# STATE OF VERMONT
# AGENCY OF TRANSPORTATION

INDEX OF SHEETS


| | |
|---|---|
| 1 | TITLE SHEET |
| 2-3 | QUANTITY SHEETS |
| 4 | PROJECT NOTES |
| 5 | STANDARD DETAILS |
| 6-8 | TRAFFIC CONTROL SHEETS |
| 9-11 | REFERENCE SHEETS - BRIDGE 18 |
| 12-13 | REFERENCE SHEETS - BRIDGE 31 |
| 14-17 | REFERENCE SHEETS - BRIDGE 39 |
| 18-25 | REFERENCE SHEETS - BRIDGE 40 |
| 26-30 | REFERENCE SHEETS - BRIDGE 46 |
| 31-34 | REFERENCE SHEETS - BRIDGE 48 |
| 35-58 | REFERENCE SHEETS - STANDARDS |


**RECORD PLANS**

CONTRACTOR: VIMAS PAINTING COMPANY, INC. - LOWELLVILLE, OH

RESIDENT ENGINEER: BUTCH COLBY

CONSTRUCTION BEGAN: MARCH 26, 2012

CONSTRUCTION COMPLETE: JULY 26, 2013

RECORD PLANS BY: BUTCH COLBY

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

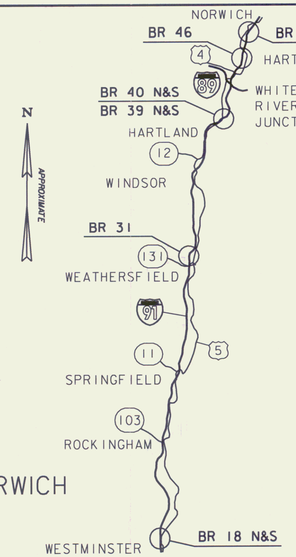
BY _____ RESIDENT ENGINEER

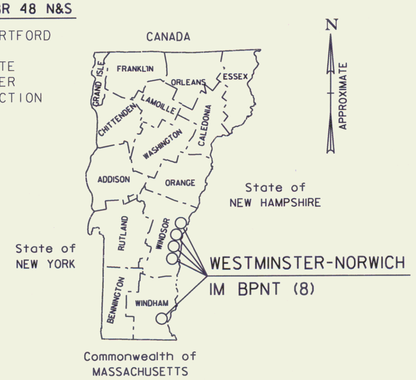
DATE 6/4/13

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.

# PROPOSED IMPROVEMENT
# BRIDGE PROJECT

## TOWNS OF WESTMINSTER, WEATHERSFIELD, HARTLAND, HARTFORD & NORWICH
## COUNTIES OF WINDHAM & WINDSOR
## BRIDGES NO. 18 N&S, 31, 39 N&S, 40 N&S, 46 AND 48 N&S



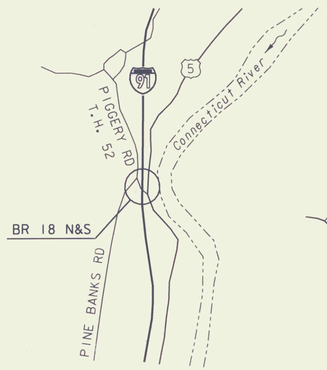

LOCATION MAP
NOT TO SCALE

PROJECT LOCATION:
- M.M. 25.62 BRIDGES NO. 18 N&S LOCATED ON I-91 OVER T.H. 52 (PIGGERY ROAD), WESTMINSTER
- M.M. 52.18 BRIDGE NO. 31 LOCATED ON T.H. 37 (THRASHER ROAD) OVER I-91, WEATHERSFIELD
- M.M. 66.19 BRIDGES NO. 39 N&S LOCATED ON I-91 OVER U.S. 5, HARTLAND
- M.M. 66.34 BRIDGES NO. 40 N&S LOCATED ON I-91 OVER OTTAUQUECHEE RIVER, HARTLAND
- M.M. 72.46 BRIDGE NO. 46 LOCATED ON I-91 OVER T.H. 33 (CHANDLER ROAD), HARTFORD
- M.M. 74.83 BRIDGES NO. 48 N&S LOCATED ON I-91 OVER VT 10A, NORWICH

