SEE SHEET 2 FOR INDEX OF SHEETS

# STATE OF VERMONT
# AGENCY OF TRANSPORTATION

## PROPOSED IMPROVEMENT
## BRIDGE PROJECT

TOWNS OF WATERBURY AND MORETOWN
COUNTY OF WASHINGTON
BRIDGE MEMBRANE & JOINT PROJECT

PROJECT LOCATION: ROUTE US 2 BR 48 : 0.2 MILES WEST OF JUNCTION OF VT 100 AND US 2
ROUTE VT 100B BR 4 : 1.6 MILES NORTH OF JUNCTION OF VT 100 AND VT 100B

PROJECT DESCRIPTION: COLD PLANING, MEMBRANE REPLACEMENT, JOINT REHABILITATION, AND PAVING OF BRIDGE AND APPROACH SLABS.

LENGTH OF STRUCTURES: ROUTE US 2 BR 48: 277.45' ROUTE VT 100B BR 4: 198.41'

TOTAL LENGTH OF STRUCTURES: 475.86'

RECORD PLANS

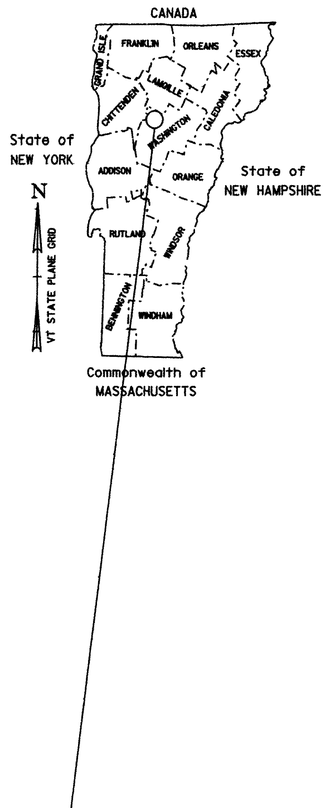
CONTRACTOR: A.C. PAVING CORP - SO. BURLINGTON, VT
RESIDENT ENGINEER: TOM MANCINI
CONSTRUCTION BEGAN: MAY 27, 2009
CONSTRUCTION COMPLETE: JULY 20, 2009
RECORD PLANS BY: TOM MANCINI

I HEREBY CERTIFY THAT ALL THE CONSTUCTION REQUIRED BY THIS SET OF DRAWINGS HAS BEEN ACCOMPLISHED AS INDICATED HEREIN

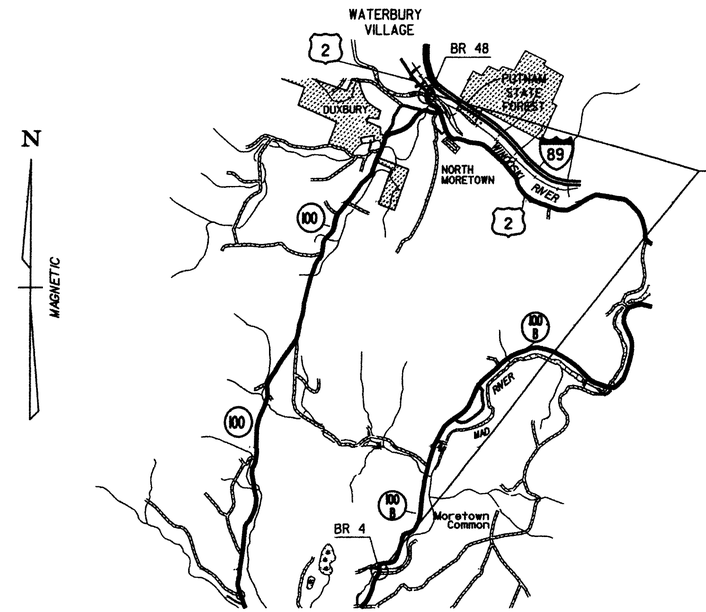
BY _____ RESIDENT ENGINEER

DATE 1/11/11

NOTE. Any further information concerning final quantities, amounts or other details relative to this project may be found at Central Files in the electronic archives




**PROJECT LOCATION**
**WATERBURY–MORETOWN**
**BHF MEMB(12)**




**CONVENTIONAL SYMBOLS**

COUNTY LINE
TOWN LINE
LIMITS OF ACCESS
POINT OF ACCESS
FENCE LINE
STONE WALL
TRAVELED WAY
GUARD RAIL
RAILROAD
SURVEY LINE
CULVERT
POWER POLE
TELEPHONE POLE
TREES
CONTROL OF ACCESS
PROPERTY LINE
R.O.W. TAKING LINE
SLOPE RIGHTS (SR)
TOP OF CUT
TOE OF SLOPE

SURVEYED BY : N/A
SURVEYED DATE : N/A

DATUM
VERTICAL N/A
HORIZONTAL N/A

SCALE 0 1 2 MILES

BUILT AS DESIGNED

THESE PLANS ARE SUBJECT TO SUCH ENGINEERING CHANGES AS MAY BE REQUIRED BY THE FEDERAL HIGHWAY ADMINISTRATION OR THE DIRECTOR OF PROGRAM DEVELOPMENT.

CONSTRUCTION IS TO BE CARRIED ON IN ACCORDANCE WITH THESE PLANS AND THE STANDARD SPECIFICATIONS FOR CONSTRUCTION DATED 2006, AS APPROVED BY THE FEDERAL HIGHWAY ADMINISTRATION ON JUNE 15, 2006 FOR USE ON THIS PROJECT, INCLUDING ALL SUBSEQUENT REVISIONS AND SUCH REVISED SPECIFICATIONS AND SPECIAL PROVISIONS AS ARE INCORPORATED IN THESE PLANS.

PLOTTED 19-FEB-2009

DIRECTOR OF PROGRAM DEVELOPMENT
APPROVED _____ DATE 2/6/09

PROJECT MANAGER : C.P. WILLIAMS

PROJECT NAME : WATERBURY-MORETOWN
PROJECT NUMBER : BHF MEMB(12)

SHEET 1 OF 28 SHEETS

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2. INDEX & PROJECT NOTES SHEET
3. QUANTITY SHEET
4. DETAILS SHEET


**REFERENCE SHEETS**

BRIDGE (US 2 Br. 48)


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6. PRELIMINARY INFORMATION SHEET
7. PLAN AND ELEVATION
8. SUPERSTRUCTURE DETAILS
9. CURB, RAILING, AND SCUPPER LAYOUTS
10.-11. FINGER JOINT DETAILS
12. APPROACH SLAB DETAILS
13.-16. ABUTMENT AND WING WALL DETAILS


BRIDGE (VT 100B Br. 4)


17.-18. TRAFFIC DESIGN LAYOUT
19. PRELIMINARY INFORMATION SHEET
20. PLAN AND ELEVATION
21. TYPICAL SECTION AND DECK REINFORCING PLAN
22. APPROACH SLAB DETAILS
23.-26. ABUTMENT AND WING WALL DETAILS
27.-28. EXPANSION JOINT DETAILS


**VAOT STANDARDS FOR CONSTRUCTION**

| | | |
|---|---|---|
| E-100 | CONSTRUCTION APPROACH SIGNS | 1-2-2004 |
| E-100A | SIDE ROAD CONSTRUCTION – APPROACH SIGNS | 1-2-2004 |
| E-101 | CONSTRUCTION SIGN DETAILS | 5-30-2003 |
| E-102 | CONSTRUCTION SIGN DETAILS | 6-30-2003 |
| E-102A | CONSTRUCTION SIGN DETAILS | 5-1-2004 |
| E-106 | TRAFFIC CONTROL – MISCELLANEOUS DETAILS | 3-1-2004 |
| E-107 | DELINEATION, BARRICADES AND DETOURS FOR CONSTRUCTION AREAS | 6-30-2003 |
| E-107A | BREAKAWAY BARRICADE DETAILS | 8-8-1995 |
| E-108 | CONSTRUCTION ZONE LONGITUDINAL DROP OFFS | 12-8-08 |
| E-110 | MAJOR MAINTENANCE OPERATIONS LANE CLOSURE | 8-8-1995 |
| E-193 | PAVEMENT MARKING DETAILS | 8-18-1995 |

**GENERAL NOTES**

1. ALL MATERIALS AND CONSTRUCTION SHALL CONFORM TO STATE OF VERMONT AGENCY OF TRANSPORTATION'S STANDARD SPECIFICATIONS FOR CONSTRUCTION, DATED 2006, AND ITS LATEST REVISIONS, AND THE AASHTO STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES, 17TH EDITION, DATED 2002, AND ITS LATEST REVISIONS.

2. DIMENSIONS, ANGLES, BEARINGS, AND ELEVATIONS OF THE EXISTING BRIDGES SHOWN ON THESE PLANS HAVE BEEN OBTAINED FROM PLANS OF THE EXISTING STRUCTURES AND LIMITED FIELD INVESTIGATION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAKING FIELD MEASUREMENTS OF ALL EXISTING STRUCTURE COMPONENTS TO ASSURE CONSISTENCY WITH THE PROPOSED MODIFICATIONS. ANY DISCREPANCIES IN DIMENSIONS, CHARACTER OR EXTENT OF THE EXISTING FEATURES SHALL BE BROUGHT TO THE ATTENTION OF THE RESIDENT ENGINEER, BEFORE ADVANCING THE WORK. NOTE THAT ALL REFERENCE SHEETS ARE SCANS AND NOT TO SCALE.

3. FOLLOWING COMPLETION OF ALL OTHER CONSTRUCTION ACTIVITIES, ALL FABRIC DRAIN TROUGHS, METAL DOWN SPOUTS, AND BRIDGE SCUPPERS SHALL BE THOROUGHLY FLUSHED BY THE CONTRACTOR WITH THE COST TO BE INCIDENTAL TO ALL OTHER ITEMS IN THE CONTRACT.

**PAVEMENT REMOVAL NOTES**

1. THE FINAL ONE HALF INCH OF PAVEMENT ON THE BRIDGE DECK AND APPROACH SLABS SHALL BE REMOVED BY LOADER, GRADER, OR EQUIPMENT APPROVED BY THE ENGINEER. USE OF COLD PLANER TO REMOVE BRIDGE AND APPROACH SLAB PAVEMENT SHALL BE INCIDENTAL TO ITEM 529.10 "REMOVAL OF BRIDGE PAVEMENT". THE REMOVAL OF EXISTING SHEET MEMBRANE SHALL BE INCIDENTAL TO ITEM 529.10 "REMOVAL OF BRIDGE PAVEMENT".

2. DURING BRIDGE AND APPROACH SLAB PAVEMENT REMOVAL, THE CONTRACTOR SHALL EXERCISE CARE TO INSURE THAT NO DAMAGE OCCURS TO THE EXISTING PORTLAND CEMENT CONCRETE DECK OR THE APPROACH SLABS. IF THE CONTRACTOR DAMAGES AREAS OF THE DECK OR APPROACH SLABS, THEN THE REQUIRED REPAIRS SHALL BE AS PER SECTION 580 OF THE SPECIFICATION AND WILL BE AT THE CONTRACTOR'S EXPENSE.

3. WHERE TRAFFIC IS TO BE MAINTAINED ON ONE LANE OF A BRIDGE WHILE THE OTHER LANE IS BEING REPAIRED, THE EXISTING PAVEMENTS HALL BE RETAINED TO INSURE A SMOOTH RIDE AND LESS IMPACT DAMAGE TO THE REPAIRS MADE.

4. THE CONTRACTOR SHALL TAKE CARE NOT TO DAMAGE ANY DROP INLETS, CATCH BASINS, MANHOLES OR BRIDGES CUPPERS AT ANY STAGE DURING THE CONSTRUCTION. DAMAGE TO THESE STRUCTURES SHALL BE REPAIRED BY THE CONTRACTOR TO THE SATISFACTION OF THE ENGINEER. THE COST FOR SUCH WORK SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.

**WATERPROOFING NOTES**

1. FOLLOWING REMOVAL OF BRIDGE PAVEMENT, THE CONCRETE BRIDGE DECK SHALL BE CLEANED AND PREPARED IN ACCORDANCE WITH SUBSECTION 580.04 AND TO THE SATISFACTION OF THE ENGINEER AND SHALL BE PAID FOR AS ITEM 580.16 "SURFACE PREPARATION FOR MEMBRANE".

2. ANY AREA OF THE BRIDGE DECK THAT IS DAMAGED BY THE CONTRACTOR SHALL BE REPAIRED AT THE SOLE COST OF THE CONTRACTOR. ANY AREA OF CONCRETE BELOW THE MEMBRANE THAT IS FOUND TO BE UNSOUND SHALL BE IDENTIFIED BY THE CONTRACTOR AND BROUGHT TO THE ATTENTION OF THE ENGINEER. THE ENGINEER SHALL MAKE A DETERMINATION AS TO HOW TO REPAIR THE DETERIORATED PORTION OF THE DECK AND AS TO THE EXTENT OF THE REPAIRS.

3. UPON APPROVAL OF THE DECK CONDITION BY THE ENGINEER, SHEET MEMBRANE WATERPROOFING, TORCH APPLIED, SHALL BE INSTALLED IN ACCORDANCE WITH SECTION 519. IF THE DECK CANNOT BE WATERPROOFED AND PAVED IN ITS ENTIRETY, IN A CONTINUOUS OPERATION, OR IF TRAFFIC IS TO BE MAINTAINED ON ONE LANE WHILE THE OTHER LANE IS BEING REPAIRED, THEN THE FOLLOWING SHALL APPLY:

   a. THE MEMBRANE SHALL EXTEND 1+/- FOOT BEYOND THE LANE LINE OF THE REPAIRED LANE SO THAT THE MEMBRANE CAN BE LAPPED ONTO WHEN WATERPROOFING THE SECOND LANE OR WHEN CONSTRUCTION OPERATIONS HAVE RESUMED.

   b. BOTH LIFTS OF PAVEMENT SHALL BE PLACED ON THE NEWLY INSTALLED MEMBRANE FOR THE ENTIRE LENGTH OF THE BRIDGE PRIOR TO ALLOWING TRAFFIC ONTO THIS LANE.

   c. THAT PART (1'+/-) OF THE MEMBRANE THAT EXTENDS BEYOND THE NECESSARY LANE WIDTH TO MAINTAIN TRAFFIC SHALL BE COVERED WITH RELEASE PAPER AND BITUMINOUS CONCRETE PAVEMENT. WHEN WATERPROOFING THE SECOND LANE, REMOVAL OF THE PAVEMENT ON THE RELEASE PAPER IN ORDER TO OVERLAP THE MEMBRANE SHALL BE INCLUDED IN THE UNIT PRICE BID FOR ITEM 900.680 "SPECIAL PROVISION (BITUMINOUS CONCRETE PAVEMENT, SMALL QUANTITY)".

4. WATER REPELLENT, SILANE, SHALL BE APPLIED TO ALL EXPOSED CONCRETE, EXCEPT FOR PIERS AND THE UNDERSIDE OF THE DECK BETWEEN THE DRIP NOTCHES. THIS WORK SHALL BE PAID FOR AS ITEM 514.10 "WATER REPELLENT, SILANE".

**PAVEMENT NOTES**

1. FOLLOWING INSTALLATION OF SHEET MEMBRANE WATERPROOFING ON THE BRIDGE DECK, THE BRIDGE DECKS AND AT-GRADE APPROACH SLABS SHALL BE PAVED CURB TO CURB WITH ITEM 900.680 "SPECIAL PROVISION (BITUMINOUS CONCRETE PAVEMENT, SMALL QUANTITY)", IN TWO COURSES.

2. CARE SHALL BE EXERCISED TO SMOOTHLY TRANSITION THE NEW BRIDGE PAVEMENT INTO THE EXISTING PAVEMENT (50' MINIMUM, SEE DETAIL SHEET). ANY COLD PLANING NECESSARY FOR SHAPING BRIDGE APPROACHES ALONG THE EXISTING MAIN LINE SHALL BE PAID FOR UNDER ITEM 210.10 "COLD PLANING, BITUMINOUS PAVEMENT". ANY COLD PLANING ALONG SIDE ROADS SHALL BE DONE AT THE RESIDENT ENGINEER'S DISCRETION.

3. LONGITUDINAL JOINTS IN THE PAVEMENTS HALL BE TAPERED IN ACCORDANCE WITH SECTION 490 OF THE SPECIFICATION.

4. EMULSIFIED ASPHALT SHALL BE APPLIED TO TACK CONTACT SURFACES AT A RATE OF .025 GAL/SY. THIS WORK SHALL BE PAID FOR AS ITEM 404.65 "EMULSIFIED ASPHALT".

5. TESTING FOR PAVEMENT DENSITY WILL REQUIRE CORES OF THE PAVEMENT ON THE BRIDGE DECK, POSSIBLY RESULTING IN DAMAGE TO THE MEMBRANE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR REPAIR OF ANY DAMAGED MEMBRANE IN ACCORDANCE WITH THE MANUFACTURERS SPECIFICATIONS. THE COST FOR THIS WORK SHALL BE INCIDENTAL TO ITEM 900.680 "SPECIAL PROVISION (BITUMINOUS CONCRETE PAVEMENT, SMALL QUANTITY)".

**EXPANSION JOINT NOTES**

1. BRIDGE EXPANSION JOINTS HAVE BEEN EVALUATED ON A CASE BY CASE BASIS AND SHALL BE TREATED AS FOLLOWS:

   a. US 2, BRIDGE 48 – THE NORTHERN JOINT IS A "SAWCUT JOINT" AND SHALL BE REMOVED. THE REMOVAL WORK SHALL BE CONSIDERED INCIDENTAL TO ITEM 529.10 "REMOVAL OF BRIDGE PAVEMENT". A NEW ASPHALTIC PLUG JOINT SHALL BE INSTALLED AS SHOWN ON DETAILS HEET. THE NEW JOINT SHALL BE PAID FOR AS ITEM 516.10 "BRIDGE EXPANSION JOINT, ASPHALTIC PLUG". THE SOUTHERN JOINT IS A "FINGER JOINT". THE DRAIN TROUGH SHALL BE FLUSHED AND EVALUATED. THIS SHALL BE CONSIDERED INCIDENTAL TO ITEM 529.10 "REMOVAL OF BRIDGE PAVEMENT".

   b. VT 100B, BRIDGE 4 – THE NORTHERN JOINT IS A "SAWCUT JOINT" AND SHALL BE REMOVED. THE REMOVAL WORK SHALL BE CONSIDERED INCIDENTAL TO ITEM 529.10 "REMOVAL OF BRIDGE PAVEMENT". A NEW ASPHALTIC PLUG JOINT SHALL BE INSTALLED AS SHOWN ON DETAILS HEET. THE NEW JOINT SHALL BE PAID FOR AS ITEM 516.10 "BRIDGE EXPANSION JOINT, ASPHALTIC PLUG". THE SOUTHERN JOINT IS A "VERMONT JOINT". THE DRAIN TROUGH SHALL BE FLUSHED AND EVALUATED. THIS SHALL BE CONSIDERED INCIDENTAL TO ITEM 529.10 "REMOVAL OF BRIDGE PAVEMENT".

2. AT THE BEGINNING AND END OF EACH AT-GRADE APPROACH SLAB, NOT ADJACENT TO THE BRIDGE DECK, A SAWCUT PAVEMENT JOINT SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE DETAIL SHOWN ON DETAIL SHEET. PAYMENT FOR THE SAWCUT JOINT SHALL BE MADE AS ITEM 524.11 "JOINT SEALER, HOT POURED" OR 524.13 "JOINT SEALER, COLD POURED" AT THE OPTION OF THE CONTRACTOR.

**TRAFFIC CONTROL**

1. A MINIMUM OF ONE WAY TRAFFIC SHALL BE MAINTAINED THROUGH OUT ALL PHASES OF THIS PROJECT. WORK IS TO BE PERFORMED IN ACCORDANCE WITH THE MUTCD (2003), AND THE APPROPRIATE VTRANS STANDARD DRAWINGS.

2. THE CONTRACTOR SHALL SUBMIT A TRAFFIC CONTROL PLAN, AND A SCHEDULE FOR IMPLEMENTATION AND MAINTENANCE OF TRAFFIC CONTROL FOR ALL WORK ASSOCIATED WITH THIS PROJECT. THE SUBMISSION SHALL BE MADE AT LEAST 30 CALENDAR DAYS PRIOR TO IMPLEMENTATION, THROUGH THE ENGINEER TO VTRANS TRAFFIC DESIGN FOR APPROVAL PRIOR TO IMPLEMENTATION.

3. TEMPORARY ROAD AND/OR SHOULDER CLOSURES WILL BE ALLOWED DURING WORKING HOURS ONLY. THE ROADWAYS HALL BE RESTORED TO FULL CAPACITY AT THE CLOSE OF DAILY CONSTRUCTION ACTIVITIES.

4. ALL COSTS ASSOCIATED WITH PROTECTION OF TRAFFIC DURING REMOVAL OF THE BRIDGE PAVEMENT WILL BE INCIDENTAL TO ITEM 641.10 "TRAFFIC CONTROL".

5. ALL SIGNS, BARRICADES, AND OTHER TRAFFIC CONTROL DEVICES SHALL BE CLEANED WEEKLY OR AS DIRECTED BY THE RESIDENT ENGINEER. EXISTING PERMANENT SIGNS THAT CONTRADICT TEMPORARY TRAFFIC CONTROLS IGNS SHALL BE REMOVED AND REPLACED OR COVERED FOR THE PERIOD OF TIME THAT THE TRAFFIC CONTROL PLAN IS IMPLEMENTED. COST FOR THIS WORK SHALL BE CONSIDERED INCIDENTAL TO ITEM 641.10 "TRAFFIC CONTROL".

