFORMATION
BR101	PLAN AND ELEVATION
BR102	BRIDGE QUANTITY SHEET
BR103	BORING INFORMATION SHEET
BR104-105 & 106A	BORING LOGS
BR107	SUPERSTRUCTURE DETAILS
BR108	BRIDGE DECK REINFORCING PLAN
BR109	CURB, RAILING & SCUPPER LAYOUT
BR110	FRAMING PLAN
BR111	GIRDER ELEVATION
BR112	GIRDER DETAILS
BR113	CROSS FRAME DETAILS
BR114	BEARING DEVICE DETAILS
BR115	BEARING DEVICE DETAILS
BR116	FINGER JOINT DETAILS
BR117	FINGER JOINT DETAILS
BR118	APPROACH SLAB DETAILS
BR119	PIER DETAILS
BR120	PLAN & ELEVATION - ABUTMENT NO. 1
BR121	ABUTMENT NO. 1 PILE PLAN & SECTIONS
BR122	RETAINING WALL DETAILS
BR123	PLAN & ELEVATION - ABUTMENT NO. 2
BR124	ABUTMENT NO. 2 PILE PLAN & SECTIONS
BR125	CURB JOINT DETAILS
BR126	DETAILS
BR127-128	ALUMINUM BRIDGE RAIL DETAILS
BR129	BRIDGE AND APPROACH RAIL DETAILS
BR130-BR131	REINFORCING STEEL SCHEDULES

GENERAL NOTES

1. 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).

2. ALL FIELD CONNECTIONS SHALL BE MADE WITH 7/8" DIAMETER TYPE 1 BOLTS MEETING ASTM DESIGNATION A-325. HOLES SHALL BE 15/16" DIAMETER. CONNECTIONS NOT DESIGNATED SHALL BE DETAILED BY THE FABRICATOR AND SUBMITTED TO THE STATE FOR APPROVAL.

3. ALL WELDING SHALL CONFORM WITH THE PROVISIONS OF SUBSECTION 506.10.

4. AFTER SUPERSTRUCTURE STEEL HAS BEEN ERECTED, ELEVATIONS ALONG THE TOP OF BEAMS SHALL BE TAKEN AS DIRECTED BY THE ENGINEER FOR USE IN DETERMINING FINAL GRADE.

5. ANY HOLES IN FASCIA BEAMS OR FASCIA GIRDER WEBS NOT OTHERWISE FILLED SHALL BE FILLED WITH BUTTON HEAD OR HEX HEAD BOLTS.

6. ALL REINFORCING STEEL SHALL BE DETAILED AND FABRICATED USING PROCEDURES AND TOLERANCES IN ACCORDANCE WITH APPLICABLE PUBLICATIONS OF THE "CONCRETE REINFORCING STEEL INSTITUTE".

7. MINIMUM COVER FOR REINFORCING STEEL SHALL BE TWO (2) INCHES ALONG BACK FACES OF WALLS AGAINST EARTH, AND THREE (3) INCHES ELSEWHERE, UNLESS OTHERWISE NOTED.

8. REINFORCING PLACEMENT TOLERANCES SHALL BE
   SPACING - 1"
   CLEARANCE - 1/4"

9. DECK CONCRETE SHALL BE "CONCRETE, CLASS A". ALL OTHER CONCRETE SHALL BE "CONCRETE CLASS B" UNLESS OTHERWISE DESIGNATED ON THE PLANS.

10. ALL EXPOSED EDGES OF CONCRETE SHALL BE CHAMFERED 1" BY 1".

11. SURFACES OF BRIDGE SEATS UNDER BEARING DEVICES SHALL BE LEVEL. OTHER BRIDGE SEAT AREAS SHALL BE SLOPED 1/2" PER FOOT. ABUTMENT SEATS SHALL BE SLOPED FULL WIDTH TOWARD CENTER SPAN. PIER SEATS SHALL BE SLOPED EACH WAY FROM CENTER. THE ENTIRE BRIDGE SEAT SURFACE SHALL BE SMOOTH STEEL TROWEL FINISHED.

12. 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 DAYS POUR AND THE BEGINNING OF ANY OTHER POUR.