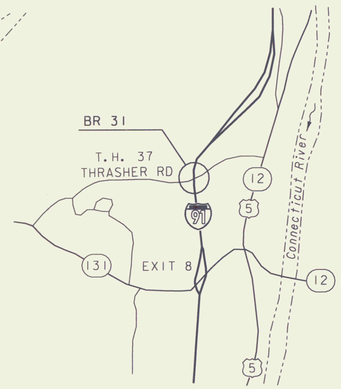
PROJECT DESCRIPTION: THIS PROJECT INVOLVES CLEANING AND REPAINTING THE EXISTING STEEL SUPERSTRUCTURE MEMBERS, SCUPPER REPAIR, AND MINOR ASSOCIATED WORK.

STANDARD SHEETS

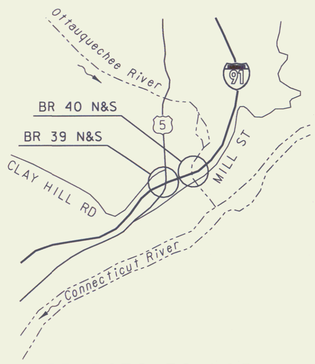
| | | |
|---|---|---|
| E-100 | CONSTRUCTION APPROACH SIGNS | 01/02/04 |
| E-100A | SIDE ROAD CONSTRUCTION-APPROACH SIGNS | 01/02/04 |
| E-101 | CONSTRUCTION SIGN DETAILS | 05/30/03 |
| E-102 | CONSTRUCTION SIGN DETAILS | 06/30/03 |
| E-102A | CONSTRUCTION SIGN DETAILS | 05/01/04 |
| E-103 | MAINLINE TRAFFIC CONTROL DIVIDED HIGHWAY ONE LANE CLOSED | 03/01/04 |
| E-106 | TRAFFIC CONTROL-MISCELLANEOUS DETAILS | 03/01/04 |
| E-107 | DELINEATION, BARRICADES AND DETOURS FOR CONSTRUCTION AREAS | 06/30/03 |
| E-107A | BREAKAWAY BARRICADE DETAILS | 06/08/09 |



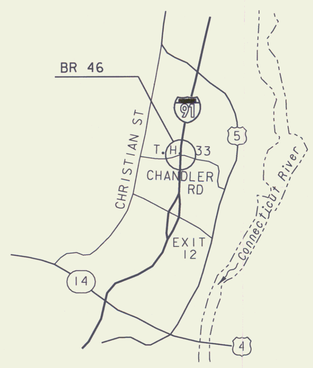

BRIDGES 18 N&S
WESTMINSTER
NOT TO SCALE



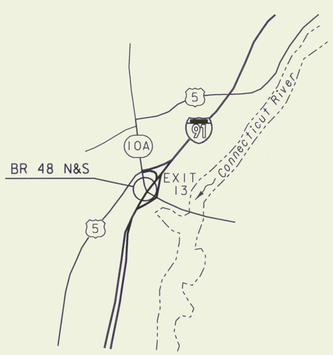

BRIDGE 31
WEATHERSFIELD
NOT TO SCALE




BRIDGES 39 N&S
BRIDGES 40 N&S
HARTLAND
NOT TO SCALE




BRIDGE 46
HARTFORD
NOT TO SCALE




BRIDGES 48 N&S
NORWICH
NOT TO SCALE

QUALITY ASSURANCE PROGRAM: LEVEL

**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 SR SR)
TOP OF CUT
TOE OF SLOPE

DATUM
VERTICAL N/A
HORIZONTAL N/A

N
APPROXIMATE

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.

STATE OF VERMONT · SALLY M. GLAZE · 496 · REGISTERED PROFESSIONAL ENGINEER

DIRECTOR OF PROGRAM DEVELOPMENT
APPROVED _____ DATE 9/14/11

PROJECT MANAGER : MARK SARGENT

PROJECT NAME : WESTMINSTER-NORWICH

PROJECT NUMBER : IM BPNT (8) - READVERTISED

SHEET 1 OF 58 SHEETS

VHB Vanasse Hangen Brustlin, Inc.