6. THE CONTRACTOR SHALL COORDINATE ITS WORK ACTIVITIES AND TRAFFIC CONTROL WITH ANY OTHER CONTRACTOR WORKING WITHIN THE PROJECT AREAS,

7. PAYMENT FOR TEMPORARY CONSTRUCTION SIGNS AND TRAFFIC CONTROL DEVICES NOT OTHERWISE PAID FOR UNDER A SEPARATE CONTRACT ITEM WILL BE INCLUDED IN THE UNIT BID PRICE FOR CONTRACT ITEM 641.10 "TRAFFIC CONTROL".

| | |
|---|---|
| PROJECT NAME: | WATERBURY-MORETOWN |
| PROJECT NUMBER: | BHF MEMB(12) |
| FILE NAME: 08ell4notes.dgn | PLOT DATE: 17-FEB-2009 |
| PROJECT LEADER: C.P.WILLIAMS | DRAWN BY: D.D.BEARD |
| DESIGNED BY: H.I.SALLS | CHECKED BY: H.I.SALLS |
| INDEX & PROJECT NOTES SHEET | SHEET 2 OF 28 |

STATE OF VERMONT
AGENCY OF TRANSPORTATION

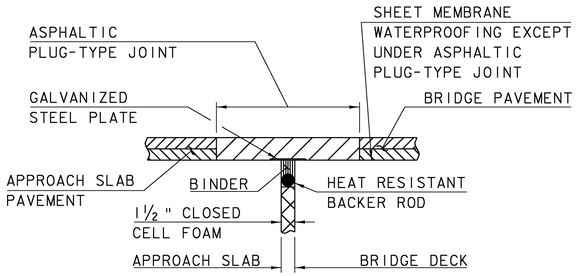
# QUANTITY SHEET 1

| SUMMARY OF ESTIMATED QUANTITIES | | | | | | | TOTALS | | DESCRIPTIONS | | | | DETAILED SUMMARY OF QUANTITIES | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ROADWAY | BRIDGE (US 2 Br. 48) | BRIDGE (VT 100B Br. 4) | FULL C.E. ITEMS | GRAND TOTAL | FINAL | UNIT | ITEMS | ITEM NUMBER | ROUND | QUANTITIES | UNIT | ITEMS |
| | 450 | 580 | | 1030 | | SY | COLD PLANING, BITUMINOUS PAVEMENT | 210.10 | | | | |
| | 4 | 3 | | 7 | | CWT | EMULSIFIED ASPHALT | 404.65 | | | | |
| 1 | | | | 1 | | LU | PRICE ADJUSTMENT, ASPHALT CEMENT (N.A.B.I.) | 406.50 | | | | |
| | 70 | 60 | | 130 | | GAL | WATER REPELLENT, SILANE | 514.10 | | | | |
| | 100 | 50 | | 150 | | LF | BRIDGE EXPANSION JOINT, ASPHALTIC PLUG | 516.10 | | | | |
| | 1280 | 635 | | 1915 | | SY | SHEET MEMBRANE WATERPROOFING, TORCH APPLIED | 519.20 | | | | |
| | | | | | | | BEGIN OPTION AA | | | | | |
| | 170 | 105 | | 275 | | LF | JOINT SEALER, HOT POURED | 524.11 | | | | |
| | 170 | 105 | | 275 | | LF | JOINT SEALER, COLD POURED | 524.13 | | | | |
| | | | | | | | END OPTION AA | | | | | |
| | 1605 | 895 | | 2500 | | SY | REMOVAL OF BRIDGE PAVEMENT | 529.10 | | | | |
| | 11525 | 5680 | | 17205 | | SF | SURFACE PREPARATION FOR MEMBRANE | 580.16 | | | | |
| | 40 | 8 | | 48 | | HR | UNIFORMED TRAFFIC OFFICERS | 630.10 | | | | |
| | 800 | 600 | | 1400 | | HR | FLAGGERS | 630.15 | | | | |
| | | | 1 | 1 | | LS | TESTING EQUIPMENT, BITUMINOUS | 631.17 | | | | |
| 1 | | | | 1 | | LS | MOBILIZATION/DEMOBILIZATION | 635.11 | | | | |
| | 1 | | | 1 | | LS | TRAFFIC CONTROL (US 2 - BRIDGE NO. 48) | 641.10 | | | | |
| | | 1 | | 1 | | LS | TRAFFIC CONTROL (VT 100B - BRIDGE NO. 4) | 641.10 | | | | |
| | 750 | 630 | | 1380 | | LF | DURABLE 4 INCH WHITE LINE | 646.400 | | | | |
| | 645 | 610 | | 1255 | | LF | DURABLE 4 INCH YELLOW LINE | 646.410 | | | | |
| | 11 | | | 11 | | LF | DURABLE 24 INCH STOP BAR | 646.480 | | | | |
| 1 | | | | 1 | | LU | PRICE ADJUSTMENT, FUEL (N.A.B.I.) | 690.50 | | | | |
| | 1 | 1 | | 2 | | LU | SPECIAL PROVISION (MAT DENSITY PAY ADJUSTMENT, SMALL QUANTITY) (N.A.B.I.) | 900.650 | | | | |
| | 1 | 1 | | 2 | | LU | SPECIAL PROVISION (MIXTURE PAY ADJUSTMENT) (N.A.B.I.) | 900.650 | | | | |
| | 323 | 222 | | 545 | | TON | SPECIAL PROVISION (BITUMINOUS CONCRETE PAVEMENT, SMALL QUANTITY) | 900.680 | | | | |

PROJECT NAME: WATERBURY-MORETOWN
PROJECT NUMBER: BHF MEMB(12)

FILE NAME: 08e114excel.dgn
PROJECT MANAGER: C.P.WILLIAMS
DESIGNED BY: H.I.SALLS
QUANTITY SHEET #1

PLOT DATE: 03/19/2009
DRAWN BY: D.D.BEARD
CHECKED BY: H.I.SALLS
SHEET 3 OF 28




ASPHALTIC PLUG-TYPE
JOINT DETAIL
(NOT TO SCALE)

## ASPHALTIC PLUG JOINT NOTES

I. INSTALLATION

A. LOCATE THE JOINT CENTRALLY OVER THE DECK OVERLAY EXPANSION GAP OR FIXED JOINT MARKED OUT TO THE MANUFACTURER'S RECOMMENDED WIDTH.

B. REMOVE THE BITUMINOUS CONCRETE PAVEMENT FULL DEPTH AS SHOWN ON THE PLANS. THE PAVEMENT SHALL BE DRY AND SAW CUT TO THE LIMITS REQUIRED TO PLACE THE JOINT. A PNEUMATIC HAMMER AND CHISEL MAY BE USED ADJACENT TO THE CURB ONLY WHEN SAW CUTTING IS NOT POSSIBLE.

C. BLAST CLEAN THE JOINT AREA OF DEBRIS AND ASPHALT. THOROUGHLY DRY THE JOINT AREA WITH COMPRESSED AIR PRIOR TO APPLYING BINDER MATERIAL.

D. REPAIR SPALLED AND DEFECTIVE CONCRETE WITH AN APPROVED MATERIAL AS AGREED UPON BY THE ENGINEER.

E. PLACE PROPERLY SIZED HEAT RESISTANT BACKER ROD IN THE MOVEMENT GAP ALLOWING FOR 1" +/- OF BINDER ABOVE THE ROD.

F. HEAT AND PLACE THE BINDER MATERIAL AS RECOMMENDED BY THE MANUFACTURER.

G. PLACE ¼" THICK BY 8" WIDE SECTIONS OF STEEL PLATE OVER THE CENTER OFTHE MOVEMENT GAP. SECURE THE PLATES FROM MOVING BY INSERTING LOCATING PINS THROUGH THE PRESTAMPED HOLES INTO BACKER ROD AND COVER WITH HOT BINDER. THE STEEL PLATES MAY BE OMITTED WHERE THE ENGINEER DETERMINES THAT THE APPROACH SLAB OR BRIDGE DECK WILL PROVIDE INADEQUATE SUPPORT AND WHERE VERTICAL MOVEMENT OF THE PLATES MIGHT OCCUR.

H. HEAT AND MIX THE BINDER MATERIAL AND AGGREGATE AS RECOMMENDED BY THE MANUFACTURER.

I. INSTALLATION OF MATERIAL, COMPACTION, AND TOP COATING SHALL BE AS RECOMMENDED BY THE MANUFACTURER.

J. IMMEDIATELY AFTER TOP COATING, CAST AN ANTI-SKID MATERIAL OVER THE JOINT TO REDUCE THE RISK OF TRACKING.

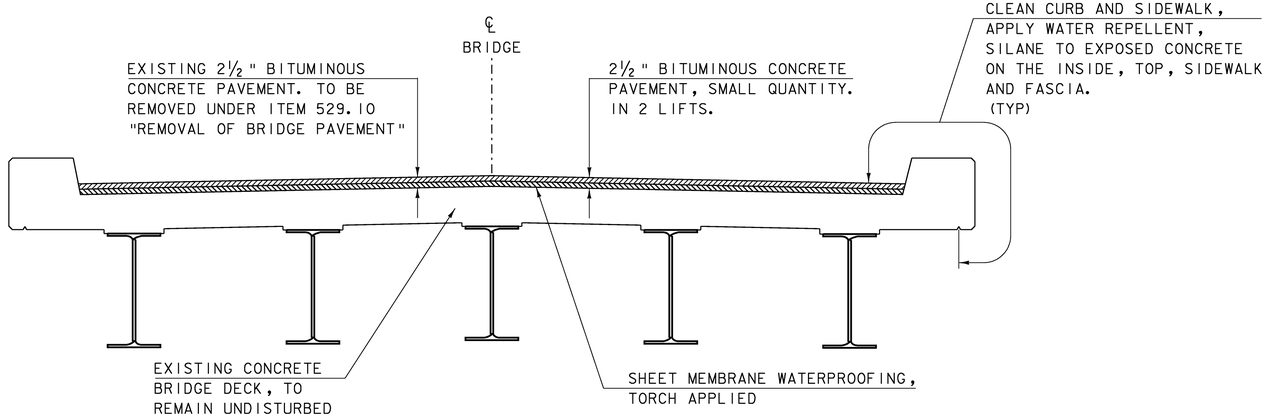
K. PROTECT JOINT FROM TRAFFIC UNTIL THE MATERIAL HAS COOLED TO 51 DEG C (125 DEG F) +/-.

2. WEATHER LIMITATIONS. (APPLY BINDER MATERIAL ONLY WHEN THE FOLLOWING CONDITIONS PREVAIL OR AS RECOMMENDED BY THE MANUFACTURER):

A. THE AMBIENT AIR TEMPERATURE IS AT LEAST 10 DEG C (50 DEG F) AND RISING.

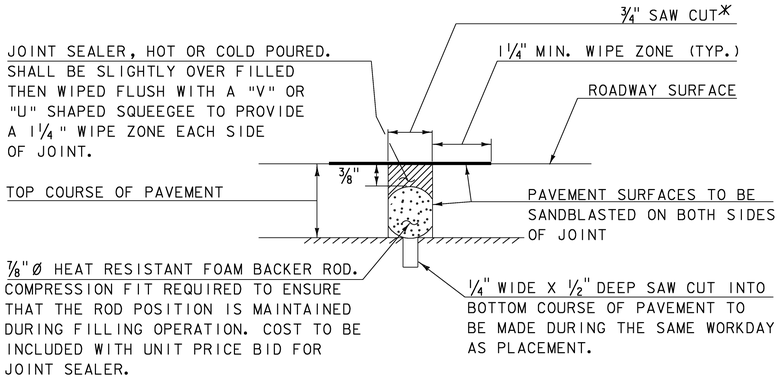
B. THE ROAD SURFACE IS DRY.

C. WEATHER CONDITIONS OR OTHER CONDITIONS ARE FAVORABLE AND ARE EXPECTED TO REMAIN SO FOR THE PERFORMANCE OF SATISFACTORY WORK.




TYPICAL BRIDGE SECTION
NTS

NOTE: EXISTING BRIDGE GEOMETRY VARIES BY LOCATION
TYPICAL SECTION SHOWN FOR SCHEMATIC PURPOSES ONLY.

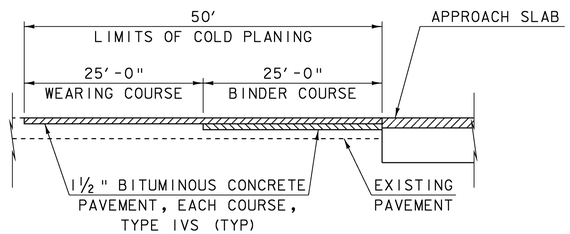



SAWED PAVEMENT JOINT DETAIL
(NOT TO SCALE)

*JOINT IS TO BE LOCATED ACCURATELY BY STRING LINING, OR OTHER MEANS, PRIOR TO PAVING, SO THAT THE SAW CUTS WILL BE MADE DIRECTLY OVER THE END OF CONCRETE DECK. JOINT SHALL BE CUT DRY IN A SINGLE PASS AND BE SEALED WITHIN 24 HOURS OR PRIOR TO EXPOSURE TO TRAFFIC. JOINT SHALL BE CLEANED PRIOR TO APPLYING THE JOINT SEALER.

| BRIDGE NUMBER | CROSSING OVER | LENGTH OF BRIDGE (FT) | CURB TO CURB PAVEMENT WIDTH (FT) | TOWN | MILE MARKER |
|---|---|---|---|---|---|
| US 2 BR 48 | WINOOSKI RIVER | 277.45 | 39.79 | WATERBURY | 4.93 |
| VT 100B BR 4 | MAD RIVER | 198.41 | 28.66 | MORETOWN | 1.61 |

BRIDGE LOCATION TABLE



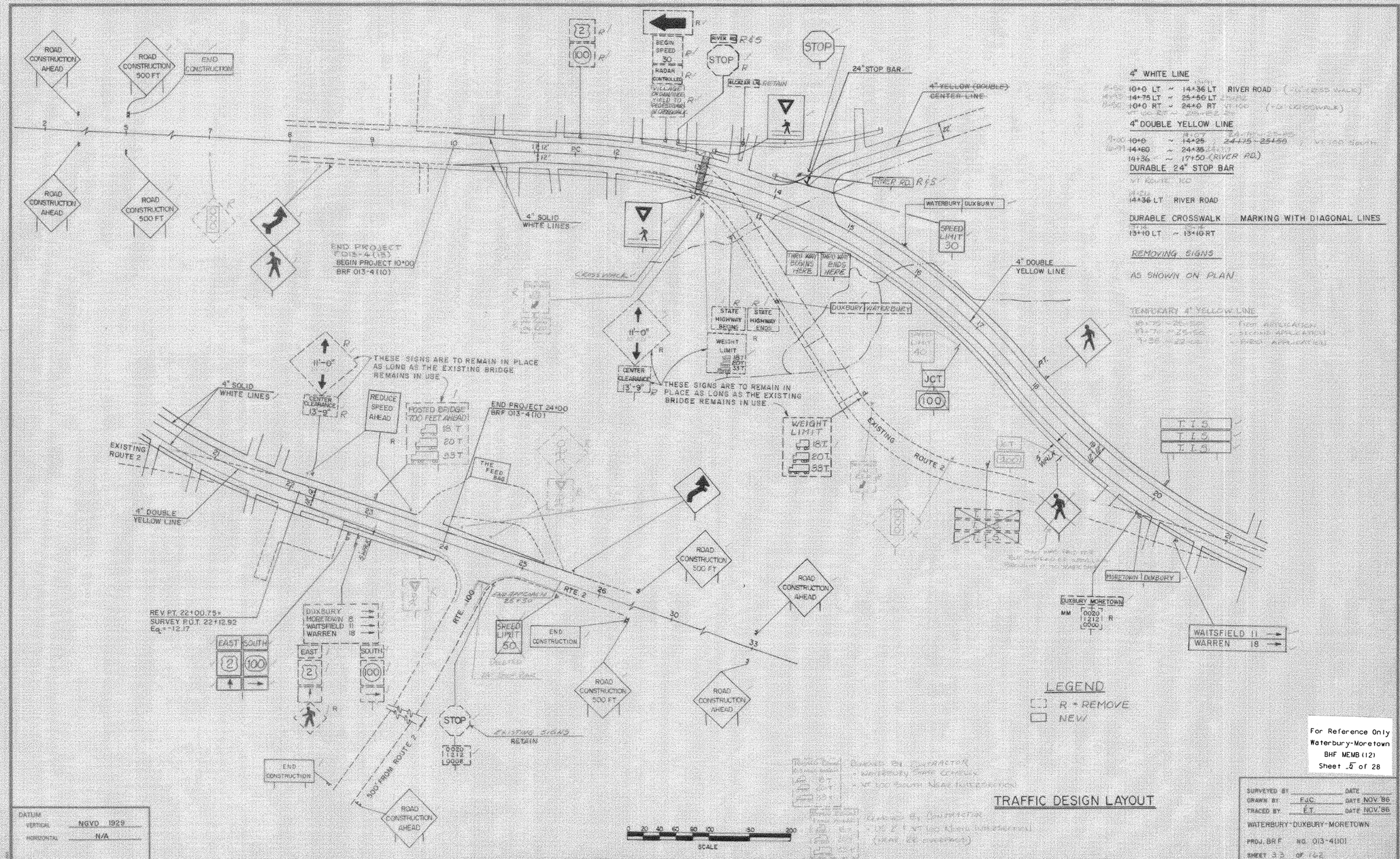

COLD PLANE APPROACH DETAIL
NTS
ALONG MAIN LINE ONLY

PROJECT NAME: WATERBURY-MORETOWN

PROJECT NUMBER: BHF MEMB(12)

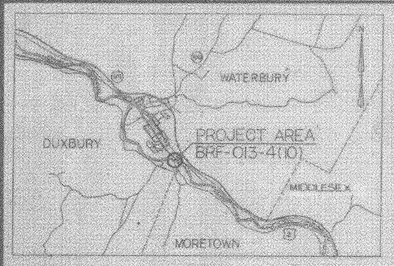
FILE NAME: 08ell4detail.dgn
PROJECT LEADER: C.P.WILLIAMS
DESIGNED BY: H.I.SALLS
DETAIL SHEET

PLOT DATE: 17-FEB-2009
DRAWN BY: D.D.BEARD
CHECKED BY: H.I.SALLS
SHEET 4 OF 28




For Reference Only
Waterbury-Moretown
BHF MEMB(12)
Sheet 5 of 28

## NEW HIGHWAY SECTION — BRIDGE APPROACHES



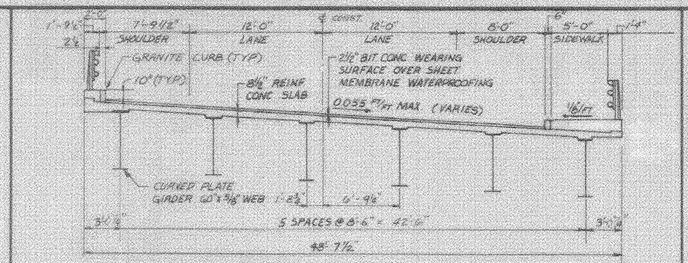

PROJECT LOCATION

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 |


BRIDGE TYPICAL SECTION

SCALE 3/16"=1'-0"

* EXCEPT FROM STA. 14+25 TO STA. 14+82.89 SEE BR 106

## 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 13/16" 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 BOTTON HEAD OR NEX 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 MEMBERS 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 PIP 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 OR 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+81.1 (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 529.16, 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 — DEREK 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 SPANS OVERALL LENGTH 244 FT. INVENTORY RATING
2. SPAN LENGTH(S) CENTER TO CENTER OF BEARINGS NORTH SPAN 103 FT. 4 IN OC. SOUTH SPAN 132 FT. 6 IN C-C
3. CLEAR SPAN LENGTH(S) NORMAL TO STREAM SAME AS ℄ B
4. WATERWAY AREA OF FULL OPENING (NORMAL TO STREAM) 4225 SQ. FT. VERTICAL CLEARANCE ABOVE STREAMBED 23.5 FT.
5. WATER SURFACE ELEVATION @ Q 2.33 410.8 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 529.16

## NEW STRUCTURE

STRUCTURE GEOMETRY:
1. STRUCTURE TYPE 2 SPAN CONTINUOUS WELDED PLATE GIRDER OVERALL LENGTH 277'-5⅜" ALONG ℄ CONST.
2. SPAN LENGTH(S) CENTER TO CENTER OF BEARINGS 139'3⅛" FT. ALONG ℄ CONSTRUCTION
3. VERTICAL CLEARANCE ABOVE STREAMBED OR ROAD UNDER 30.5 FT @ EAST FASCIA, 24 FT @ WEST FASCIA.
4. CLEAR SPAN LENGTH(S) NORMAL TO STREAM NORTH SPAN 103 FT. SOUTH SPAN 130 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 411.1 VELOCITY 6.20 FPS
   Q 10 24000 CFS WATER ELEVATION 423.1 VELOCITY 7.66 FPS
   Q 25 28500 CFS WATER ELEVATION 425.5 VELOCITY 7.37 FPS
   Q 50 34000 CFS WATER ELEVATION 426.1 VELOCITY 7.63 FPS
   Q 100 38500 CFS WATER ELEVATION 428.2 VELOCITY 8.87 FPS
2. DRAINAGE AREA 175 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 4.12 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? Q50, 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 Q 100
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 2320 CFS DEPTH EL. 417
12. STREAMBANK OR CHANNEL PROTECTION REQUIRED TYPE NE
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 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 | 4 AXLE | 3A STR. | 4A STR. | 5A SEMI |
| INVENTORY 0.55 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 PILING | AME 1-25-91 |

For Reference Only
Waterbury-Moretown
BHF MEMB (12)
Sheet 6 of 28

# STATE OF VERMONT
## AGENCY OF TRANSPORTATION

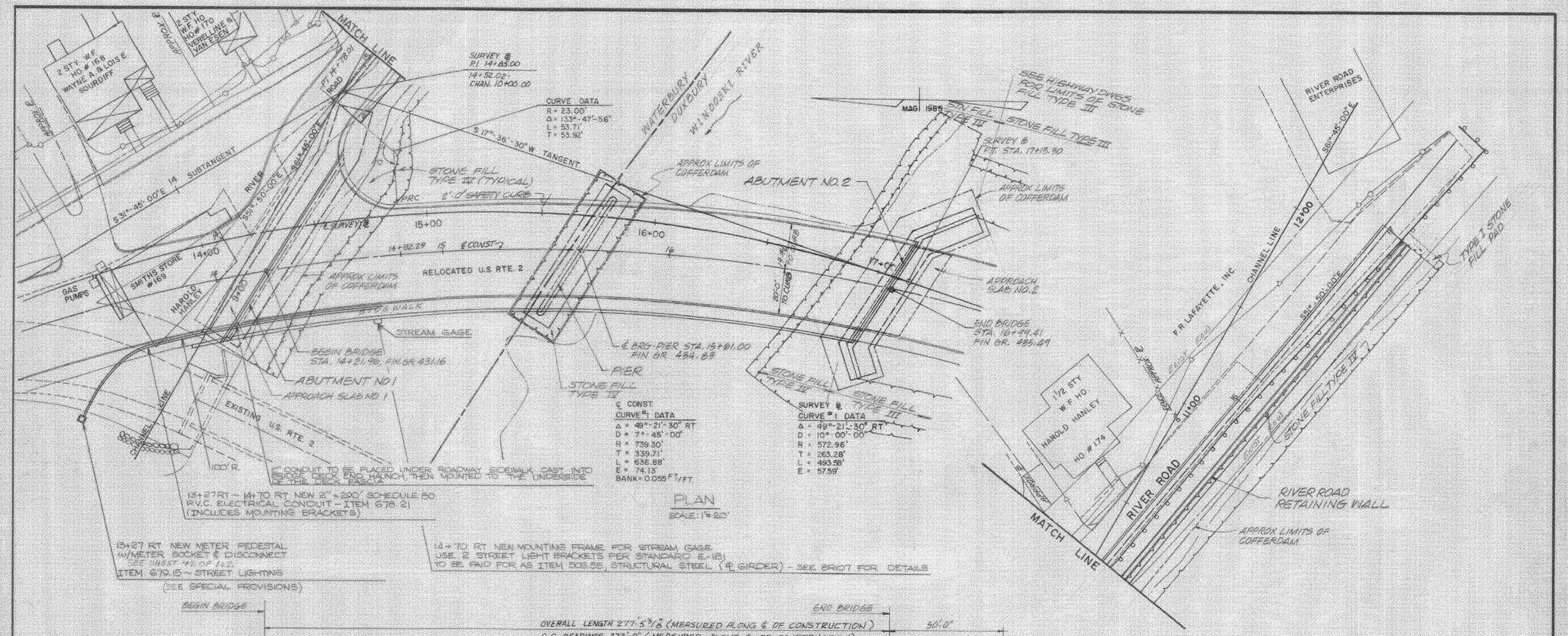
| | |
|---|---|
| TOWN OF WATERBURY-DUXBURY-MORETOWN | Bridge No. 48 |
| | Log Sta. |
| HIGHWAY NO. U.S. RTE. 2 | Surv. Sta. 15+61 |

U.S. RTE. 2 OVER WINOOSKI RIVER

PRELIMINARY INFORMATION

| | |
|---|---|
| Designed by D.W.C. | Drawn by G.T.W. |
| Checked by L.J.C. date 9/90 | Bridge Design Supervisor D.W.C. date 9/90 |
| PROJECT WATERBURY-DUXBURY-MORETOWN | PROJECT NO. BRF-013-4(10) |
| Bridge Sheet No. BR100 | Sheet 45 of 102 |

BR-2




For Reference Only
Waterbury-Moretown
BHF MEMB (12)
Sheet 7 of 28

# STATE OF VERMONT
## AGENCY OF TRANSPORTATION

| | |
|---|---|
| Town Of WATERBURY-DUXBURY-MORETOWN | Bridge No. 48 |
| Highway No. U.S. RTE. 2 | Log Sta. Surv. Sta. 15+61 |

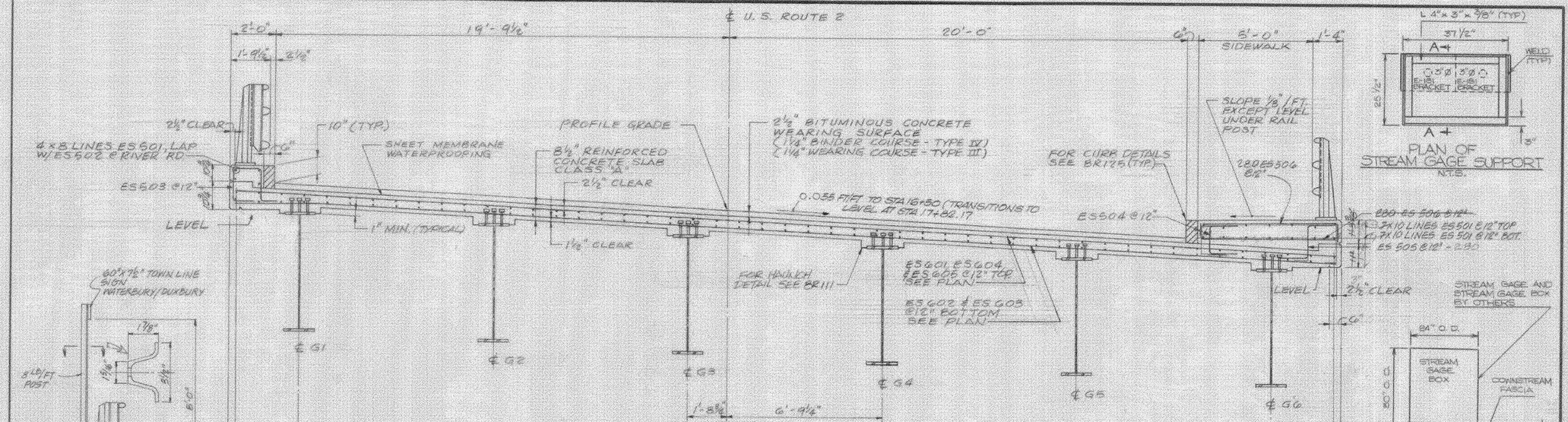
U.S. RTE. 2 OVER WINOOSKI RIVER

PLAN AND ELEVATION

| | |
|---|---|
| Designed By D.W.C. | Drawn By G.T.W. |
| Checked By L.J.C. Date 9/89 | Bridge Design Supervisor D.W.C. Date 9/90 |
| PROJECT WATERBURY-DUXBURY-MORETOWN | PROJECT NO. BRF-013-4(10) |
| L.G.C. Info. | |
| Bridge Sheet No. BR101 | Sheet 44 of 162 |

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

BR-6




NOTES:

1. THE BRIDGE RAILING SHALL BE 3 RAIL ALUMINUM RAILING ON THE SIDEWALK SIDE (WEST FASCIA) SHALL HAVE SPINDLES. SEE BRIDGE SHEET NO. BR127.
2. SEE DRAWING BR111 FOR GIRDER HAUNCH AND SHEAR CONNECTOR DETAILS.
3. ALL SUPERSTRUCTURE REINFORCING STEEL SHALL BE EPOXY COATED.
4. * - EXCEPT FROM STA. 14+25 TO 14+82.29 (SEE BRIDGE DECK REINFORCING PLAN, BR108 & SECTIONS A-A & B-B FOR DETAILS AT NORTHEAST CORNER.)