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

14. A MINIMUM OF ONE TEST PILE SHALL BE DRIVEN AT THE PIER AND ABUT. #2. A DYNAMIC AND STATIC LOAD TEST SHALL BE PERFORMED ON THE TEST PILE AT ABUT. #2 PRIOR TO DRIVING PRODUCTION PILING AT ANY SUBSTRUCTURE. A DYNAMIC LOAD TEST SHALL BE PERFORMED ON THE PIER TEST PILE PRIOR TO DRIVING PRODUCTION PILES AT THE PIER. (SEE SPECIAL PROVISIONS FOR DETAILS OF PILE LOAD TESTS).

15. ALL PILING SHALL BE CAST-IN-PLACE CONCRETE PILING. PIER DESIGN LOAD IS 148 KIPS; ABUTMENT #1, ABUTMENT #2, AND THE RETAINING WALL DESIGN LOAD IS 140 KIPS. METAL SHELLS FOR THE CAST-IN-PLACE CONCRETE PILES SHALL BE CLOSED END PIPE 12-3/4 INCHES WITH A MINIMUM WALL THICKNESS OF 3/8TH INCHES. THE CONTRACTOR SHALL PROVIDE THE SERVICES OF A GEOTECHNICAL CONSULTING FIRM TO PROVIDE WAVE EQUATION ANALYSIS OF THE PILE DRIVING SYSTEM, AS WELL AS DYNAMIC TESTING OF TEST PILES AT ABUTMENT #2 AND THE PIER. IN ADDITION, A STATIC LOAD TEST, IN ACCORDANCE WITH ASTM D 1143, SHALL BE CONDUCTED ON THE TEST PILE AT ABUTMENT #2. (SEE SPECIAL PROVISIONS FOR ADDITIONAL DETAILS.)

16. ALL DIMENSIONS ARE HORIZONTAL OR VERTICAL AND ARE GIVEN AT 68 DEGREES FAHRENHEIT (UNLESS NOTED OTHERWISE).

17. JOINTS AND SCORE MARKS IN CONCRETE SHALL BE CONSTRUCTED AS INDICATED ON THE PLANS OR AS DIRECTED BY THE ENGINEER.

18. THE KEY IN CONCRETE CONSTRUCTION JOINTS SHALL BE MONOLITHIC AND CONTINUOUS FOR THE FULL LENGTH OF THE JOINT.

19. THE EXISTING PIER SHALL BE REMOVED UNDER ITEM 529.25 DOWN TO ELEV. 405.0 OR 5' BELOW THE RIVER BED WHICHEVER IS LOWER. REMOVAL SHALL BE DONE IN A SAFE, WORKMANLIKE MANNER. THE EXISTING ABUTMENTS SHALL NOT BE REMOVED.

20. IN ALL HORIZONTAL CONSTRUCTION JOINTS, THE SHEAR KEYS SHALL BE FORMED AS DETAILED ON DRAWING BR 126, AND THEY SHALL BE CONTINUOUS FOR THE FULL LENGTH OF THE JOINT. AN UPWARD KEY SHALL BE PLACED INTEGRALLY WITH THE CONCRETE BELOW THE JOINT.

21. ALL STRUCTURAL STEEL SHALL BE AASHTO M222 UNPAINTED, UNLESS OTHERWISE NOTED.

22. FOR INFORMATION ABOUT "COFFERDAM AT STATION 14+25 (ABUTMENT NO. 1 AND RIVER ROAD)", "COFFERDAM AT STATION 15+21.1 (PIER)" AND "COFFERDAM AT STATION 16+97" (ABUTMENT NO. 2), SEE SPECIAL PROVISIONS. PRICE FOR COFFERDAM SHALL INCLUDE PRICE OF PLACING COFFERDAM SEAL, EXCAVATION AND SHEET PILING.

23. ITEM 529.15, REMOVAL OF EXISTING STRUCTURE, SHALL INCLUDE THE FOLLOWING:

   A. REMOVAL AND DISPOSAL OF THE EXISTING BITUMINOUS CONCRETE BRIDGE PAVEMENT AND REINFORCED CONCRETE DECK.

   B. REMOVAL OF THE EXISTING TRUSSES, FLOOR BEAMS, STRINGERS, BEARINGS, ETC., ALL OF WHICH SHALL BECOME THE PROPERTY OF THE CONTRACTOR.