VHB NO. 52130 z10AI78CV.DGN plot date: 9/12/2011

# QUANTITY SHEET

| SUMMARY OF ESTIMATED QUANTITIES | | | | | | | | | | | | | TOTALS | | DESCRIPTIONS | | | | DETAILED SUMMARY OF QUANTITIES | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BRIDGE NO. 18N | BRIDGE NO. 18S | BRIDGE NO. 31 | BRIDGE NO. 39N | BRIDGE NO. 39S | BRIDGE NO. 40N | BRIDGE NO. 40S | BRIDGE NO. 46 | BRIDGE NO. 48N | BRIDGE NO. 48S | EROSION CONTROL | ROADWAY | FULL CE ITEMS | GRAND TOTAL | FINAL | UNIT | ITEMS | ITEM NUMBER | EST | QUANTITIES | UNIT | ITEMS |
| 800 | 800 | | | | 200 | 200 | | | | | | | 2000 | | LB | STRUCTURAL STEEL | 506.60 | | | | |
| 160 | 160 | 160 | 160 | 160 | 160 | 160 | 160 | 160 | 160 | | | | 1600 | | HR | TRUCK-MOUNTED ATTENUATOR | 608.45 | | | | |
| 450 | 450 | 450 | 450 | 450 | 510 | 510 | 450 | 450 | 450 | | | | 4620 | | LF | TEMPORARY TRAFFIC BARRIER | 621.90 | | | | |
| 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | | | | 1000 | | HR | UNIFORMED TRAFFIC OFFICERS | 630.10 | | | | |
| 80 | 80 | 80 | 80 | 80 | | | 80 | 80 | 80 | | | | 640 | | HR | FLAGGERS | 630.15 | | | | |
| | | | | | | | | | | | | 1 | 1 | | LS | FIELD OFFICE - ENGINEERS | 631.10 | | | | |
| | | | | | | | | | | | | 1 | 1 | | LS | TESTING EQUIPMENT, PROTECTIVE COATINGS | 631.18 | | | | |
| | | | | | | | | | | | | 3000 | 3000 | | DL | FIELD OFFICE - TELEPHONE (N.A.B.I.) | 631.26 | | | | |
| | | | | | | | | | | | 1 | | 1 | | LS | MOBILIZATION/DEMOBILIZATION | 635.11 | | | | |
| 1 | | | | | | | | | | | | | 1 | | LS | TRAFFIC CONTROL (I-91-BRIDGE NO. 18N) | 641.10 | | | | |
| | 1 | | | | | | | | | | | | 1 | | LS | TRAFFIC CONTROL (I-91-BRIDGE NO. 18S) | 641.10 | | | | |
| | | 1 | | | | | | | | | | | 1 | | LS | TRAFFIC CONTROL (TH 37 OVER I-91-BRIDGE NO. 31) | 641.10 | | | | |
| | | | 1 | | | | | | | | | | 1 | | LS | TRAFFIC CONTROL (I-91-BRIDGE NO. 39N) | 641.10 | | | | |
| | | | | 1 | | | | | | | | | 1 | | LS | TRAFFIC CONTROL (I-91-BRIDGE NO. 39S) | 641.10 | | | | |
| | | | | | 1 | | | | | | | | 1 | | LS | TRAFFIC CONTROL (I-91-BRIDGE NO. 40N) | 641.10 | | | | |
| | | | | | | 1 | | | | | | | 1 | | LS | TRAFFIC CONTROL (I-91-BRIDGE NO. 40S) | 641.10 | | | | |
| | | | | | | | 1 | | | | | | 1 | | LS | TRAFFIC CONTROL (I-91-BRIDGE NO. 46) | 641.10 | | | | |
| | | | | | | | | 1 | | | | | 1 | | LS | TRAFFIC CONTROL (I-91-BRIDGE NO. 48N) | 641.10 | | | | |
| | | | | | | | | | 1 | | | | 1 | | LS | TRAFFIC CONTROL (I-91-BRIDGE NO. 48S) | 641.10 | | | | |
| 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | | | | 20 | | EA | PORTABLE CHANGEABLE MESSAGE SIGN | 641.15 | | | | |
| 290 | 290 | 290 | 290 | 290 | 290 | 290 | 290 | 290 | 290 | | | | 2900 | | LF | 4 INCH WHITE LINE | 646.20 | | | | |
| 1160 | 1160 | 1160 | 1160 | 1160 | 1160 | 1160 | 1160 | 1160 | 1300 | | | | 11740 | | LF | TEMPORARY 6 INCH WHITE LINE | 646.620 | | | | |
| | | | | | | | | | 240 | | | | 240 | | LF | TEMPORARY 12 INCH WHITE LINE | 646.660 | | | | |
| | | | | | | | | | 5 | | | | 5 | | EA | TEMPORARY LETTER OR SYMBOL | 646.690 | | | | |
| 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | | | | 1000 | | SF | PAVEMENT MARKING MASK | 646.86 | | | | |
| | | | | | | | | | | 1000 | | | 1000 | | SY | GEOTEXTILE FOR SILT FENCE | 649.51 | | | | |
| | | | | | | | | | | 2000 | | | 2000 | | SY | TEMPORARY EROSION MATTING | 653.20 | | | | |