# STATE OF VERMONT
## AGENCY OF TRANSPORTATION

| | |
|---|---|
| Town Of WATERBURY-DUXBURY-MORETOWN | Bridge No. 45 |
| Highway No. U.S. RTE 2 | Log Sta. |
| | Surv. Sta. 15+61 |

U.S. RTE. 2 OVER WINOOSKI RIVER

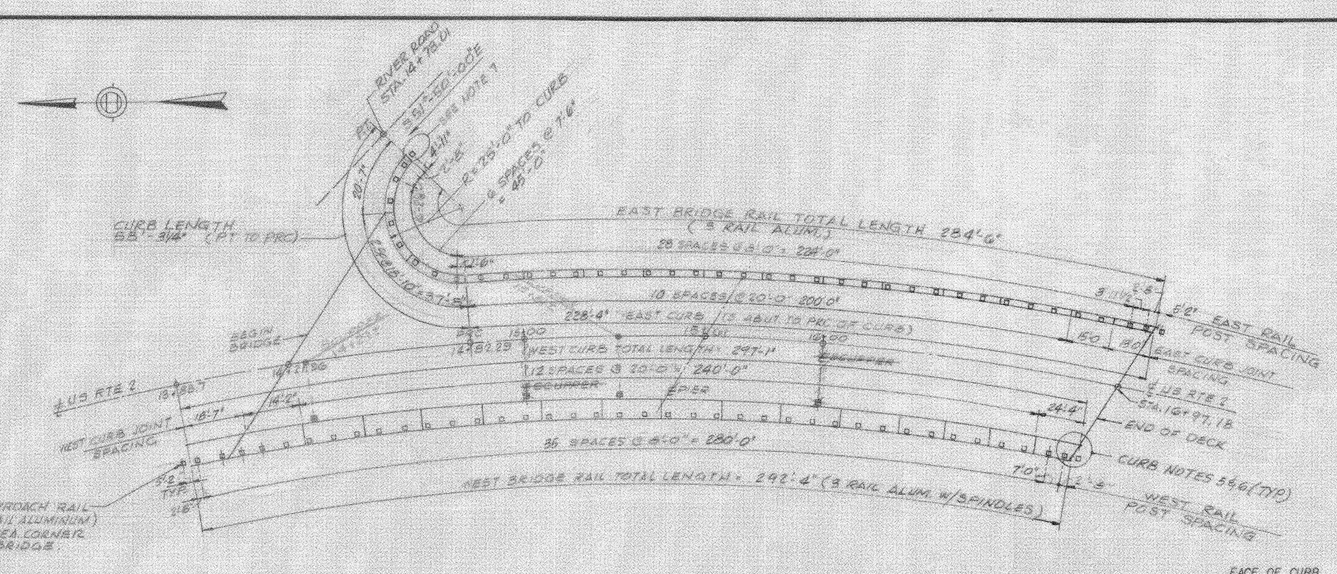
SUPERSTRUCTURE DETAILS

| | |
|---|---|
| Designed By C.J.B | Drawn By R.J.L |
| Checked By L.J.C Date 9/89 | Bridge Design Supervisor DWC Date 9/90 |
| PROJECT WATERBURY-DUXBURY-MORETOWN | PROJECT NO. BRF-013-4(10) |
| L.G.C. Info. | |
| Bridge Sheet No. BR 107 | Sheet 51 of 162 |

For Reference Only
Waterbury-Moretown
BHF MEMB (12)
Sheet 28 of 28

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

BR-6




## CURB, RAILING & SCUPPER PLAN

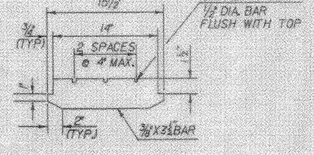
SCALE: 1" = 20'

## SCUPPER NOTES

1. STRUCTURAL TUBING SHALL CONFORM TO ASTM A500 OR A501. ALL OTHER STEEL SHALL CONFORM TO ASTM A36. THE WHOLE SCUPPER ASSEMBLY SHALL BE GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH ASTM A153.
2. ALL SURFACES OF SCUPPER WHICH WILL CONTACT CONCRETE SHALL BE COATED WITH EPOXY BONDING COMPOUND IN ACCORDANCE WITH SECTION 718. THE COST OF THIS WORK SHALL BE INCLUDED WITH THE UNIT PRICE BID FOR CONCRETE, CLASS A.
3. SCUPPER SHALL BE PAID FOR AS STRUCTURAL STEEL.
4. SPECIAL CARE SHALL BE TAKEN TO SEAL WATERPROOFING MEMBRANE AROUND SCUPPERS SIMILAR TO METHOD USED AT CURB.
5. THE TOP SURFACE OF SCUPPER SHALL BE SLOPED TO MATCH ROADWAY SLOPE AND GRADE.
6. ANY GALVANIZED AREAS THAT ARE WELDED IN THE FIELD MUST BE COATED WITH ZINC RICH PRIMER AFTERWARDS ACCORDING TO VERMONT SPECIFICATION 708.01(2).

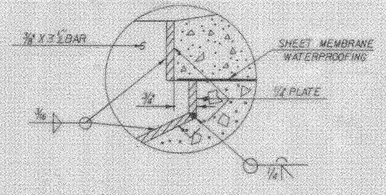
## CURB & RAILING NOTES

1. THE 2'-0" CURB SHALL BE PLACED IN 20'-0" SECTIONS AS PER DWG. BR 125. CURB JOINT DETAILS, PLACEMENT DETAILS FOR THE CURB SHALL BE SUBMITTED TO THE BRIDGE RAILING FABRICATOR BY THE CONTRACTOR.
2. BRIDGE RAIL POST SHALL BE 11'-6" MINIMUM FROM CURB CONSTRUCTION JOINTS (UNLESS OTHERWISE NOTED).
3. FOR CURB JOINT DETAILS AND GRANITE CURB DETAILS, SEE BR 123.
4. FOR BRIDGE RAILING DETAILS SEE BR 127 - BR 129
5. FOR APPROACH RAIL - (2 RAIL ALUMINUM) SEE BR 129
6. FOR CURB DETAILS @ SOUTH END OF BRIDGE SEE BR 116
7. FOR CONTINUATION OF CURB & RAIL ON RIVER ROAD SEE BR 128

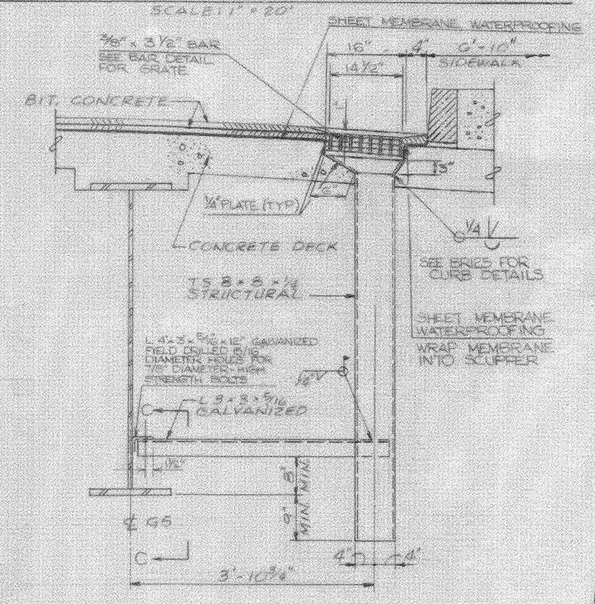



### BAR DETAIL FOR GRATE

SCALE: 1 1/2" = 1'-0

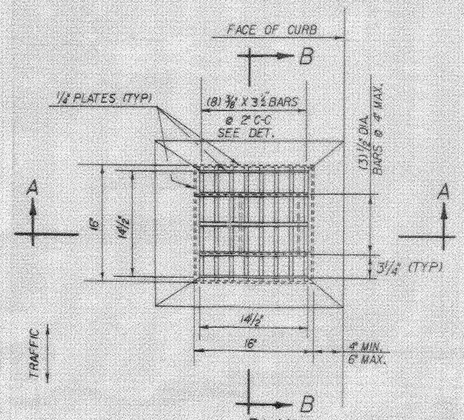



### DETAIL "C"



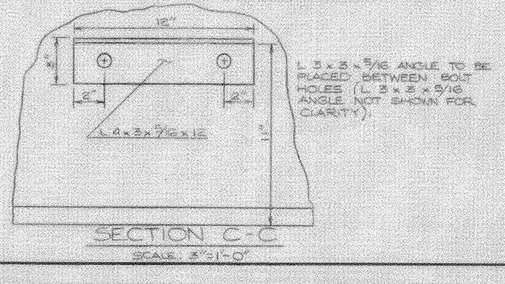

### SECTION B-B

SCALE: 1" = 1'-0"



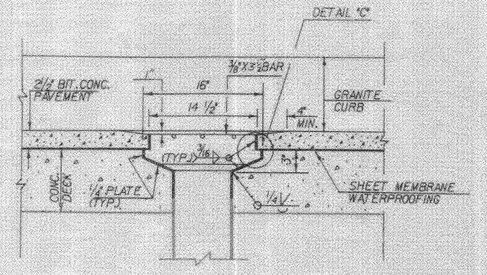

### PLAN

SCALE 1 1/2" = 1'-0




### SECTION C-C

SCALE: 3" = 1'-0"




### SECTION B-B

SCALE: 1 1/2" = 1'-0

REVISED MAY 14, 1991 RSC

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

# STATE OF VERMONT
## AGENCY OF TRANSPORTATION

| | |
|---|---|
| Town Of WATERBURY-DUXBURY-MORETOWN | Bridge No. 48 |
| Highway No. U.S. RTE. 2 | Log Sta. Surv. Sta. 15+61 |

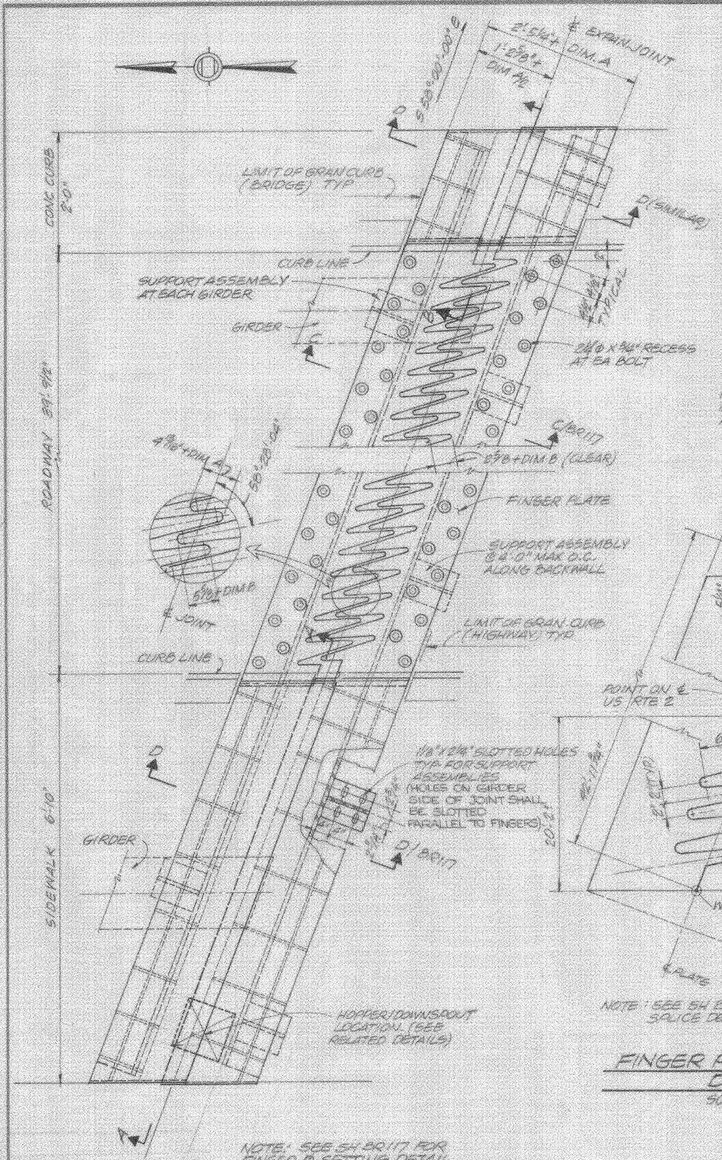
U.S. RTE. 2 OVER WINOOSKI RIVER

CURB, RAILING & SCUPPER LAYOUTS

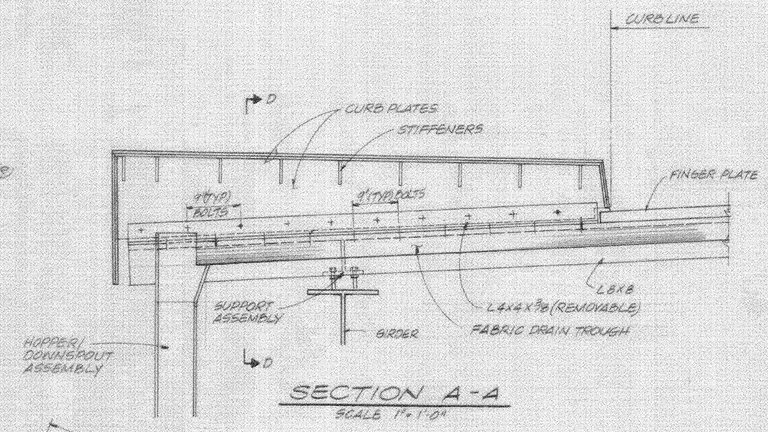
| | |
|---|---|
| Designed By C J B | Drawn By R J L |
| Checked By LJC Date 9/89 | Bridge Design Supervisor DWC Date 9/90 |
| PROJECT WATERBURY-DUXBURY-MORETOWN | PROJECT NO. BRF-013-4(10) |
| L.C.C. Info. | |
| Bridge Sheet No. BR 109 | Sheet 53 of 162 |

For Reference Only
Waterbury-Moretown
BHF MEMB (12)
Sheet 9 of 28

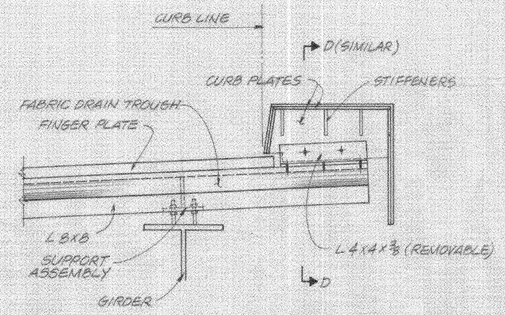
BR-6



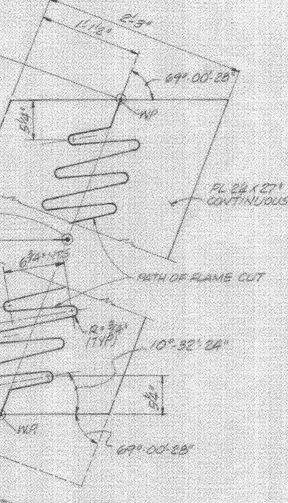

## PLAN OF EXPANSION JOINT
SCALE 1"=1'-0"




## SECTION A-A
SCALE 1"=1'-0"

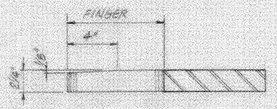



## SECTION B-B
SCALE 1"=1'-0"




NOTE: SEE SH BR117 FOR FINGER @ SPLICE DETAIL.

## FINGER PLATE CUTTING DETAIL
SCALE 1/2"=1'-0"




## TYPICAL FINGER
NOT TO SCALE

### JT. DIMENSION TABLE

| TEMP(DEG F) | DIM A | DIM B |
|---|---|---|
| 0° | +0.825" | +0.968" |
| 15° | +0.550" | +0.646" |
| 30° | +0.275" | +0.323" |
| 45° | 0 | 0 |
| 60° | -0.275" | -0.323" |
| 75° | -0.550" | -0.646" |
| 90° | -0.825" | -0.968" |
| 105° | -1.101" | -1.291" |

## EXPANSION JOINT NOTES

EXPANSION JOINT NOTES

1. THE FINAL FINISH OF THE EXPANSION JOINT SHALL BE COVERED DURING THE PLACING OF THE BRIDGE DECK CONCRETE.
2. ALL STEEL COMPONENTS SHALL BE ASTM A-588, UNLESS OTHERWISE NOTED. PAYMENT FOR THE FINGER PLATE ASSEMBLY, COMPLETE IN PLACE, SHALL BE UNDER ITEM 516.10, "BRIDGE EXPANSION JOINT (TOTAL MOVEMENT = 3.23")".
3. WELDED STUDS SHALL BE INCLUDED IN THE COST FOR ITEM 516.10. THE CURB PLATES SHALL BE GALVANIZED AND PAINTED GRAY IN COLOR (FEDERAL COLOR NO. 26493), IN ACCORDANCE WITH SECTION 513.03(c) "GALVANIZED SURFACES".
4. THE 2-1/4" THICK FINGER PLATES SHALL BE CUT FROM 2-1/4" x 27" PLATE, AND SEPARATED INTO FOUR SECTIONS (SEE DS 117 FOR DETAILS). THE FABRIC TROUGH SHALL BE CONTINUOUS PREFORMED FABRIC MATERIAL CONFORMING TO SECTION 701.07.
5. THREE COATS OF PAINT (IN ACCORDANCE WITH SECTION 513) SHALL BE APPLIED TO THE INTERIOR SURFACE OF THE EXPANSION JOINT.
6. THE HOPPER/DOWNSPOUT ASSEMBLY SHALL BE A-36 STEEL (GALVANIZED). PAYMENT FOR THE HOPPER/DOWNSPOUT ASSEMBLY SHALL BE INCLUDED IN THE UNIT PRICE BID, PER POUND, FOR STRUCTURAL STEEL.
7. WHERE INDICATED, EPOXY BONDING COMPOUND CONFORMING TO SECTION 719.02 SHALL BE APPLIED. PAYMENT TO BE INCLUDED IN THE UNIT PRICE FOR "CONCRETE, CLASS A", ITEM 501.22.

# STATE OF VERMONT
## AGENCY OF TRANSPORTATION

| | |
|---|---|
| Town Of WATERBURY-DUXBURY-MORETOWN | Bridge No. 48 |
| Highway No. U.S. RTE. 2 | Log Sta. Surv. Sta. 15+61 |

U.S. RTE. 2 OVER WINOOSKI RIVER

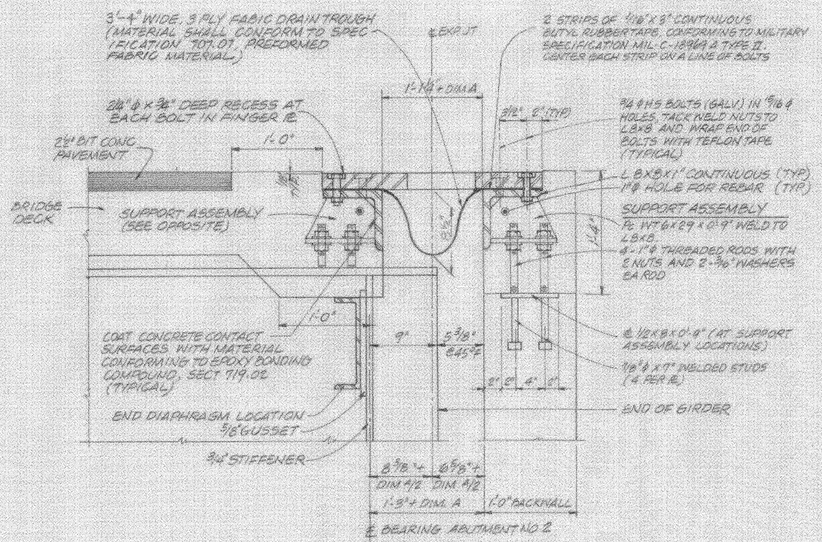
FINGER JOINT DETAILS

| | |
|---|---|
| Designed By LJC | Drawn By GAT |
| Checked By DWC Date 6/90 | Bridge Design Supervisor DWC Date 9/90 |
| PROJECT WATERBURY-DUXBURY-MORETOWN | PROJECT NO. BRF-013-4(10) |
| L.O.C. Info. | |
| Bridge Sheet No. BR116 | Sheet LO of 162 |

For Reference Only
Waterbury-Moretown
BHF MEMB (12)
Sheet LO of 28

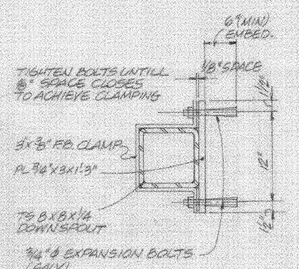
BARNES AND JARNIS, INC.
CONSULTING ENGINEERS
BOSTON, MASS.

BR-6



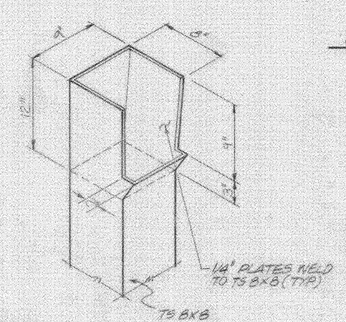

SECTION C-C

SCALE 1½" = 1'-0"




BACKWALL CLAMP DETAIL

SCALE 1½" = 1'-0"

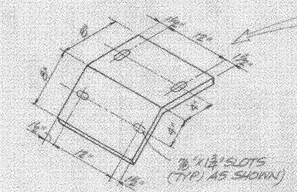



HOPPER DETAIL

SCALE 1½" = 1'-0"

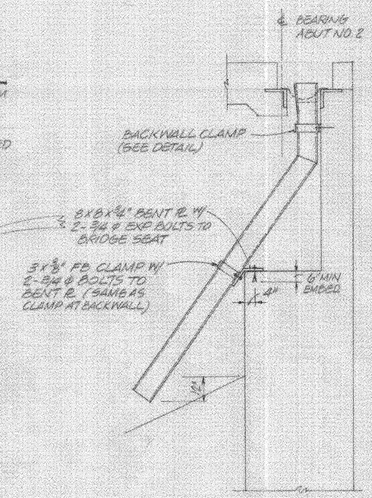
DOWNSPOUT NOTES

1. STRUCTURAL TUBING SHALL CONFORM TO ASTM A 500 OR 501. GALVANIZED IN ACCORDANCE WITH ASTM A-123
2. FLAT-BAR CLAMPS AND PLATES SHALL BE GALVANIZED OR METALLIZED AS PER SECTION 731.05.
3. DOWNSPOUT AND ACCESSORIES TO BE PAID FOR AS STRUCTURAL STEEL.