   C. REMOVAL OF THE TEMPORARY REPAIR GIRDERS, INCLUDING BOLTED ATTACHMENTS, WHICH SHALL REMAIN THE PROPERTY OF THE STATE (SEE SPECIAL PROVISIONS).

STATE OF VERMONT — DREW W. CONLEY — NO. 5447 — REGISTERED PROFESSIONAL ENGINEER

BARNES AND JARNIS, INC.
CONSULTING ENGINEERS
BOSTON, MASS.

EXISTING STRUCTURE

1. STRUCTURE TYPE CAMEL BACK THROUGH WARREN TRUSS-2 SPAN OVERALL LENGTH 244 FT. INVENTORY RATING
2. SPAN LENGTH(S) CENTER TO CENTER OF BEARINGS NORTH SPAN 123 FT-4 IN OC, SOUTH SPAN 78 FT-6 IN C-C
3. CLEAR SPAN LENGTH(S) NORMAL TO STREAM SAME AS ↑ ↑
4. WATERWAY AREA OF FULL OPENING (NORMAL TO STREAM) 1225 SQ. FT. VERTICAL CLEARANCE ABOVE STREAMBED 23.5 FT
5. WATER SURFACE ELEVATION @ Q 2.33 426.8 WATER SURFACE ELEVATION @ Q 50 425.6
6. WATER SURFACE ELEVATION AT FLOOD OF RECORD 439 YEAR NOV 4 1927 ESTIMATED DISCHARGE 85000 CFS
7. DOES ALL WATER PASS THROUGH EXISTING STRUCTURE? YES IF NOT, AT WHAT FREQUENCY AND ELEVATION DOES RELIEF OCCUR?
   ADDITIONAL WATERWAY AREA PROVIDED BY RELIEF NONE
8. TYPE OF SUBSTRUCTURE FOUNDATION MATERIAL UNKNOWN
9. DISPOSITION OF STRUCTURE REMOVE EXISTING STRUCTURE ITEM 529.15

NEW STRUCTURE

STRUCTURE GEOMETRY:

1. STRUCTURE TYPE 2 SPAN CONTINUOUS WELDED PLATE GIRDER OVERALL LENGTH 377'-5 3/4" ALONG ℄ CONST.
2. SPAN LENGTH(S) CENTER TO CENTER OF BEARINGS 29 1/16 FT. ALONG ℄ CONSTRUCTION
3. VERTICAL CLEARANCE ABOVE STREAMBED OR ROAD UNDER 20.2 FT @ EAST FASCIA, 24 FT @ WEST FASCIA
4. CLEAR SPAN LENGTH(S) NORMAL TO STREAM NORTH SPAN 105 FT. SOUTH SPAN 180 FT.
5. WATERWAY AREA OF FULL OPENING (NORMAL TO STREAM) 4090 SQ. FT.
6. ARE PROVISIONS TO BE MADE FOR PUBLIC UTILITIES?

HYDRAULIC DATA:

1. Q 2.33	15500 CFS	WATER ELEVATION 419.1	VELOCITY 6.20 FPS
Q 10	62000 CFS	WATER ELEVATION 423.1	VELOCITY 7.66 FPS
Q 25	85500 CFS	WATER ELEVATION 425.5	VELOCITY 7.37 FPS
Q 50	94000 CFS	WATER ELEVATION 426.1	VELOCITY 8.63 FPS
Q 100	96500 CFS	WATER ELEVATION 428.2	VELOCITY 8.80 FPS