VHB Vanasse Hangen Brustlin, Inc.

PROJECT NAME: WESTMINSTER-NORWICH

PROJECT NUMBER: IM BPNT (8)

FILE NAME: z10a178qsi.dgn
PROJECT LEADER: S. M. GUNN
DESIGNED BY: B. J. MASSE
QUANTITY SHEET (1 OF 2)

PLOT DATE: 9/12/2011
DRAWN BY: B. J. MASSE
CHECKED BY: S. M. GUNN
SHEET 2 OF 58

# QUANTITY SHEET

| SUMMARY OF ESTIMATED QUANTITIES | | | | | | | | | | | | | TOTALS | | DESCRIPTIONS | | | | DETAILED SUMMARY OF QUANTITIES | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BRIDGE NO. 18N | BRIDGE NO. 18S | BRIDGE NO. 31 | BRIDGE NO. 39N | BRIDGE NO. 39S | BRIDGE NO. 40N | BRIDGE NO. 40S | BRIDGE NO. 46 | BRIDGE NO. 48N | BRIDGE NO. 48S | EROSION CONTROL | ROADWAY | FULL CE ITEMS | GRAND TOTAL | FINAL | UNIT | ITEMS | ITEM NUMBER | EST | QUANTITIES | UNIT | ITEMS |
| 1 | | | | | | | | | | | | | 1 | | LS | SPECIAL PROVISION (CONTAINMENT AND DISPOSAL OF LEAD PAINT CLEANING RESIDUES) (I91-BR. NO. 18N) | 900.645 | | | | |
| | 1 | | | | | | | | | | | | 1 | | LS | SPECIAL PROVISION (CONTAINMENT AND DISPOSAL OF LEAD PAINT CLEANING RESIDUES) (I91-BR. NO. 18S) | 900.645 | | | | |
| | | 1 | | | | | | | | | | | 1 | | LS | SPECIAL PROVISION (CONTAINMENT AND DISPOSAL OF LEAD PAINT CLEANING RESIDUES) (TH 37 OVER I91-BR. NO. 31) | 900.645 | | | | |
| | | | 1 | | | | | | | | | | 1 | | LS | SPECIAL PROVISION (CONTAINMENT AND DISPOSAL OF LEAD PAINT CLEANING RESIDUES) (I91-BR. NO. 39N) | 900.645 | | | | |
| | | | | 1 | | | | | | | | | 1 | | LS | SPECIAL PROVISION (CONTAINMENT AND DISPOSAL OF LEAD PAINT CLEANING RESIDUES) (I91-BR. NO. 39S) | 900.645 | | | | |
| | | | | | 1 | | | | | | | | 1 | | LS | SPECIAL PROVISION (CONTAINMENT AND DISPOSAL OF LEAD PAINT CLEANING RESIDUES) (I91-BR. NO. 40N) | 900.645 | | | | |
| | | | | | | 1 | | | | | | | 1 | | LS | SPECIAL PROVISION (CONTAINMENT AND DISPOSAL OF LEAD PAINT CLEANING RESIDUES) (I91-BR. NO. 40S) | 900.645 | | | | |
| | | | | | | | 1 | | | | | | 1 | | LS | SPECIAL PROVISION (CONTAINMENT AND DISPOSAL OF LEAD PAINT CLEANING RESIDUES) (I91-BR. NO. 46) | 900.645 | | | | |