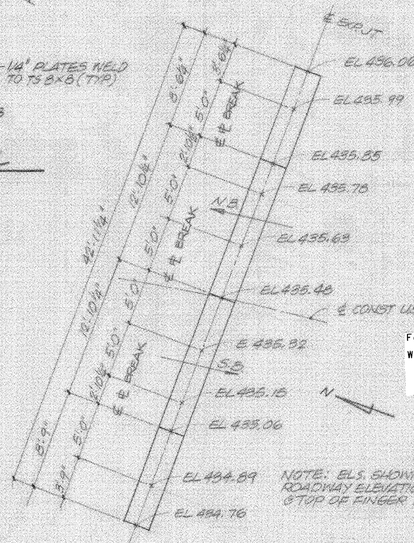

BENT PLATE

SCALE ½" = 1'-0"




SECTION AT HOPPER / DOWNSPOUT ASSEMBLY

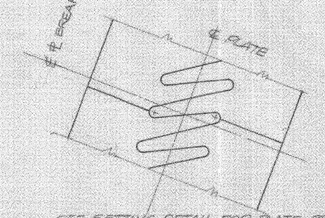
SCALE 12" = 1'-0"




FINGER 12 SETTING DETAIL

SCALE ⅜" = 1'-0"

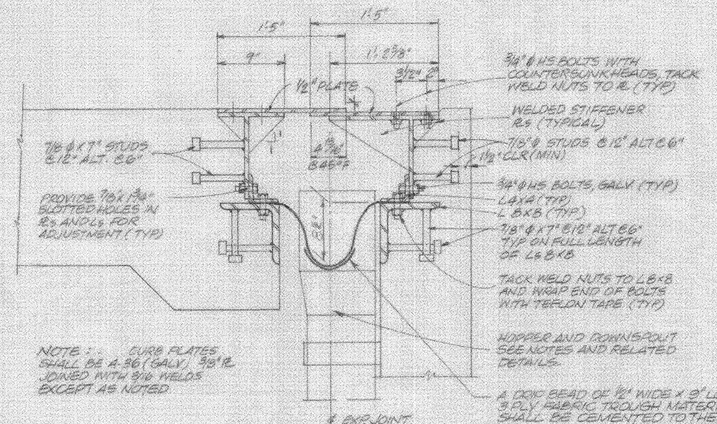
NOTE: SEE EXP JT PLAN AND RELATED DETAILS ON SH BR 116




SEE SETTING DETAIL FOR PLATE BREAK LOCATIONS. SEE CUTTING DETAIL SH BR 116 FOR INFORMATION NOT SHOWN.

FINGER 12 SECTION BREAK DETAIL

SCALE 1½" = 1'-0"




SECTION D-D

SCALE 1½" = 1'-0"

* PROVIDE AN 1/8" CLEARANCE BETWEEN THE SURFACES OF THE FIXED AND SLIDING CURB PLATES.

For Reference Only
Waterbury-Moretown
BHF MEMB (12)
Sheet 11 of 28

| REVISED: | BARNES AND JARNIS, INC. |
|---|---|
| - HOPPER DETAIL<br>- FABRIC DRAIN TROUGH<br>9-18-91 VA.O.T. | CONSULTING ENGINEERS<br>BOSTON, MASS. |

# STATE OF VERMONT
## AGENCY OF TRANSPORTATION

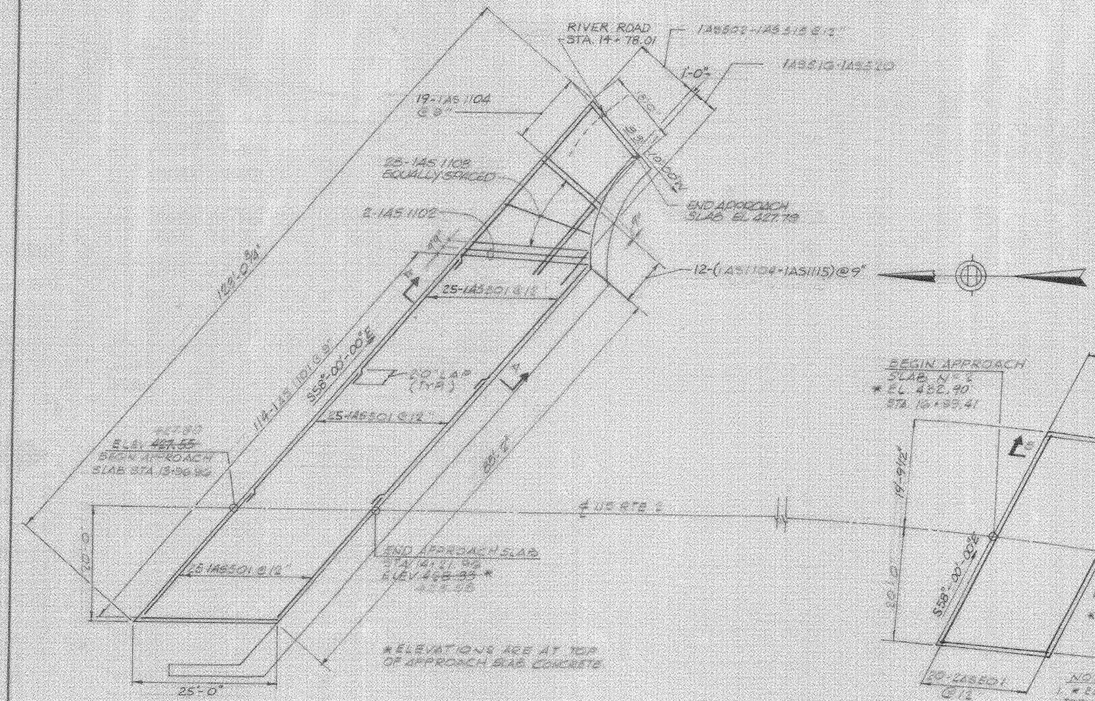
| | |
|---|---|
| Town Of WATERBURY-DUXBURY-MORETOWN | Bridge No. 48 |
| Highway No. U.S. RTE. 2 | Leg Sta.<br>Surv. Sta. 15+61 |

U.S. RTE. 2 OVER WINOOSKI RIVER

FINGER JOINT DETAILS

| | |
|---|---|
| Designed By LJC | Drawn By GAT |
| Checked By DWC Date 6/90 | Bridge Design Supervisor DWC Date 9/90 |
| PROJECT WATERBURY-DUXBURY-MORETOWN | PROJECT NO. BRF 013 4(10) |
| I.G.C. Info. | |
| Bridge Sheet No. BR 117 | Sheet 61 of 162 |

BR-4




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 |
| Highway No. U.S. RTE. 2 | Log Sta. |
| | Surv. Sta. 15+61 |

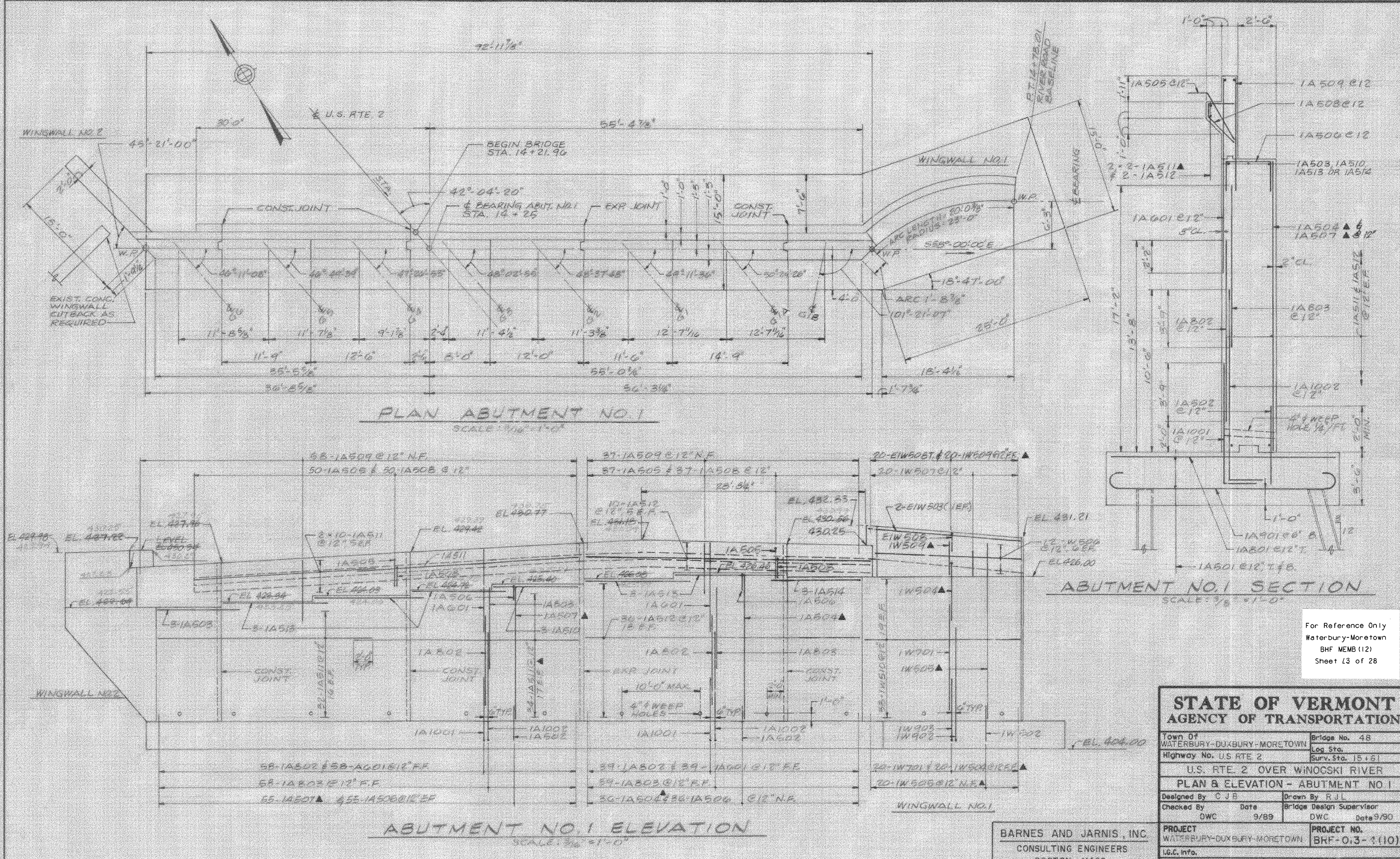
U.S. RTE. 2 OVER WINOOSKI RIVER

APPROACH SLAB DETAILS

| | |
|---|---|
| Designed By C.J.B. | Drawn By D.F.H. |
| Checked By LJC Date 9/89 | Bridge Design Supervisor DWC Date 9/90 |
| PROJECT WATERBURY-DUXBURY-MORETOWN | PROJECT NO. BRF-013-4(10) |
| L.O.C. Info. | |
| Bridge Sheet No. BR 116 | Sheet 62 of 162 |

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

BR-4




For Reference Only
Waterbury-Moretown
BHF MEMB (12)
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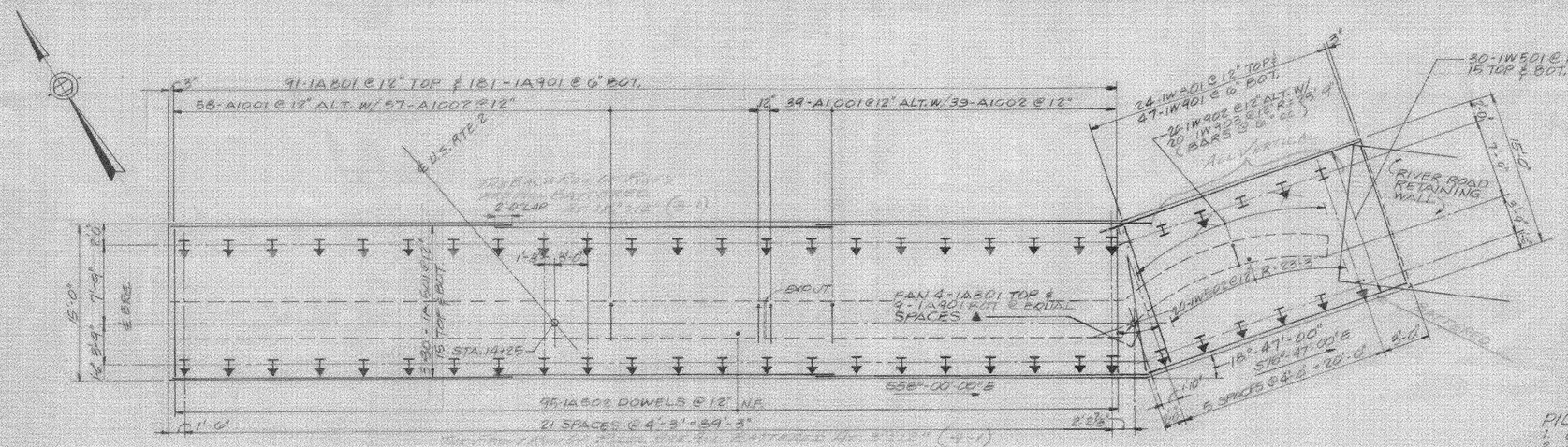
BARNES AND JARNIS, INC.
CONSULTING ENGINEERS
BOSTON, MASS.

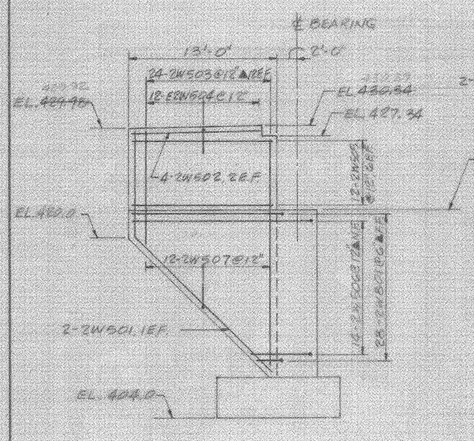
**STATE OF VERMONT**
**AGENCY OF TRANSPORTATION**

| | |
|---|---|
| Town Of WATERBURY-DUXBURY-MORETOWN | Bridge No. 48 |
| | Log Sta. |
| Highway No. U.S. RTE. 2 | Surv. Sta. 15+61 |
| U.S. RTE. 2 OVER WINOOSKI RIVER | |
| PLAN & ELEVATION - ABUTMENT NO. 1 | |
| Designed By C J B | Drawn By R J L |
| Checked By DWC Date 9/89 | Bridge Design Supervisor DWC Date 9/90 |
| PROJECT WATERBURY-DUXBURY-MORETOWN | PROJECT NO. BHF-0.3-1(10) |
| I.G.C. Info. | |
| Bridge Sheet No. BR 120 | Sheet 64 of 162 |



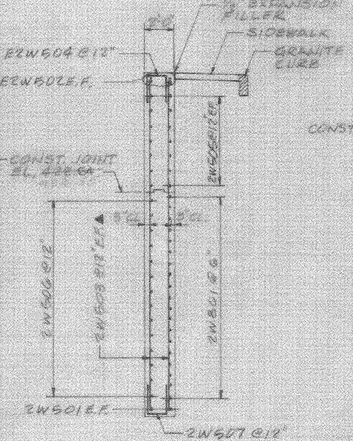

## ABUTMENT NO. 1 PILE & FOOTING REINF. PLAN

SCALE: 3/16" = 1'-0"



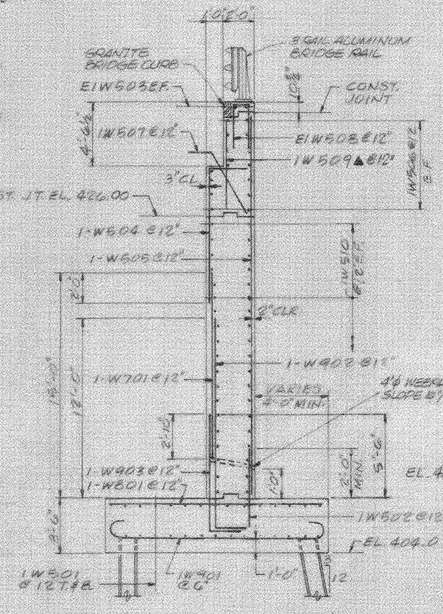

## WINGWALL NO. 2 ELEVATION

SCALE: 3/16" = 1'-0"



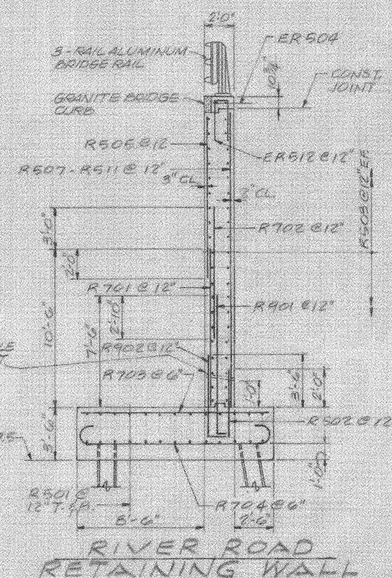

## WINGWALL NO. 2 SECTION

SCALE: ¼" = 1'-0"




## WINGWALL NO. 1 SECTION

SCALE: ½" = 1'-0"




## RIVER ROAD RETAINING WALL

SCALE: ½" = 1'-0"

### PILE NOTES

1. ESTIMATED PILE LENGTH 45 FT.
2. ALL PILES TO BE CAST-IN PLACE CONCRETE
3. DESIGN LOAD 140 KIPS
4. POINT ENDS OF ALL PILES SHALL BE CLOSED WITH A ½" THICK FLAT PLATE (SEE BR12A FOR DETAIL)
5. I INDICATES VERTICAL PILE (PP 12-¾"ø x 0.375 CONCRETE FILLED)
   ↧ BATTERED PILE - ARROW INDICATES DIRECTION OF BATTER AT 8:12

### COFFERDAM NOTES

1. COFFERDAM DESIGN SHOULD BE BASED ON ORDINARY HIGH WATER ELEVATION OF 419.1. MINIMUM TOP OF COFFERDAM ELEVATION SHALL BE 421.1.
2. LIMITS OF COFFERDAM SHALL BE A MINIMUM OF 3'-0" OUTSIDE OF FOOTING OR AS REQUIRED TO CLEAR BATTERED PILES AT THE REQUIRED EMBEDMENT DEPTH.
3. A CONCRETE SEAL SHALL BE PROVIDED WITH A THICKNESS AS DETERMINED FROM THE DESIGN ORDINARY HIGH WATER ELEVATION OF 419.1.

For Reference Only
Waterbury-Moretown
BHF MEMB(12)
Sheet 14 of 28

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

# STATE OF VERMONT
## AGENCY OF TRANSPORTATION

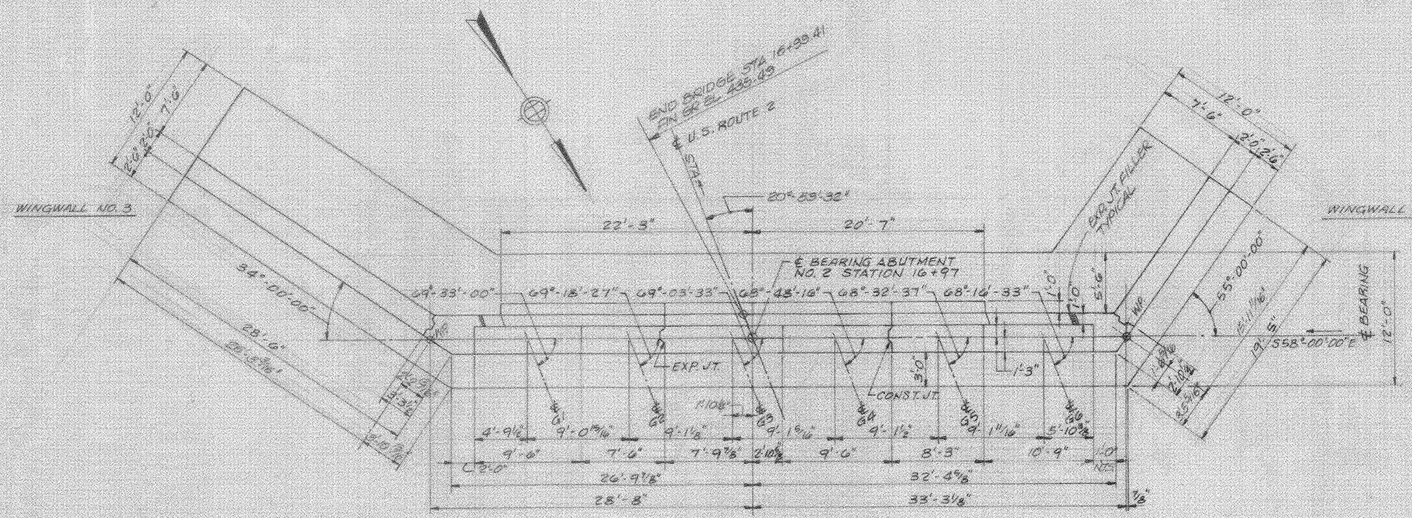
| | |
|---|---|
| Town Of WATERBURY-DUXBURY-MORETOWN | Bridge No. 48 |
| | Log Sta. |
| Highway No. U.S. RTE. 2 | Surv. Sta. 15+61 |

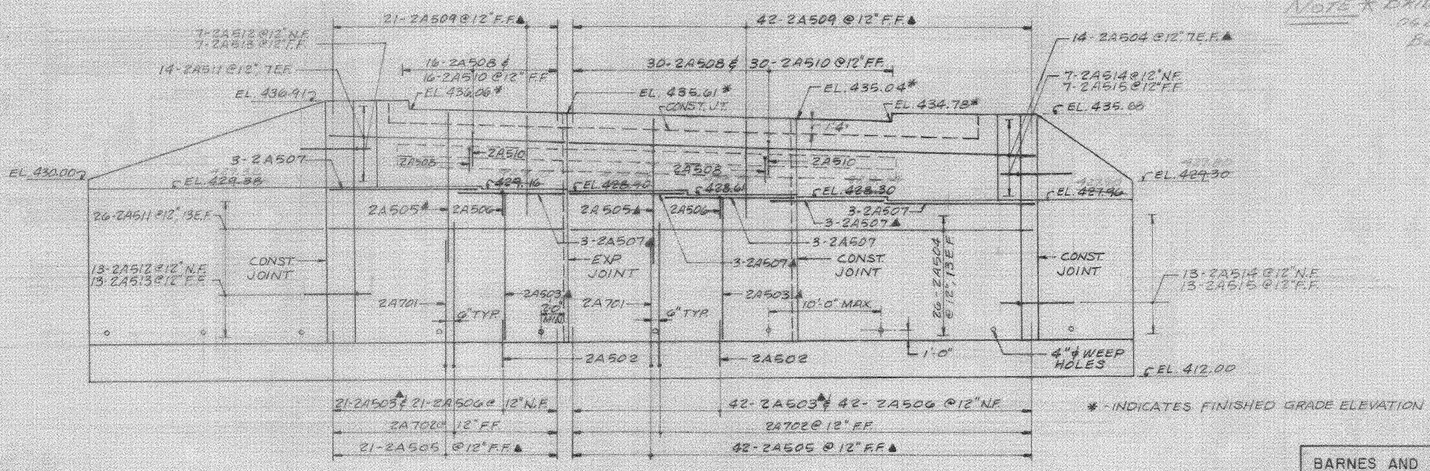
U.S. RTE. 2 OVER WINOOSKI RIVER

ABUTMENT NO. 1 PILE PLAN & SECTIONS

| | |
|---|---|
| Designed By C.J.B | Drawn By R.J.L |
| Checked By DWC Date 9/89 | Bridge Design Supervisor DWC Date 9/90 |
| PROJECT WATERBURY-DUXBURY-MORETOWN | PROJECT NO. BRF-013-4(10) |
| W.B.S. Info. | |
| Bridge Sheet No. BR 121 | Sheet 45 of 162 |

BR-4




NOTE * BRIDGE SEAT ELEVATIONS CALLED FOR DUE TO EXTRA THICKNESS OF BEARING DEVICES.