2. DRAINAGE AREA 715 SQ. MI. CHARACTER OF TERRAIN ROLLING TO MOUNTAINOUS
3. ARE THERE OBJECTIONS TO A PIER IN THE STREAM? PIER TO BE LOCATED OUT AT THE SOUTH EDGE OF THE MAIN CHANNEL
4. DOES STREAM REACH ITS MAXIMUM HIGH WATER ELEVATION RAPIDLY? YES IS ORDINARY RISE RAPID? YES
5. NATURE OF NATURAL STREAMBED FAIRLY DEEP, CLEAN AND REGULAR BOTTOM - LARGE TO MEDIUM GRAVEL AND SILTY SAND
6. ESTIMATED SCOUR DEPTH 416 FEET COMMENT ON: DRIFT MODERATE ICE MODERATE
7. WILL ALL WATER PASS THROUGH NEW STRUCTURE? NO IF NOT, WHAT FREQUENCY AND ELEVATION WILL RELIEF OCCUR? 250, 426.1
   ADDITIONAL WATERWAY AREA PROVIDED BY RELIEF N/A
8. VERTICAL CLEARANCE ABOVE Q 100 0 FT.
9. ALLOWABLE WATER SURFACE ELEVATION 428.2 LIMITED BY 8100
10. IS DESIGN STAGE AFFECTED BY UPSTREAM OR DOWNSTREAM CONDITIONS? NO IF YES, DESCRIBE
11. AVERAGE DAILY LOW FLOW 400 CFS DEPTH EL. 410 AVERAGE DAILY HIGH FLOW 2300 CFS DEPTH EL. 417
12. STREAMBANK OR CHANNEL PROTECTION REQUIRED TYPE
13. DISTANCE TO EXISTING UPSTREAM STRUCTURE 1.29 MI. SPAN WATERWAY AREA OF FULL OPENING Q
14. DISTANCE TO EXISTING DOWNSTREAM STRUCTURE 3.61 MI. SPAN WATERWAY AREA OF FULL OPENING Q

ALLOWABLE STRESSES:

1. DESIGN LIVE LOAD AASHTO HS 25
2. ALLOWABLE LOAD FOR SPREAD FOOTINGS ON SOIL N/A ON LEDGE N/A
3. ALLOWABLE LOAD FOR PILING TYPE ESTIMATED LENGTH SEE PLANS (BR101)
4. ALLOWABLE STRESS FOR STRUCTURAL STEEL AASHTO M270 TENSION 27 KSI
5. ALLOWABLE STRESS FOR REINFORCING STEEL GRADE 60 TENSION 24 KSI COMPRESSION 20 KSI
6. ALLOWABLE STRESS FOR CONCRETE CLASS A f'_c = 3500 PSI f_c = 1400 PSI
   CLASS B f'_c = 3500 PSI f_c = 1400 PSI

TRAFFIC MAINTENANCE:

1. IS TRAFFIC TO BE MAINTAINED? YES IF YES, ON EXISTING STRUCTURE YES OR ON TEMPORARY BRIDGE NO
2. TEMPORARY BRIDGE REQUIREMENTS: ONE OR TWO WAY N/A TRAFFIC CONTROL SIGNALS REQUIRED
   MINIMUM CLEAR SPAN MINIMUM CLEAR HEIGHT MINIMUM WATERWAY AREA
   ARE SIDEWALKS REQUIRED? IF SO, ON WHAT SIDE?

ADDITIONAL DESIGN CONSIDERATIONS

LOAD RATING (TONS)

STRESS LEVELS	TRUCK							
	H	HS	3S2	6 AXLE	3A. STR.	4A. STR.	5A. SEMI
INVENTORY 0.50 Fy	25	46					
POSTED 0.67 Fy	43	74	146		118	120	135
OPERATING 0.75 Fy		100	207	211	168	170	

RECOMMENDED FOR APPROVAL ____ STRUCTURES ENGINEER DATE

RECOMMENDED FOR APPROVAL ____ CHIEF OF DESIGN DATE

APPROVED BY ____ DIRECTOR OF ENGINEERING & CONSTRUCTION DATE

REVISIONS

NO.	DESCRIPTION	BY & DATE
1	CHANGE HP PILING TO CAST-IN PLACE CONCRETE PILINGS	AWE 1-25-91

For Reference Only
Waterbury-Moretown
BHF MEMB (12)
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STATE OF VERMONT
AGENCY OF TRANSPORTATION

TOWN OF WATERBURY-DUXBURY-MORETOWN	Bridge No. 48 / Log Sta. / Surv. Sta. 15+61
HIGHWAY NO. U.S. RTE. 2	
U.S. RTE. 2 OVER WINOOSKI RIVER	
PRELIMINARY INFORMATION	
Designed by D.W.C.	Drawn by G.T.W.
Checked by LJC date 9/90	Bridge Design Supervisor DWC date 9/90
PROJECT WATERBURY-DUXBURY-MORETOWN	PROJECT NO. BRF-013-4(10)
Bridge Sheet No. BR100	Sheet 43 of 162

BR-2