* - INDICATES FINISHED GRADE ELEVATION

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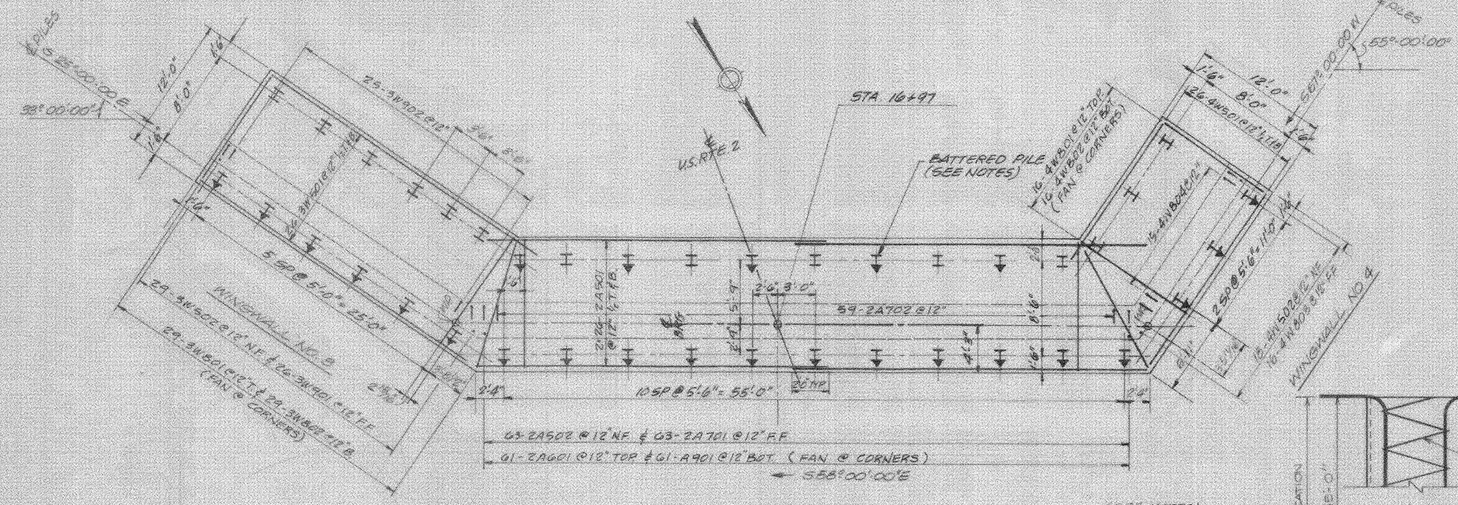
# STATE OF VERMONT
## AGENCY OF TRANSPORTATION

| | |
|---|---|
| Town Of WATERBURY-DUXBURY-MORETOWN | Bridge No. 48 |
| Highway No. U.S. RTE. 2 | Log Sta. / Surv. Sta. 15+61 |
| U.S. RTE. 2 OVER WINOOSKI RIVER | |
| PLAN & ELEVATION - ABUTMENT NO. 2 | |
| Designed By CJB | Drawn By RJL |
| Checked By DWC Date 9/89 | Bridge Design Supervisor DWC Date 9/90 |
| PROJECT WATERBURY-DUXBURY-MORETOWN | PROJECT NO. BRF-013-4(10) |
| I.C.C. Info. | |
| Bridge Sheet No. BR 123 | Sheet 67 of 162 |

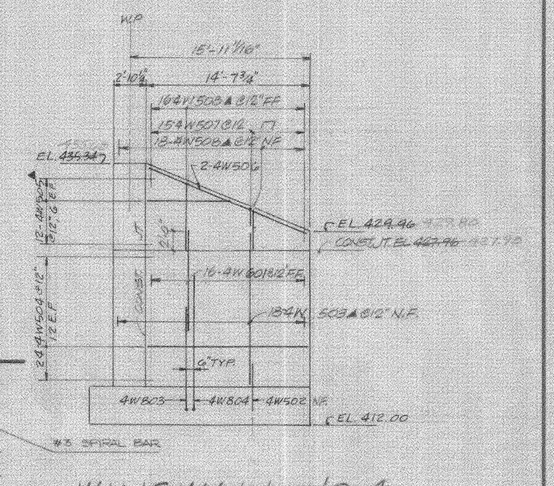
BARNES AND JARNIS, INC.
CONSULTING ENGINEERS
BOSTON, MASS.

BR-6



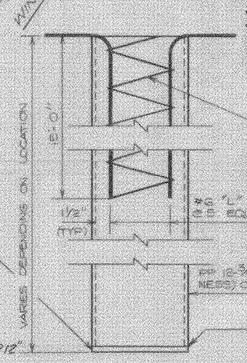

ABUTMENT NO. 2 PILE & FOOTING REINF. PLAN (SEE NOTES)

SCALE: 3/16" = 1'-0"




WINGWALL NO. 4 ELEVATION

SCALE: 3/16" = 1'-0"



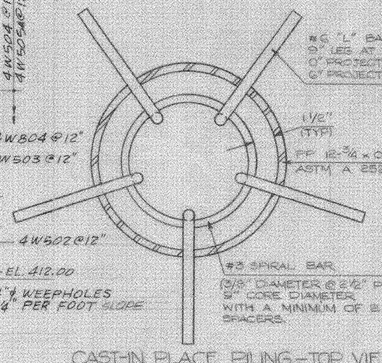

CAST-IN PLACE PILING - ELEVATION

SCALE: 1 1/2" = 1'-0"

PILE NOTES

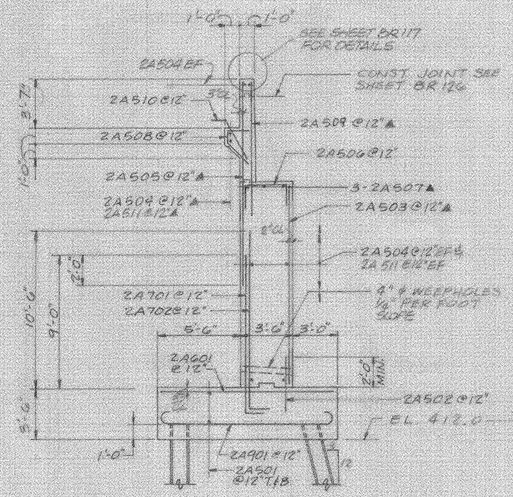
1. ESTIMATED PILE LENGTH TO FT.
2. ALL PILES TO BE CAST-IN PLACE CONCRETE
3. DESIGN LOAD 140 KIPS
4. POINT ENDS OF ALL PILES SHALL BE CLOSED WITH A 1" THICK PLATE (SEE DETAIL AT LEFT).
5. I INDICATES VERTICAL PILE (PP 12-3/4 x 0.375 (MIN. THICK.) CONCRETE FILLED)
6. I BATTERED PILE - ARROW INDICATES DIRECTION OF BATTER AT 3:12

NOTE: SEE BR SHEET 121 FOR COFFERDAM NOTES.



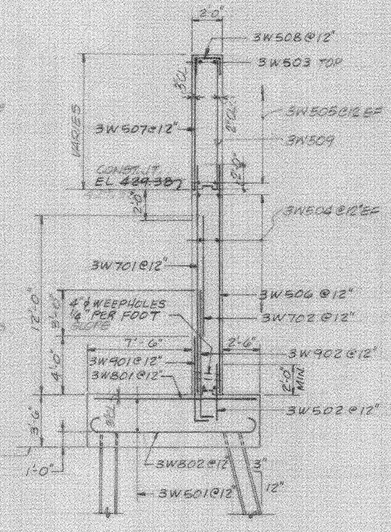

CAST-IN PLACE PILING - TOP VIEW

SCALE: 3" = 1'-0"



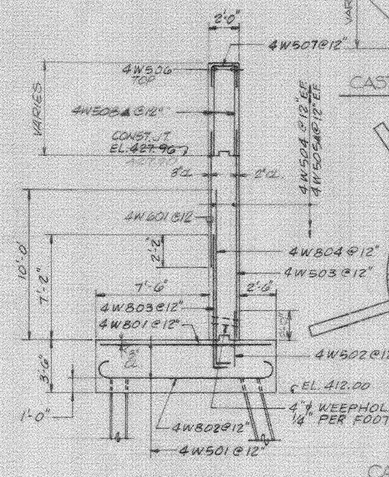

ABUTMENT NO. 2 SECTION

SCALE: 1/4" = 1'-0"




WINGWALL NO. 3 SECTION

SCALE: 1/4" = 1'-0"




WINGWALL NO. 4 SECTION

SCALE: 1/4" = 1'-0"

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 |
| Highway No. U.S. RTE. 2 | Log Sta. / Surv. Sta. 15+61 |

U.S. RTE. 2 OVER WINOOSKI RIVER

ABUTMENT NO. 2 PILE PLAN & SECTIONS

| | |
|---|---|
| Designed By C J B | Drawn By P J T |
| Checked By DWC Date 9/89 | Bridge Design Supervisor DWC Date 9/90 |
| PROJECT WATERBURY-DUXBURY-MORETOWN | PROJECT NO. BRF-013-4(10) |
| L.G.C. Info. | |
| Bridge Sheet No. BR 124 | Sheet 68 of 142 |

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

BR-6

TEMP. 4" WHITE LINE

~~STA. 8+00 ~ 14+50 11' LT.~~
~~STA. 8+00 ~ 10+35 11' RT.~~
~~STA. 11+15 ~ 14+50 11' RT.~~
8+00 ~ 14+50 LT & RT

DURABLE 4" WHITE LINE

STA. 8+00 ~ 14+50 11' LT.
STA. 8+00 ~ 10+35 11' RT.
STA. 11+15 ~ 14+50 11' RT.

DURABLE 4" YELLOW LINE

STA. 8+00 ~ 10+55 ℄ (DBL.)
STA. 10+95 ~ 14+50 ℄ (DBL.)

TEMP. 4" YELLOW LINE

~~STA. 8+00 ~ 10+55 ℄ (DBL.)~~
~~STA. 10+95 ~ 14+50 ℄ (DBL.)~~
14+00

N

STOP

E

STOP HERE ON RED

R

THESE SIGNS ARE TO REMAIN IN PLACE AS LONG AS THE EXISTING BRIDGE REMAINS IN USE

E

R(2)

14+50

8+00

9+00

10+00

11+00

12+00

13+00

MATCH LINE

MATCH LINE

E

STOP HERE ON RED

R(2)

NO TURN ON RED

THESE SIGNS ARE TO REMAIN IN PLACE AS LONG AS THE EXISTING BRIDGE REMAINS IN USE

35° R.

33° R.

45° R.

135° R.

PT 11+35.46

11+50

TIES
(NOT TO SCALE)

ML POC 14+00.00
CHAN. POT 8+28.71
ML POST 13+55.89 =
CHAN. POT 8+13.06
15" RPB T-5.67 CHAN. T-6.83 POC
GRAV. DRIVE
2" IPRC T-95.63
DRILL HOLE T-16.42
T-9.76 HUB
8+00
13+00
POLE STUB T-2.86 PC 40.189 CHAN.
SIGN
HUB T-6.38
13+49.565
PC
CAMP #1 OK T-29.72
3 CABLE (BOTH SIDES)

N

LEGAL LOAD LIMIT 24,000 POUNDS

DEAD END

THESE SIGNS ARE TO REMAIN IN PLACE AS LONG AS THE EXISTING BRIDGE REMAINS IN USE

E

R(2)

E R(2)

STOP HERE ON RED

TO GET GREEN LIGHT

E

R(2)

E R(3)

LEGAL LOAD LIMIT 24,000 POUNDS

DEAD END

1002
1212
0162

N

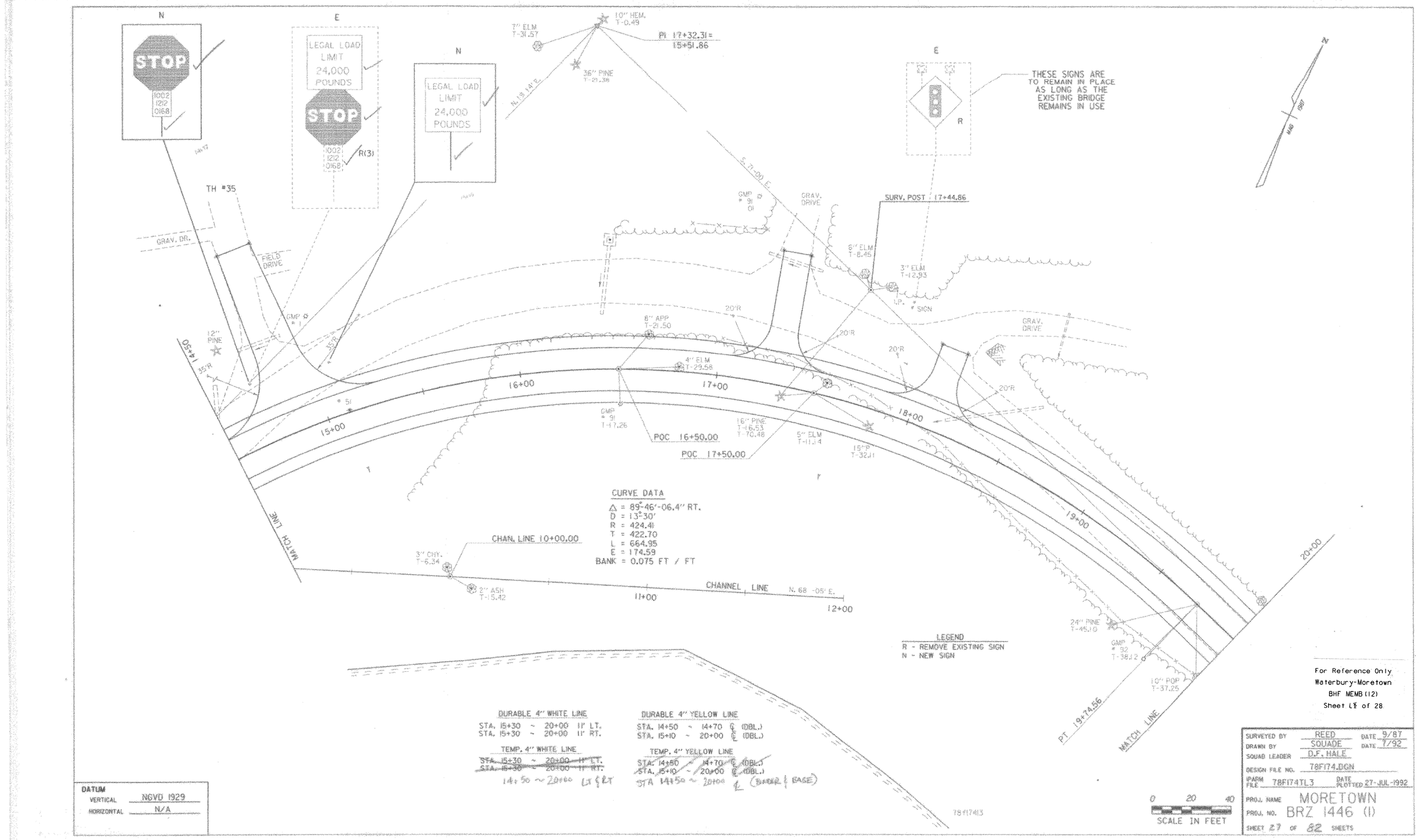
LEGEND
R - REMOVE EXISTING SIGN
N - NEW SIGN

0 20 40
SCALE IN FEET

For Reference Only
Waterbury-Moretown
BHF MEMB (12)
Sheet 17 of 28

DATUM
VERTICAL NGVD 1929
HORIZONTAL N/A

| | | |
|---|---|---|
| SURVEYED BY | REED | DATE 9/87 |
| DRAWN BY | SQUADE | DATE 7/92 |
| SQUAD LEADER | D.F. HALE | |
| DESIGN FILE NO. | 78F174.DGN | |
| IPARM FILE | 78F174TL2 | DATE PLOTTED 10-SEP-1992 |
| PROJ. NAME | MORETOWN | |
| PROJ. NO. | BRZ 1446 (1) | |
| SHEET 26 OF 82 SHEETS | | |



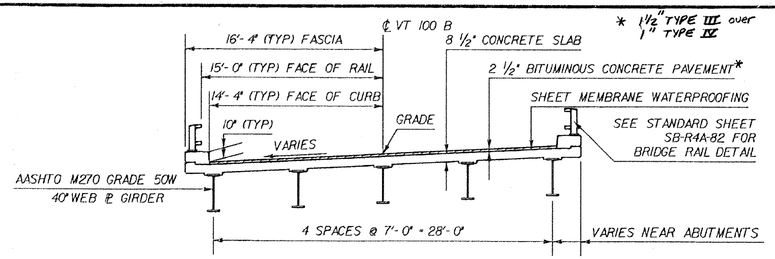

For Reference Only
Waterbury-Moretown
BHF MEMB (12)
Sheet 18 of 28

DATUM
VERTICAL NGVD 1929
HORIZONTAL N/A

| | | |
|---|---|---|
| SURVEYED BY | REED | DATE 9/87 |
| DRAWN BY | SQUADE | DATE 7/92 |
| SQUAD LEADER | D.F. HALE | |
| DESIGN FILE NO. | 78F174.DGN | |
| IPARM FILE | 78F174TL3 | DATE PLOTTED 27-JUL-1992 |
| PROJ. NAME | MORETOWN | |
| PROJ. NO. | BRZ 1446 (1) | |
| SHEET 27 OF 82 SHEETS | | |

## LIST OF SHEETS


| | |
|---|---|
| BRI00 | PRELIMINARY INFORMATION |
| BRI01 | BRIDGE QUANTITIES |
| BRI02 | GENERAL NOTES |
| BRI03 | PLAN & ELEVATION |
| BRI04-106 | BORING INFORMATION |
| BRI07 | TYPICAL SECTION & DECK REINFORCING PLAN |
| BRI08 | FRAMING PLAN & GIRDER ELEVATION |
| BRI09 | DIAPHRAGM & SPLICE DETAILS |
| BRI10 | APPROACH SLAB DETAILS |
| BRI11 | BEARING DETAILS |
| BRI12 | ABUTMENT 2 BEARING DETAILS & BEARING NOTES |
| BRI13 | MISCELLANEOUS DETAILS |
| BRI14 | ABUTMENT 1 DETAILS |
| BRI15 | ABUTMENT 2 DETAILS |
| BRI16 | FOOTING REINFORCING STEEL |
| BRI17 | PILE LAYOUT |
| BRI18 | WINGWALL 1 DETAILS |
| BRI19 | WINGWALL 2,3,4 DETAILS |
| BRI20 | BACKWALL DETAILS |
| BRI21 | PIER DETAILS |
| BRI22 | EXPANSION JOINT DETAILS |
| BRI23 | EXPANSION JOINT PLAN VIEW |
| BRI24 | END BRIDGE RAIL DETAL |
| BRI25 | SCUPPER DETAILS |
| BRI26-127 | REINFORCING STEEL SCHEDULE |
| BRI28-133 | CHANNEL SECTIONS |

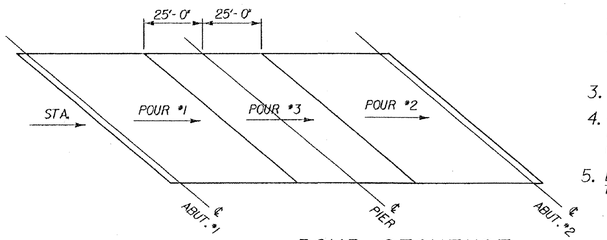




## TYPICAL BRIDGE SECTION

SCALE: 1" = 5'-0"

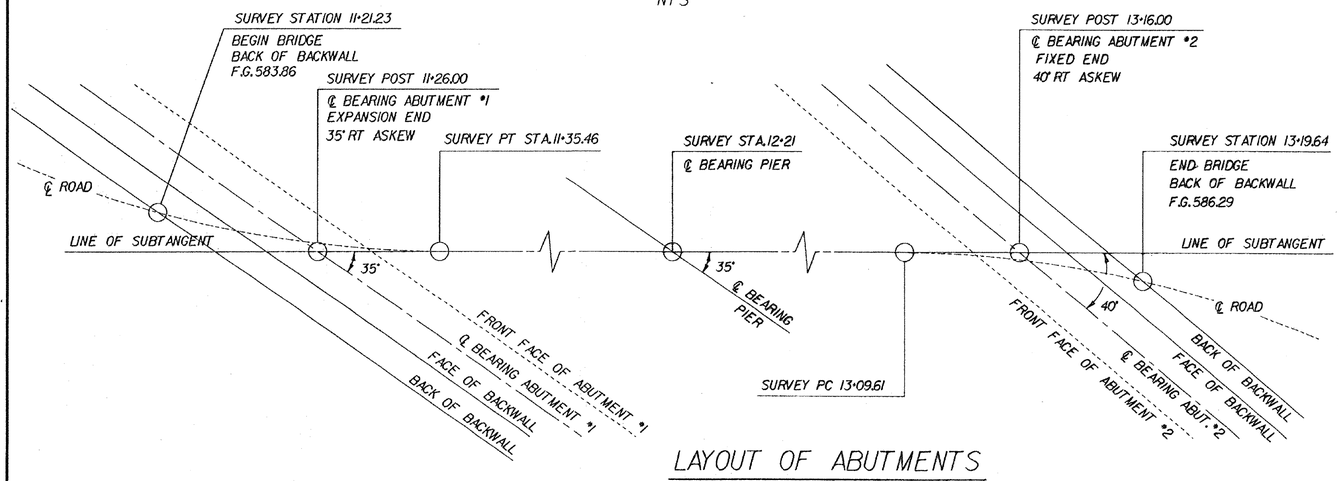
## NOTES

1. THE SEQUENCE OF POURS 1 & 2 MAY BE INTERCHANGED. A MINIMUM OF 96 HOURS BETWEEN POURS IS REQUIRED.
2. IF APPROVED BY THE ENGINEER, POURS 1 & 2 OR ALL SECTIONS MAY BE POURED THE SAME DAY PROVIDED THE MAXIMUM TIME OF THE POUR IS 8 HOURS AND THE INDICATED POURING SEQUENCE IS FOLLOWED AND A RETARDING ADMIXTURE IS USED SO THAT THE DECK CONCRETE WILL NOT SET UP UNTIL ALL THE POUR HAS BEEN MADE. THE RETARDING ADMIXTURE WILL BE SUBSIDIARY TO THE ITEM 501.22, "CONCRETE CLASS A".
3. ALL POURS SHALL START FROM THE LOW END (ELEVATION WISE).
4. IF ALL SECTIONS ARE NOT POURED IN THE SAME DAY, USE TRANSVERSE BRIDGE SLAB CONSTRUCTION JOINTS. (SEE SHEET BRI13 FOR DETAILS)
5. BRIDGE DECK CONCRETE SHALL BE DEPOSITED AND SCREEDED PARALLEL TO THE CENTERLINE OF BEARING




## POUR SEQUENCE

NTS




## LAYOUT OF ABUTMENTS

NOT TO SCALE

## EXISTING STRUCTURE

1. STRUCTURE TYPE SINGLE SPAN STEEL OVERALL LENGTH 125.0' INVENTORY RATING ----------
2. SPAN LENGTH(S) CENTER TO CENTER OF BEARINGS 120.0'
3. CLEAR SPAN LENGTH(S) NORMAL TO STREAM 105.0'
4. WATERWAY AREA OF FULL OPENING (NORMAL TO STREAM) 1650 SQ.FT. VERTICAL CLEARANCE ABOVE STREAMBED 17.0'
5. WATER SURFACE ELEVATION @ Q 2.33 563.5 WATER SURFACE ELEVATION @ Q 100 577.0
6. WATER SURFACE ELEVATION AT FLOOD OF RECORD -------- YEAR 1927 ESTIMATED DISCHARGE -----
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 -----
8. TYPE OF SUBSTRUCTURE FOUNDATION MATERIAL TIMBER PILES TO LEDGE
9. DISPOSITION OF STRUCTURE REMOVE EXISTING STRUCTURE

## NEW STRUCTURE

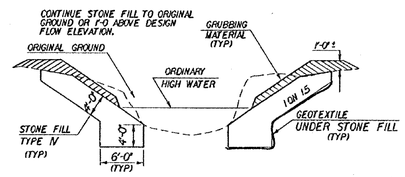
STRUCTURE GEOMETRY:
1. STRUCTURE TYPE 2 SPAN CONTINUOUS PLATE GIRDER OVERALL LENGTH 198.41'
2. SPAN LENGTH(S) CENTER TO CENTER OF BEARINGS 2 SPANS @ 95.0'
3. VERTICAL CLEARANCE ABOVE STREAMBED OR ROAD UNDER 15.5'
4. CLEAR SPAN LENGTH(S) NORMAL TO STREAM 94.5 x 93.5 TOTAL 105.0'
5. WATERWAY AREA OF FULL OPENING (NORMAL TO STREAM) 1630 SQ. FT.
6. ARE PROVISIONS TO BE MADE FOR PUBLIC UTILITIES? ------

HYDRAULIC DATA:
1. Q 2.33 4000 CFS WATER ELEVATION 569.5 VELOCITY 7.3 FPS
   Q 10 9400 CFS WATER ELEVATION 573.0 VELOCITY 10.2 FPS
   Q 25 12600 CFS WATER ELEVATION 574.7 VELOCITY 11.7 FPS
   Q 50 15000 CFS WATER ELEVATION 575.8 VELOCITY 12.6 FPS
   Q 100 17200 CFS WATER ELEVATION 577.0 VELOCITY 13.4 FPS
2. DRAINAGE AREA 19.1 SQ. MI. CHARACTER OF TERRAIN ROLLING HILLS TO MOUNTAINOUS
3. ARE THERE OBJECTIONS TO A PIER IN THE STREAM? NO
4. DOES STREAM REACH ITS MAXIMUM HIGH WATER ELEVATION RAPIDLY? YES IS ORDINARY RISE RAPID? YES
5. NATURE OF NATURAL STREAMBED GRAVEL AND COBBLES
6. ESTIMATED SCOUR DEPTH 8.0' @ PIER COMMENT ON: DRIFT MODERATE ICE HEAVY
7. WILL ALL WATER PASS THROUGH NEW STRUCTURE? YES IF NOT, WHAT FREQUENCY AND ELEVATION WILL RELIEF OCCUR? ------
   ADDITIONAL WATERWAY AREA PROVIDED BY RELIEF -----
8. VERTICAL CLEARANCE ABOVE Q 100 = 1.0'
9. ALLOWABLE WATER SURFACE ELEVATION 578.0 LIMITED BY LOW STEEL ELEVATION
10. IS DESIGN STAGE AFFECTED BY UPSTREAM OR DOWNSTREAM CONDITIONS? NO IF YES, DESCRIBE -----
11. AVERAGE DAILY LOW FLOW 125 CFS DEPTH 1.0' AVERAGE DAILY HIGH FLOW 2500 CFS DEPTH 4.0'
12. STREAMBANK OR CHANNEL PROTECTION REQUIRED STONE FILL TYPE IV
13. DISTANCE TO EXISTING UPSTREAM STRUCTURE 2500' SPAN 20' WATERWAY AREA OF FULL OPENING 280' 0
14. DISTANCE TO EXISTING DOWNSTREAM STRUCTURE 10000' SPAN 11' WATERWAY AREA OF FULL OPENING 1554' 0

ALLOWABLE STRESSES:
1. DESIGN LIVE LOAD AASHTO HS 25
2. ALLOWABLE LOAD FOR SPREAD FOOTINGS ON SOIL ----- ON LEDGE -----
3. ALLOWABLE LOAD FOR PILING 9 KSI TYPE HP 14X73 ESTIMATED LENGTH SEE BORING LOGS
4. ALLOWABLE STRESS FOR STRUCTURAL STEEL AASHTO M 270 GRADE 50W TENSION 27 KSI
5. ALLOWABLE STRESS FOR REINFORCING STEEL GRADE 60 TENSION 24 KSI COMPRESSION 20 KSI
6. ALLOWABLE STRESS FOR CONCRETE CLASS A $f'_c$ 3.5 KSI $f_b$ 1.4 KSI
   CLASS B $f'_c$ 3.5 KSI $f_b$ 1.4 KSI

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 ----
   MINIMUM CLEAR SPAN ----- MINIMUM CLEAR HEIGHT ----- MINIMUM WATERWAY AREA ----
   ARE SIDEWALKS REQUIRED? ----- IF SO, ON WHAT SIDE? -----

## ADDITIONAL DESIGN CONSIDERATIONS




## TYPICAL CHANNEL SECTION

For Reference Only
Waterbury-Moretown
BHF MEMB(12)
Sheet 19 of 28

### LOAD RATING (TONS)

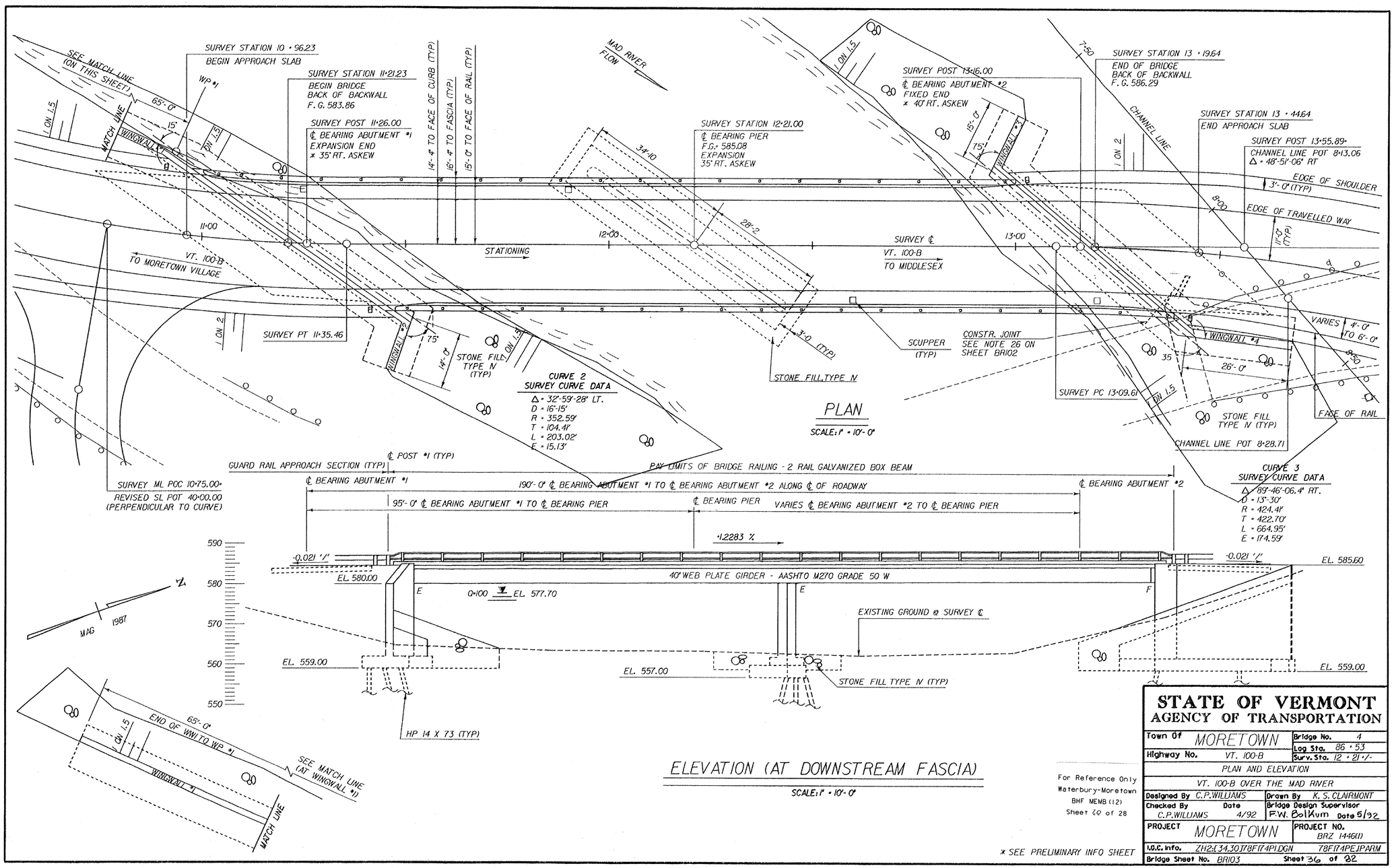
| STRESS LEVELS | TRUCK | | | | | | |
|---|---|---|---|---|---|---|---|
| | H | HS | 3S2 | 6 AXLE | 3A. STR. | 4A. STR. | 5A. SEM |
| INVENTORY 0.55 $F_y$ = 27 | 42 | 49 | X | X | X | X | X |
| POSTED 0.67 $F_y$ = 33.5 | 61 | 70 | 81 | X | 64 | 64 | 74 |
| OPERATING 0.75 $F_y$ = 37.5 | X | 83 | 96 | 109 | 76 | 77 | X |

REVISIONS

| NO. | DESCRIPTION | BY & DATE |
|---|---|---|
| | | |

# STATE OF VERMONT
## AGENCY OF TRANSPORTATION

| | |
|---|---|
| Town Of MORETOWN | Bridge No. 4 |
| Highway No. VT. 100-B | Log Sta. 86+53 Surv. Sta. 12+21 +/- |
| PRELIMINARY INFORMATION | |
| VT. 100-B OVER THE MAD RIVER | |
| Designed By C.P. WILLIAMS | Drawn By T.A. SUMNER |
| Checked By C.P. WILLIAMS Date 4/92 | Bridge Design Supervisor F.W. Bolkum Date 5/92 |
| PROJECT MORETOWN | PROJECT NO. BRZ 1446(11) |
| I.D.C. Info. ZH2:(34,30)T8F174P1.DGN | T8F174P1)PARM |
| Bridge Sheet No. BRI00 | Sheet 33 of 82 |



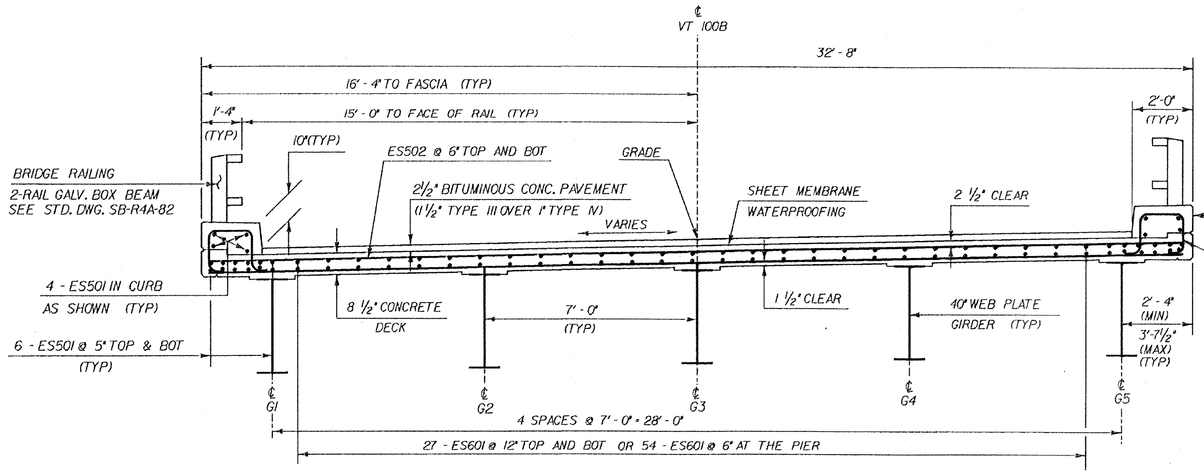

# STATE OF VERMONT
## AGENCY OF TRANSPORTATION

| | |
|---|---|
| Town Of MORETOWN | Bridge No. 4 |
| Highway No. VT. 100-B | Log Sta. 86 • 53 |
| | Surv. Sta. 12 • 21 +/- |

PLAN AND ELEVATION

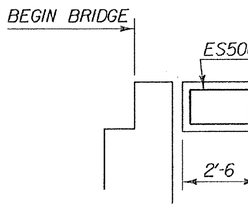
VT. 100-B OVER THE MAD RIVER

| | |
|---|---|
| Designed By C.P.WILLIAMS | Drawn By K. S. CLAIRMONT |
| Checked By C.P.WILLIAMS Date 4/92 | Bridge Design Supervisor F.W. Bolkum Date 5/32 |
| PROJECT MORETOWN | PROJECT NO. BRZ 1446(1) |
| I.G.C. Info. ZH2:L34,30,178F17,4P1.DGN | 78F17,4PEJPARM |
| Bridge Sheet No. BRI03 | Sheet 36 of 82 |



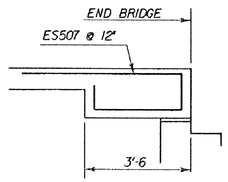

## TYPICAL BRIDGE SECTION

SCALE: ½" = 1'-0"



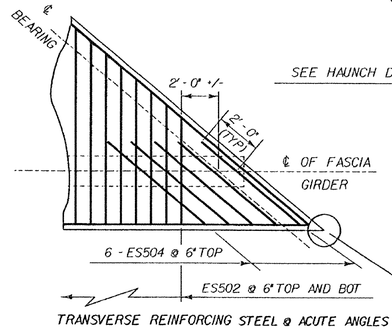

## SECTION A-A

NTS



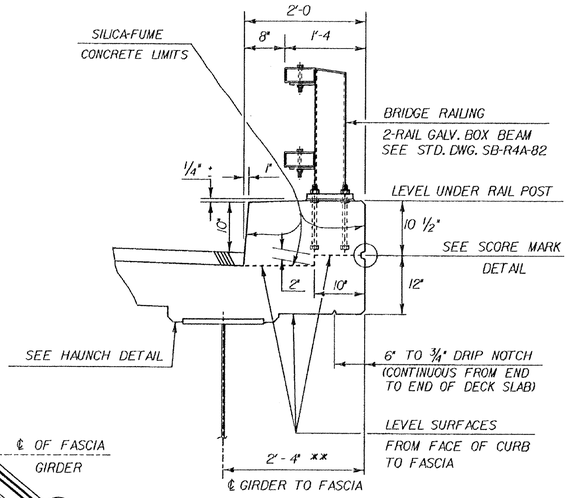

## SECTION B-B

NTS




## DETAIL "A"

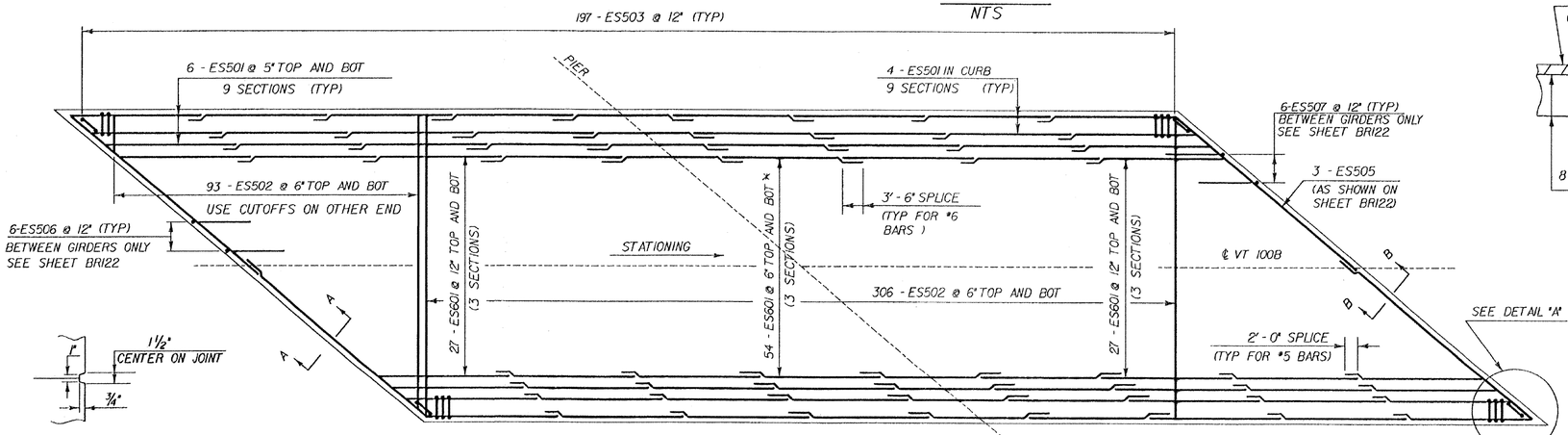
SCALE: ⅜" = 1'-0"




## CURB DETAIL

SCALE: 1" = 1'-0"

SEE SHEET BRI10 FOR CHAMFER
DETAIL @ ALL ACUTE ANGLES



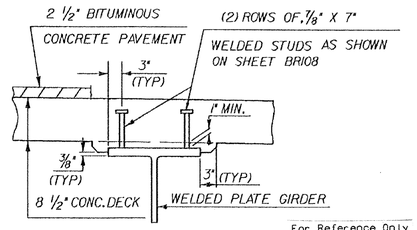

## SCORE MARK DETAIL

NTS

## DECK REINFORCING PLAN

NTS

* THESE 3 SECTIONS OF ES601 BARS
SHALL BE PLACED SYMMETRICALLY ABOUT THE ℄ PIER




## HAUNCH DETAIL

NTS

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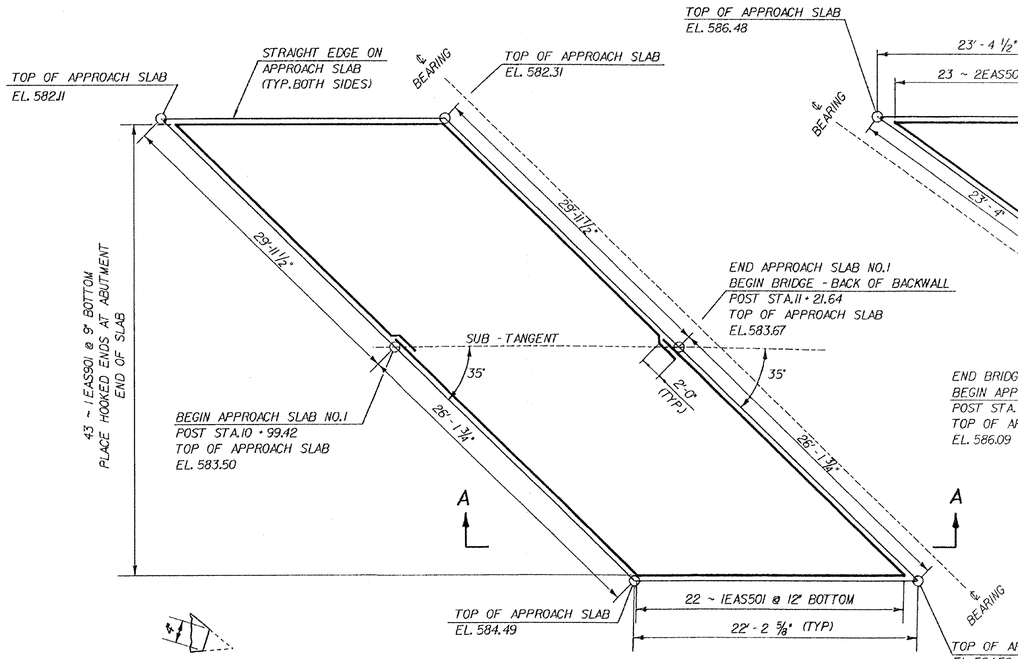
# STATE OF VERMONT
## AGENCY OF TRANSPORTATION

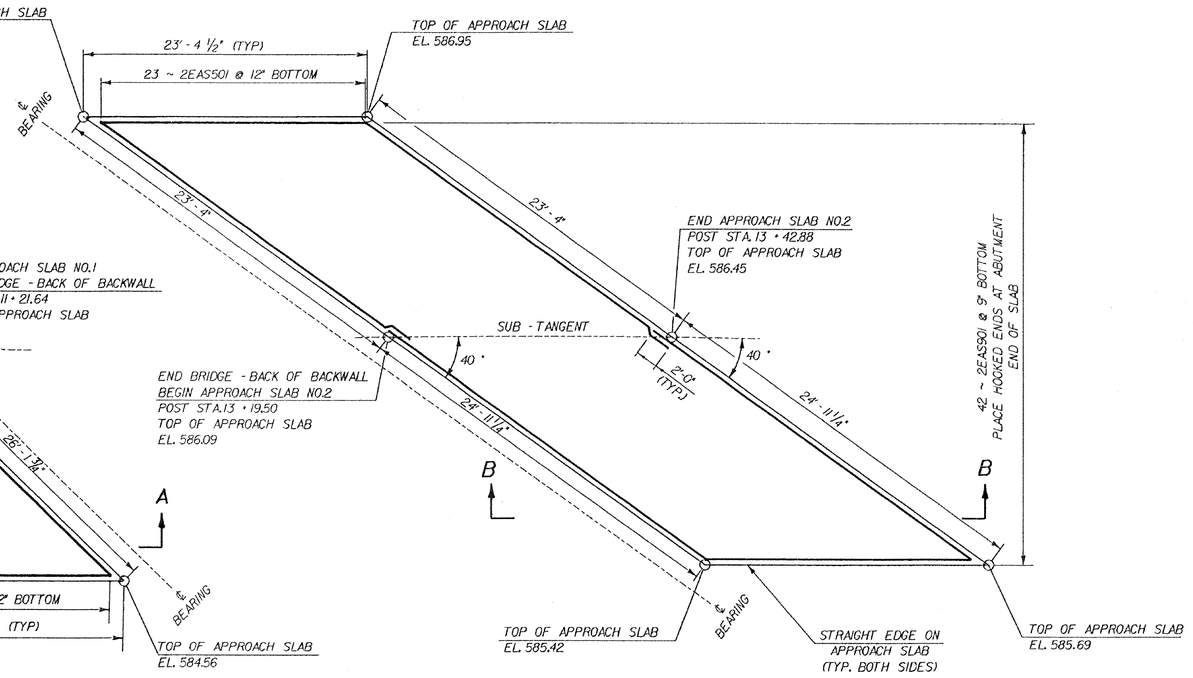
| | |
|---|---|
| Town Of MORETOWN | Bridge No. 4 |
| Highway No. VT 100B | Log Sta. 86+53 / Surv. Sta. 12+21 |
| VT 100B OVER MAD RIVER | |
| TYPICAL SECTION AND DECK REINFORCING PLAN | |
| Designed By C.P. WILLIAMS | Drawn By T.A. SUMNER |
| Checked By C.P. WILLIAMS Date 3/92 | Bridge Design Supervisor F.W. Balkum Date 5/92 |
| PROJECT MORETOWN | PROJECT NO. BRZ-1446(11) |
| I.G.C. Info. ZH:[30661]78FIT4DEK.DGN | 78FIT4DEKJPARM |
| Bridge Sheet No. BRI07 | Sheet 40 of 82 |



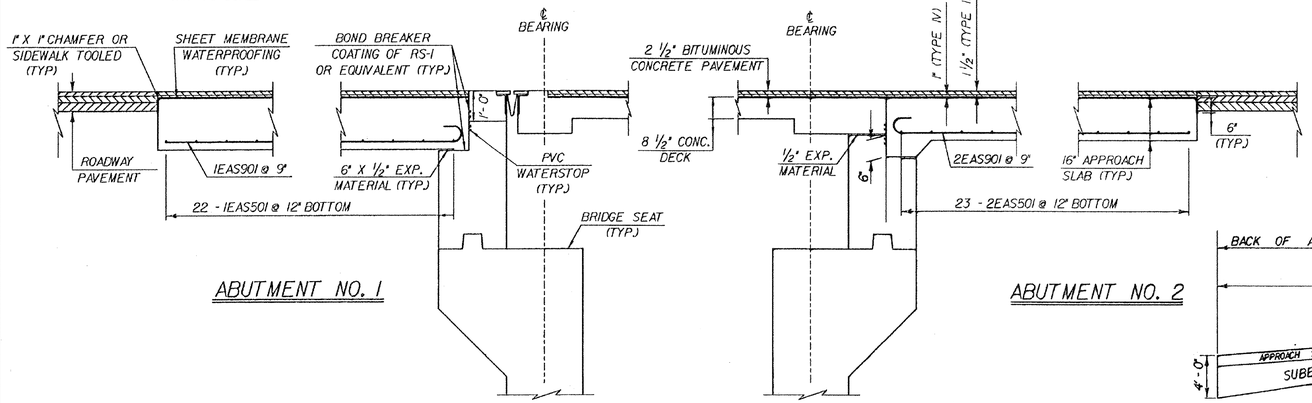

## CHAMFER DETAIL
(TYP FOR ACUTE ANGLES)

NOT TO SCALE

## APPROACH SLAB NO. 1 PLAN
NTS




## APPROACH SLAB NO. 2 PLAN
NTS

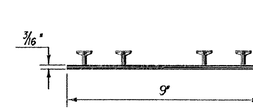



## ABUTMENT NO. 1

## ABUTMENT NO. 2

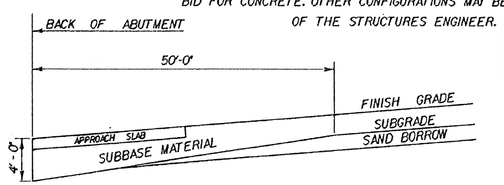
## SECTION A - A
NTS

## SECTION B - B
NTS




## P.V.C. WATERSTOP FOR CONSTRUCTION JOINTS

THE COSTS FOR P.V.C.WATERSTOP SHALL BE INCLUDED IN THE UNIT PRICE BID FOR CONCRETE. OTHER CONFIGURATIONS MAY BE USED UPON APPROVAL OF THE STRUCTURES ENGINEER.




## SUBBASE DETAIL AT ABUTMENTS
(ELEVATION IN CUT AND FILL)
NOT TO SCALE

For Reference Only
Waterbury-Moretown
BHF MEMB(12)
Sheet 23 of 28

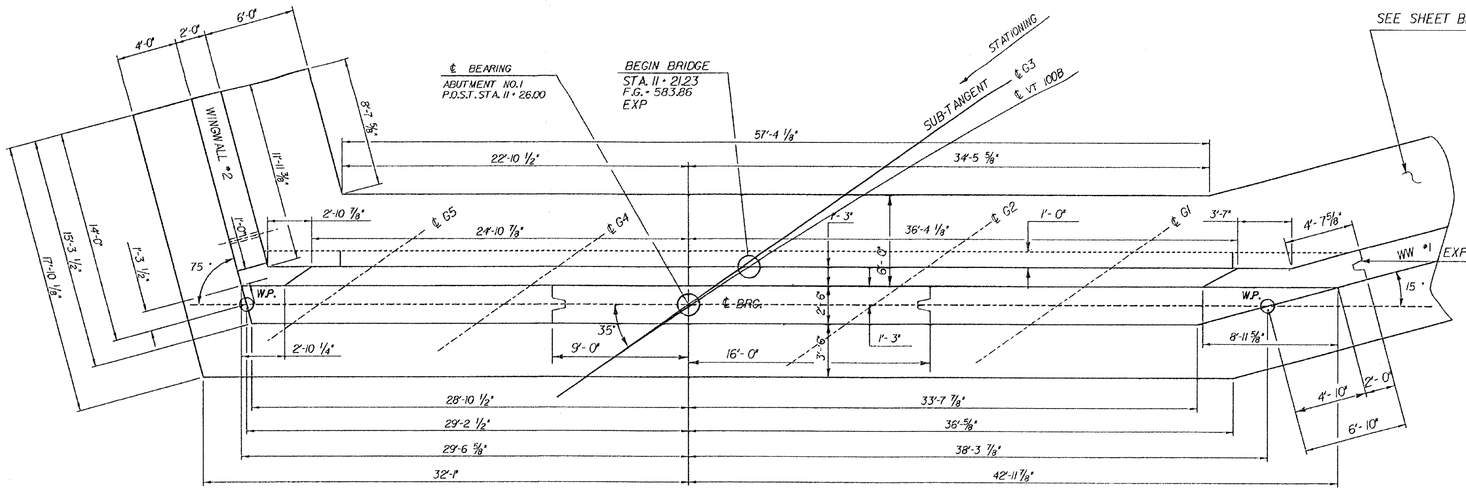
# STATE OF VERMONT
## AGENCY OF TRANSPORTATION

| | | | |
|---|---|---|---|
| Town Of | MORETOWN | Bridge No. | 4 |
| | | Log Sta. | 86 + 53 |
| Highway No. | VT100B | Surv. Sta. | 12 + 21 -/- |

VT100B OVER MAD RIVER

APPROACH SLAB DETAILS

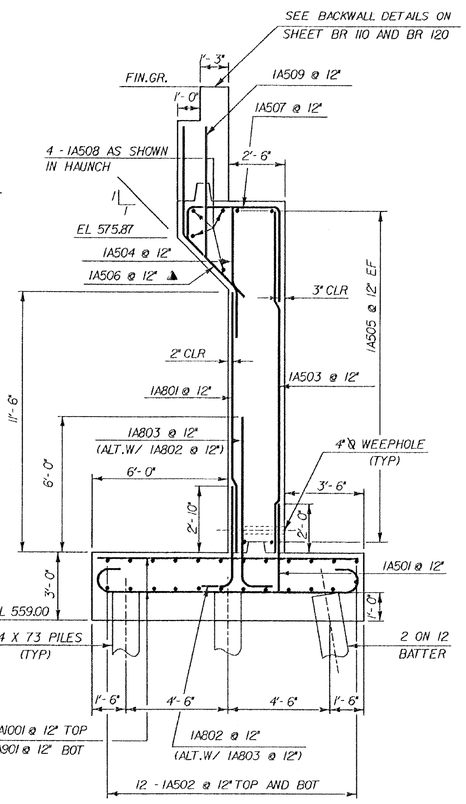
| | | | |
|---|---|---|---|
| Designed By | C.P. WILLIAMS | Drawn By | T.A. SUMNER |
| Checked By | Date | Bridge Design Supervisor | |
| C.P. WILLIAMS | 4/92 | F.W. Balkum | Date 5/92 |
| PROJECT | MORETOWN | PROJECT NO. | BRZ - 1446 (1) |
| I.G.C. Info. | ZH2L34,3017BF17.4AS.DGN | | 78F17.4ASIPARM |
| Bridge Sheet No. | BR110 | Sheet | 43 of 82 |




SEE SHEET BRII8 FOR REST OF WINGWALL #1 PLAN

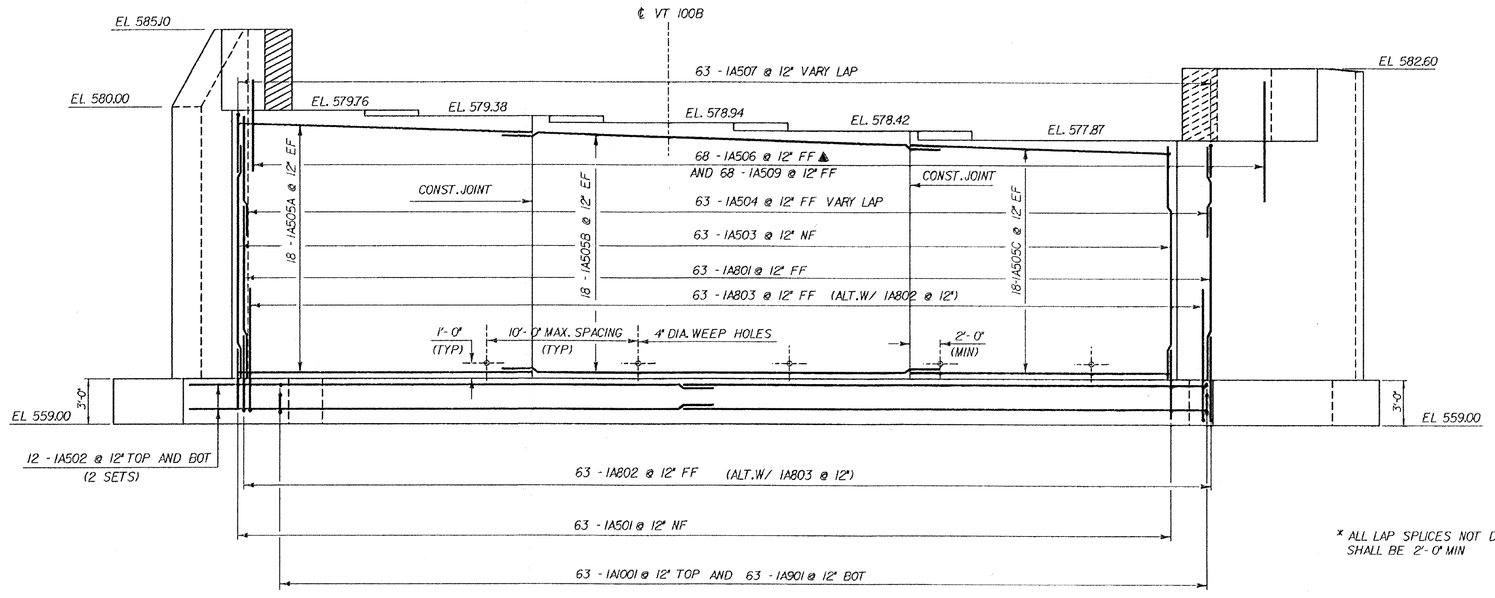
## ABUTMENT NO.1 PLAN

SCALE: 1/4" = 1'-0"




## ABUTMENT No. 1 TYPICAL

SCALE 3/8" = 1'-0




## ABUTMENT NO.1 ELEVATION

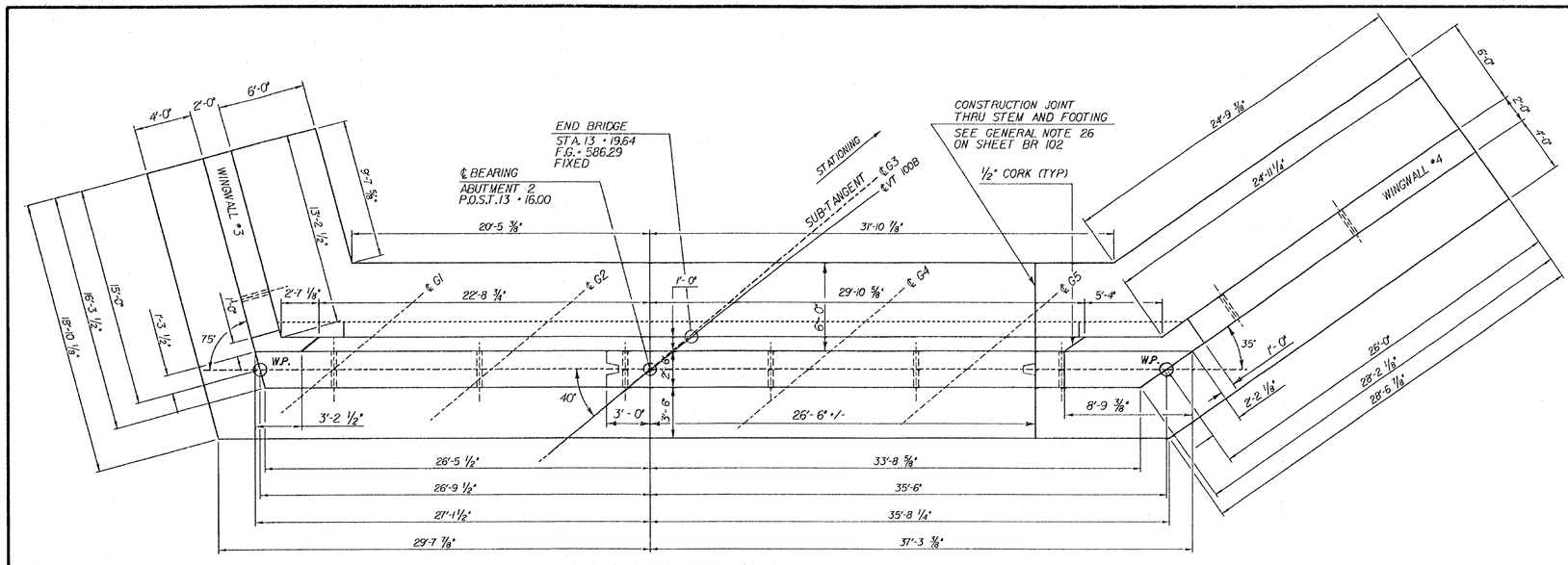
SCALE: 1/4" = 1'-0"

* ALL LAP SPLICES NOT DETAILED SHALL BE 2'-0" MIN

For Reference Only
Waterbury-Moretown
BHF MEMB (12)
Sheet 23 of 28

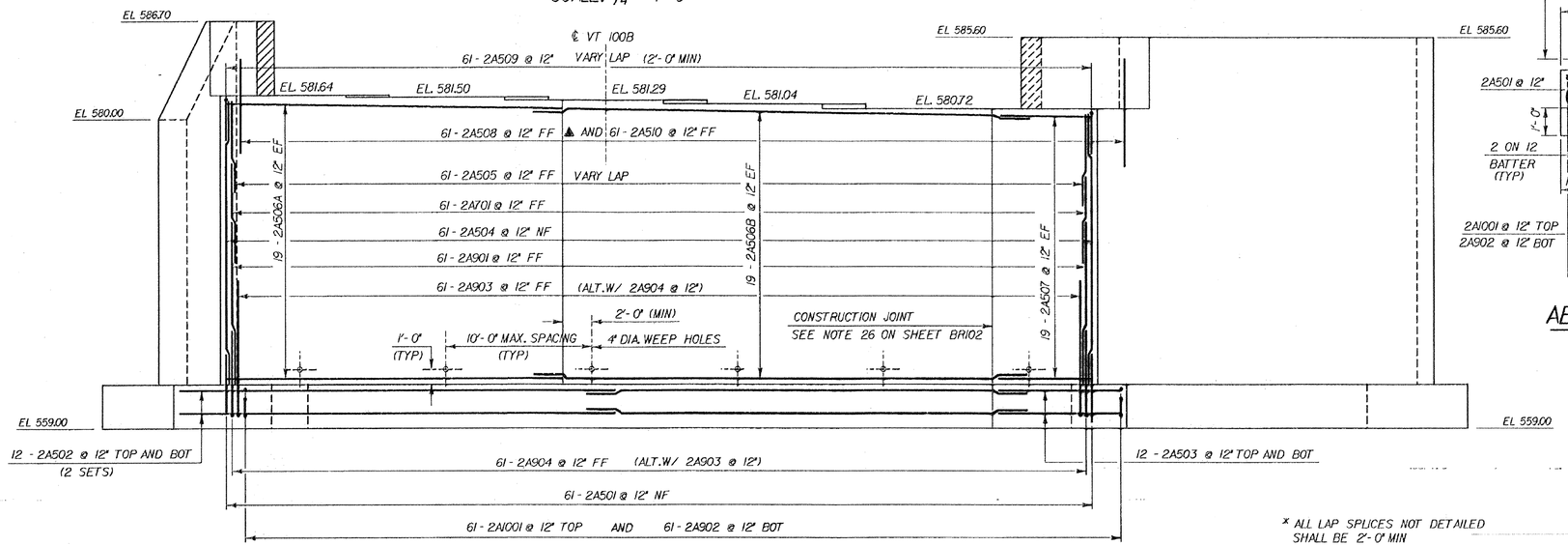
# STATE OF VERMONT
## AGENCY OF TRANSPORTATION

| | |
|---|---|
| Town Of MORETOWN | Bridge No. 4 |
| Highway No. VT 100B | Log Sta. 86+53 |
| | Surv. Sta. 12+21+/- |
| VT 100B OVER MAD RIVER | |
| ABUTMENT #1 DETAILS | |
| Designed By C.P. WILLIAMS | Drawn By T.A. SUMNER |
| Checked By C.P. WILLIAMS Date 4/92 | Bridge Design Supervisor Date |
| PROJECT MORETOWN | PROJECT NO. BRZ-1446 (1) |
| I.G.C. Info. ZH2E34.30 118F114ABT.DGN | 78F174ABUTPARM |
| Bridge Sheet No. BRII4 | Sheet 47 of 82 |



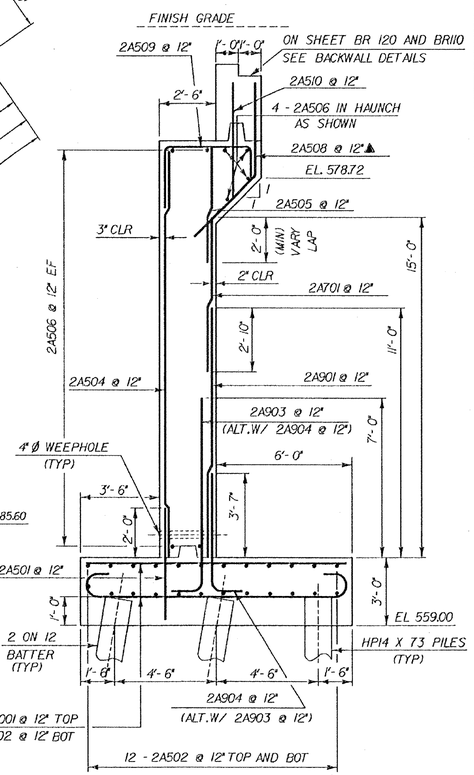

## ABUTMENT NO.2 PLAN

SCALE: 1/4" = 1'-0"




## ABUTMENT NO.2 ELEVATION

SCALE: 1/4" = 1'-0"




## ABUTMENT No. 2 TYPICAL

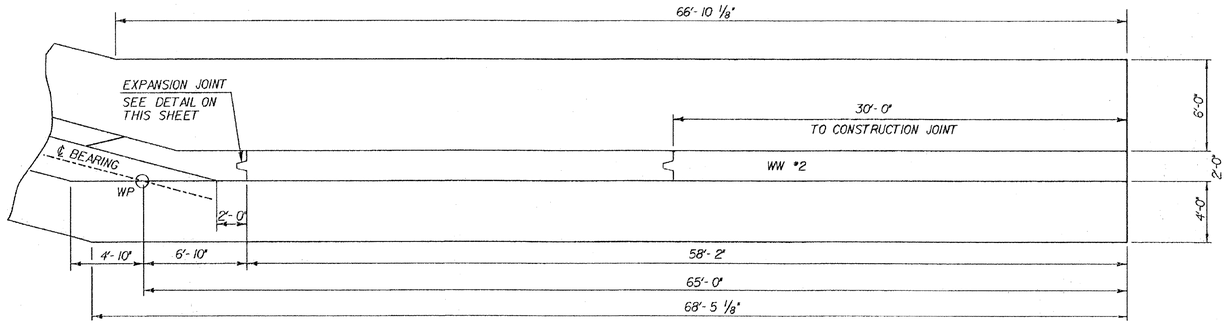
SCALE: 3/8" = 1'-0"

* ALL LAP SPLICES NOT DETAILED SHALL BE 2'-0" MIN

For Reference Only
Waterbury-Moretown
BHF MEMB (12)
Sheet 24 of 28

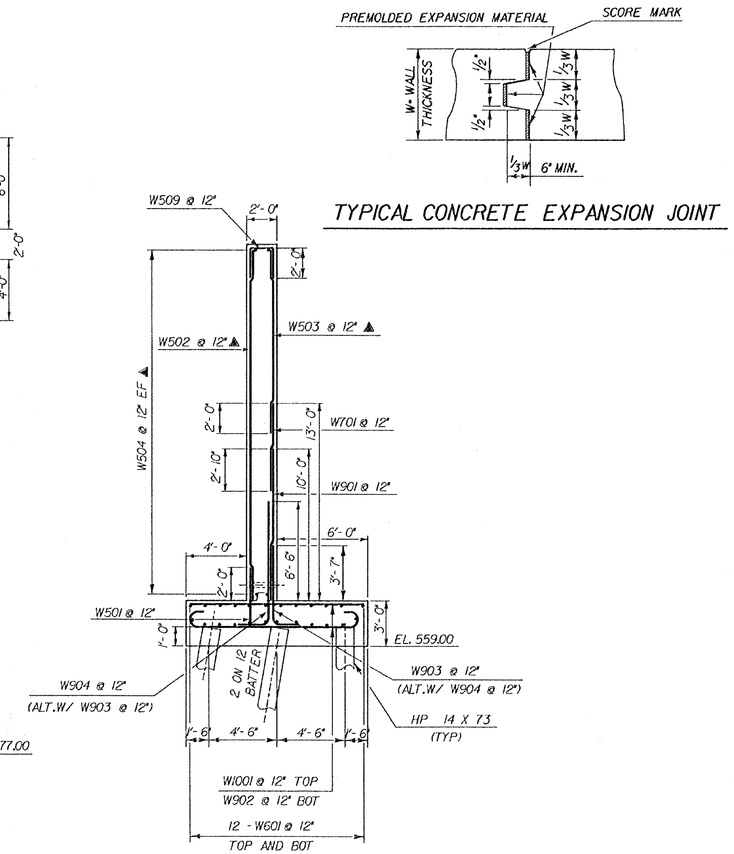
# STATE OF VERMONT
## AGENCY OF TRANSPORTATION

| | |
|---|---|
| Town Of MORETOWN | Bridge No. 4 |
| Highway No. VT 100B | Log Sta. 86 + 53 |
| | Surv. Sta. 12 + 21 +/- |
| VT 100B OVER MAD RIVER | |
| ABUTMENT #2 DETAILS | |
| Designed By C.P. WILLIAMS | Drawn By T.A.SUMNER |
| Checked By C.P. WILLIAMS Date 4/92 | Bridge Design Supervisor F.W. Bolkum Date 5/92 |
| PROJECT MORETOWN | PROJECT NO. BRZ-1446 (1) |
| I.G.C. Info. ZH2L34.3078F174ABT.DGN | 78F174AB2JPARM |
| Bridge Sheet No. BR115 | Sheet 48 of 82 |




WINGWALL #1 PLAN

SCALE: 1/4" =1'- 0"

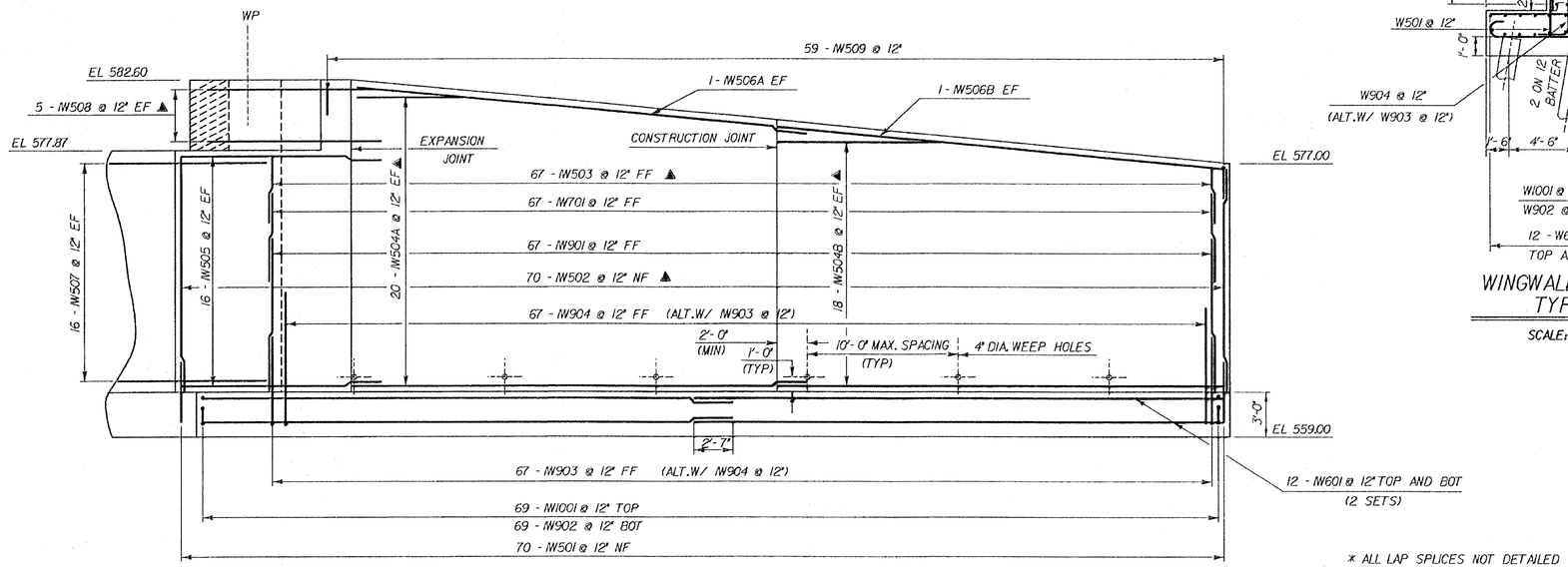



WINGWALL #1 AND #2 TYPICAL

SCALE: 1/4" = 1'- 0"




TYPICAL CONCRETE EXPANSION JOINT




WINGWALL #1 ELEVATION

SCALE: 1/4" =1'- 0"

* ALL LAP SPLICES NOT DETAILED SHALL BE 2'- 0" MIN

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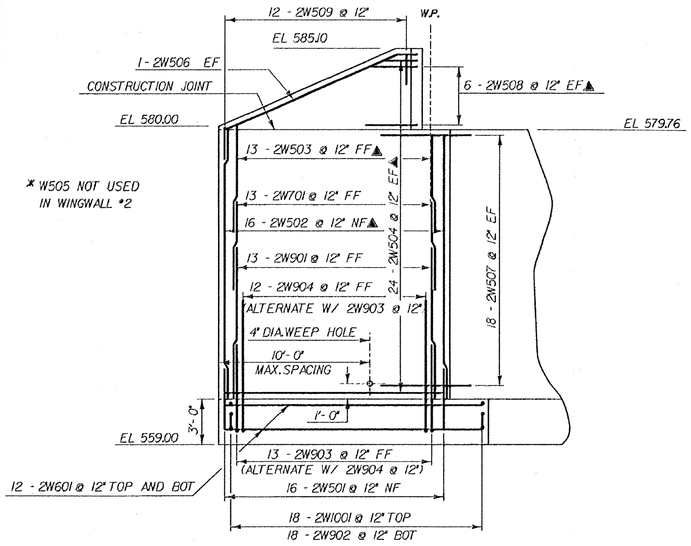
# STATE OF VERMONT
## AGENCY OF TRANSPORTATION

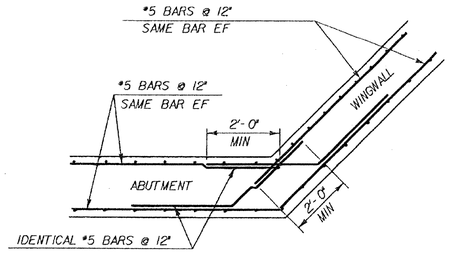
| | |
|---|---|
| Town Of MORETOWN | Bridge No. 4 |
| Highway No. VT 100B | Log Sta. 86 + 53 |
| | Surv. Sta. 12 + 21 +/- |
| VT 100B OVER MAD RIVER | |
| WINGWALL #1 DETAILS | |
| Designed By C.P. WILLIAMS | Drawn By T.A. SUMNER |
| Checked By C.P. WILLIAMS Date 4/92 | Bridge Design Supervisor F.W. Bolkum Date 5/92 |
| PROJECT MORETOWN | PROJECT NO. BRZ-1446 (1) |
| I.G.C. Info. ZH2K34.3071BF17ABT.DGN | T8F17AWWLIPARM |
| Bridge Sheet No. BRI18 | Sheet 51 of 82 |




* W505 NOT USED IN WINGWALL *2

## WING WALL NO. 2 ELEVATION

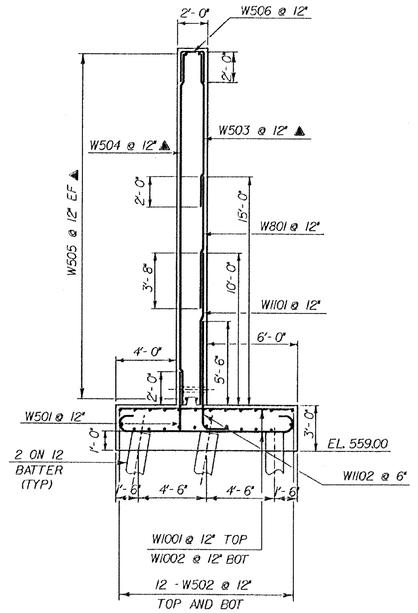
SCALE: 1/4" = 1'-0"




## TYPICAL CORNER DETAIL BELOW BRIDGE SEAT

NOT TO SCALE

NOTE:
ALL HORIZONTAL STEEL IN WINGWALL *1 WILL NOT PASS THROUGH THE EXPANSION JOINT.

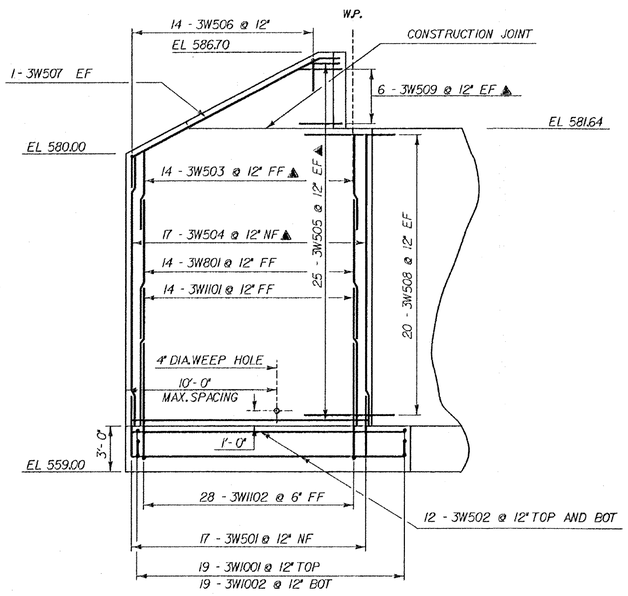



## WINGWALL #3 AND #4 TYPICAL

SCALE: 1/4" = 1'-0"

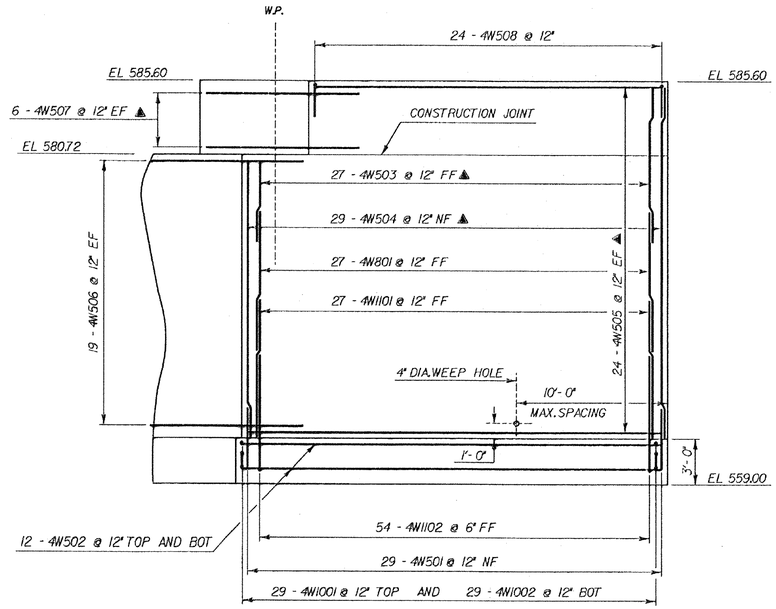
SEE SHEET BRII8 FOR WINGWALL TYPICAL

ALL LAP SPLICES NOT DETAILED SHALL BE 2'-0" MIN.




## WING WALL NO. 3 ELEVATION

SCALE: 1/4" = 1'-0"




## WING WALL NO. 4 ELEVATION

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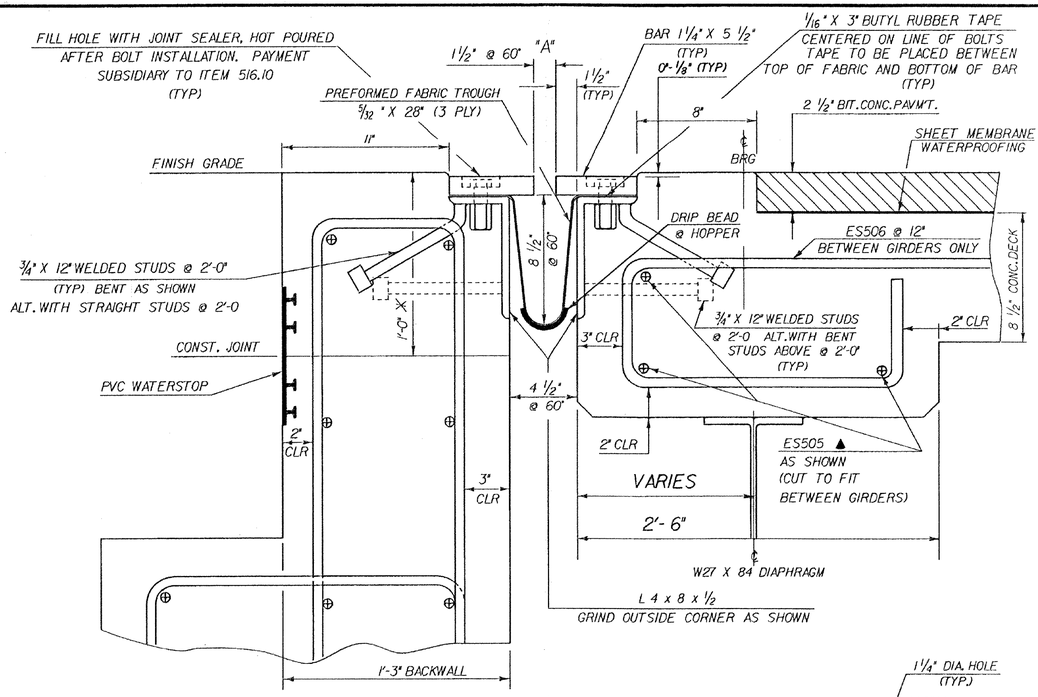
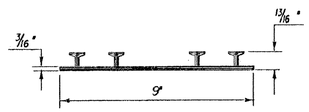
# STATE OF VERMONT
## AGENCY OF TRANSPORTATION

| | |
|---|---|
| Town Of MORETOWN | Bridge No. 4 |
| Highway No. VT 100B | Log Sta. 86 + 53 |
| | Surv. Sta. 12 + 21 +/- |
| VT 100B OVER MAD RIVER | |
| WINGWALL *2, *3 AND *4 DETAILS | |
| Designed By C.P. WILLIAMS | Drawn By T.A. SUMNER |
| Checked By C.P. WILLIAMS Date 4/92 | Bridge Design Supervisor F.W. Bolkum Date 5/92 |
| PROJECT MORETOWN | PROJECT NO. BRZ-1446 (1) |
| I.G.C. Info. ZH2E34.30T18F174ABT.DGN | 78F17-NWJPARM |
| Bridge Sheet No. BRII9 | Sheet 32 of 82 |




## TYPICAL SECTION BETWEEN GIRDERS (NORMAL)

SCALE: 3" = 1'-0

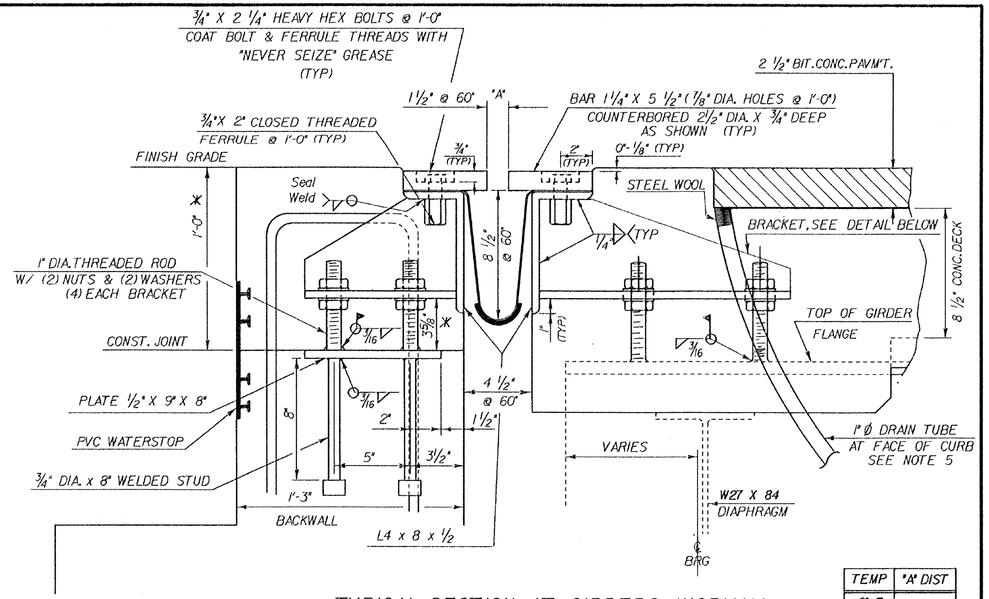



## P.V.C. WATERSTOP FOR CONSTRUCTION JOINTS

THE COSTS FOR P.V.C. WATERSTOP SHALL BE INCLUDED IN THE UNIT PRICE BID FOR CONCRETE. OTHER CONFIGURATIONS MAY BE USED UPON APPROVAL OF THE STRUCTURES ENGINEER.

NOTES

1. THE FINAL FINISH OF THE EXPANSION DEVICE SHALL BE COVERED DURING THE PLACING OF BRIDGE DECK CONCRETE.
2. ALL STEEL COMPONENTS SHALL BE AASHTO M270 GRADE 36 GALVANIZED OR METALIZED AS PER SUBSECTION 506J5 (b) OR (c).
3. THE 1 1/4" X 5 1/2" BARS SHALL BE FURNISHED IN 2 PIECES **MINIMUM.** EACH SIDE OF JOINT.
4. DETAILS ON THIS SHEET ARE FOR ITEM 516J0 "BRIDGE EXPANSION JOINTS".
5. A 1" DIAMETER PLASTIC DRAIN TUBE SHALL BE INSTALLED AS SHOWN AT THE FACE OF CURB. THE UPPER END IS TO BE PLUGGED WITH STEEL WOOL AND THE LOWER END IS TO EXTEND 6" BELOW THE BOTTOM OF THE ADJACENT GIRDER. THE DRAIN TUBES SHALL BE FASTENED TO THE GIRDERS USING A METHOD APPROVED BY THE ENGINEER.
6. A DRIP BEAD OF PREFORMED FABRIC MATERIAL SHALL BE CEMENTED TO THE BOTTOM OF THE FABRIC TROUGH USING AN ADHESIVE APPROVED BY THE MANUFACTURER.

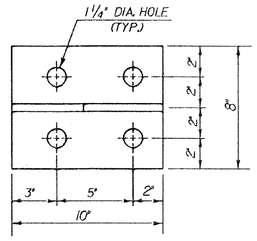



## TYPICAL SECTION AT GIRDERS (NORMAL)

SCALE: 3" = 1'-0

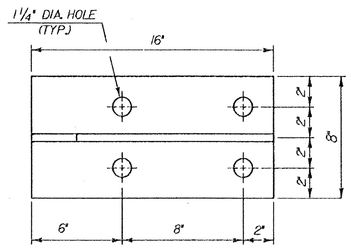
* THESE DIMENSIONS ARE THEORETICAL AND MAY CHANGE DEPENDING UPON THE OUTCOME OF THE BEAM PROFILES

| TEMP | "A" DIST |
|---|---|
| 0° F | 2" |
| 15° F | 1 7/8" |
| 30° F | 1 3/4" |
| 45° F | 1 5/8" |
| 60° F | 1 1/2" |
| 75° F | 1 3/8" |
| 90° F | 1 1/4" |
| 105° F | 1 1/8" |




## BRACKET PLAN IN BACKWALL

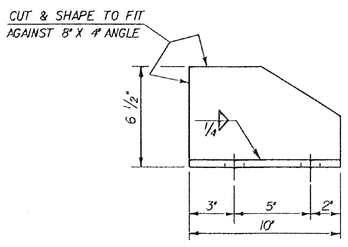
SCALE: 3" = 1'-0




## BRACKET PLAN ON GIRDER

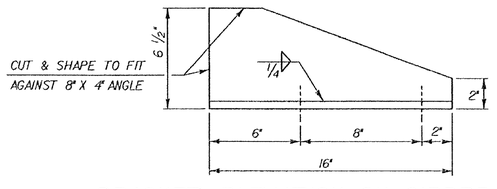
SCALE: 3" = 1'-0

ALL PLATES 1/2"




## BRACKET ELEVATION IN BACKWALL

SCALE: 3" = 1'-0



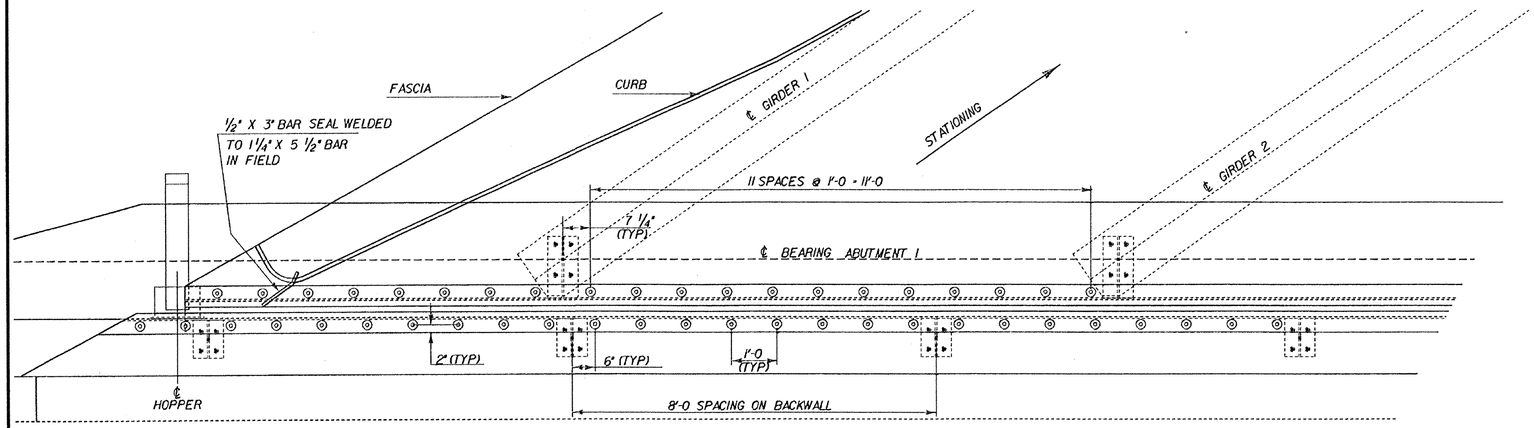

## BRACKET ELEVATION ON GIRDER

SCALE: 3" = 1'-0

For Reference Only
Waterbury-Moretown
BHF MEMB (12)
Sheet 27 of 28

# STATE OF VERMONT
## AGENCY OF TRANSPORTATION

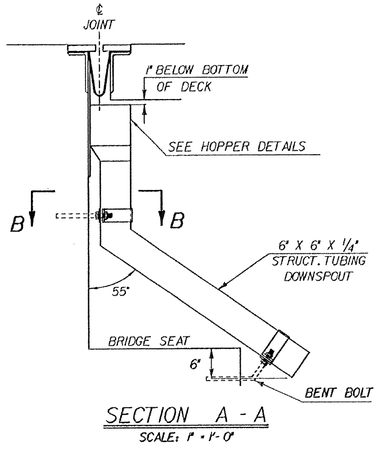
| | |
|---|---|
| Town Of MORETOWN | Bridge No. 4 |
| Highway No. VT 100B | Log Sta. 86+53 |
| | Surv. Sta. 12+21 +/- |
| VT 100B OVER MAD RIVER | |
| EXPANSION JOINT DETAILS | |
| Designed By C.P. WILLIAMS | Drawn By T.A. SUMNER |
| Checked By C.P. WILLIAMS Date 4/92 | Bridge Design Supervisor F.W. Belkum Date 5/92 |
| PROJECT MORETOWN | PROJECT NO. BRZ - 1446 (1) |
| I.G.C. Info. ZH2L34,30178F17AEXP.DGN | 78F17AEX1.PARM |
| Bridge Sheet No. BR122 | Sheet 33 of 82 |



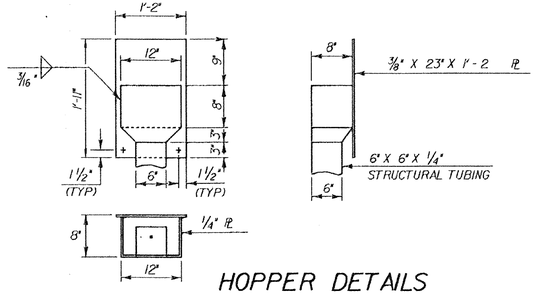

## PARTIAL PLAN VIEW
3/4" = 1'-0

## NOTES

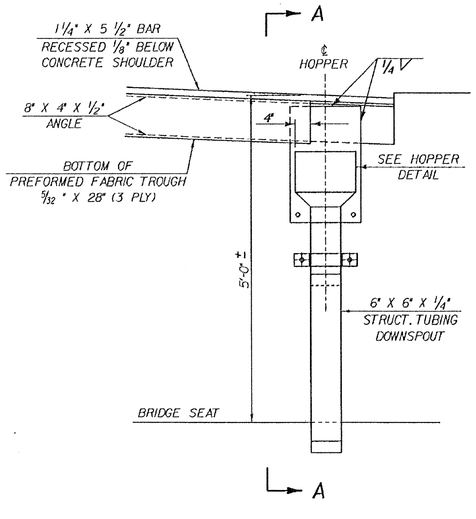
1. THE HIGH END OF THE FABRIC TROUGH SHALL BE CLOSED BY FOLDING.
2. A HOPPER WILL ONLY BE REQUIRED AT THE WINGWALL 1 CORNER.
3. ALL HOPPER AND DOWNSPOUT COMPONENTS AND HARDWARE SHALL BE GALVANIZED PER VT. SPEC. 506.15 (B). STRUCTURAL TUBING SHALL CONFORM TO ASTM A 500 B AND ALL OTHER COMPONENTS SHALL CONFORM TO AASHTO M 270 GRADE 36.
4. THE HOPPER AND DOWNSPOUT ASSEMBLY SHALL NOT BE INSTALLED UNTIL AFTER THE BRIDGE EXPANSION JOINT IS IN PLACE.
5. THE HOPPER AND DOWNSPOUT SHALL BE PAID FOR UNDER ITEM 506.55 "STRUCTURAL STEEL - PLATE GIRDER".



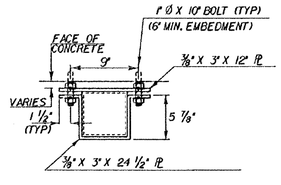

## SECTION A - A
SCALE: 1" = 1'-0




## HOPPER DETAILS
1"=1'-0




## SECTION AT CENTERLINE OF JOINT
SCALE: 1" = 1'-0




## SECTION B-B
1 1/2" = 1'-0

For Reference Only
Waterbury-Moretown
BHF MEMB (12)
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TS88840

# STATE OF VERMONT
## AGENCY OF TRANSPORTATION

| | | | |
|---|---|---|---|
| Town Of | MORETOWN | Bridge No. | 4 |
| | | Log Sta. | 86 + 53 |
| Highway No. | VT. RTE 100B | Surv. Sta. | 12 + 21 |
| VT RTE 100B OVER MAD RIVER | | | |
| EXPANSION JOINT PLAN | | | |
| Designed By | C.P. WILLIAMS | Drawn By | C.P. WILLIAMS |
| Checked By | Date | Bridge Design Supervisor | |
| M.M. GARCIA | 4/92 | F.W. Bolkum Date 5/92 | |
| PROJECT | MORETOWN | PROJECT NO. | BRZ 1446(1) |
| I.G.C. Info. | ZH2:1034030:T8F174EXP.DGN | | T8F174EX2.PARM |
| Bridge Sheet No. | BRI23 | Sheet 56 of 82 | |