| | | | | | | | | 1 | | | | | 1 | | LS | SPECIAL PROVISION (CONTAINMENT AND DISPOSAL OF LEAD PAINT CLEANING RESIDUES) (I91-BR. NO. 48N) | 900.645 | | | | |
| | | | | | | | | | 1 | | | | 1 | | LS | SPECIAL PROVISION (CONTAINMENT AND DISPOSAL OF LEAD PAINT CLEANING RESIDUES) (I91-BR. NO. 48S) | 900.645 | | | | |
| 1 | | | | | | | | | | | | | 1 | | LS | SPECIAL PROVISION (QC/QA CLEAN AND PAINT EXISTING STEEL STRUCTURES, BARE STEEL) (I91-BR. NO. 18N) | 900.645 | | | | |
| | 1 | | | | | | | | | | | | 1 | | LS | SPECIAL PROVISION (QC/QA CLEAN AND PAINT EXISTING STEEL STRUCTURES, BARE STEEL) (I91-BR. NO. 18S) | 900.645 | | | | |
| | | 1 | | | | | | | | | | | 1 | | LS | SPECIAL PROVISION (QC/QA CLEAN AND PAINT EXISTING STEEL STRUCTURES, BARE STEEL) (TH 37 OVER I91-BR. NO. 31) | 900.645 | | | | |
| | | | 1 | | | | | | | | | | 1 | | LS | SPECIAL PROVISION (QC/QA CLEAN AND PAINT EXISTING STEEL STRUCTURES, BARE STEEL) (I91-BR. NO. 39N) | 900.645 | | | | |
| | | | | 1 | | | | | | | | | 1 | | LS | SPECIAL PROVISION (QC/QA CLEAN AND PAINT EXISTING STEEL STRUCTURES, BARE STEEL) (I91-BR. NO. 39S) | 900.645 | | | | |
| | | | | | 1 | | | | | | | | 1 | | LS | SPECIAL PROVISION (QC/QA CLEAN AND PAINT EXISTING STEEL STRUCTURES, BARE STEEL) (I91-BR. NO. 40N) | 900.645 | | | | |
| | | | | | | 1 | | | | | | | 1 | | LS | SPECIAL PROVISION (QC/QA CLEAN AND PAINT EXISTING STEEL STRUCTURES, BARE STEEL) (I91-BR. NO. 40S) | 900.645 | | | | |
| | | | | | | | 1 | | | | | | 1 | | LS | SPECIAL PROVISION (QC/QA CLEAN AND PAINT EXISTING STEEL STRUCTURES, BARE STEEL) (I91-BR. NO. 46) | 900.645 | | | | |
| | | | | | | | | 1 | | | | | 1 | | LS | SPECIAL PROVISION (QC/QA CLEAN AND PAINT EXISTING STEEL STRUCTURES, BARE STEEL) (I91-BR. NO. 48N) | 900.645 | | | | |
| | | | | | | | | | 1 | | | | 1 | | LS | SPECIAL PROVISION (QC/QA CLEAN AND PAINT EXISTING STEEL STRUCTURES, BARE STEEL) (I91-BR. NO. 48S) | 900.645 | | | | |

Vanasse Hangen Brustlin, Inc.

| | |
|---|---|
| PROJECT NAME: WESTMINSTER-NORWICH | |
| PROJECT NUMBER: IM BPNT (8) | |
| FILE NAME: z10a178qs2.dgn | PLOT DATE: 9/12/2011 |
| PROJECT LEADER: S.M. GUNN | DRAWN BY: B.J. MASSE |
| DESIGNED BY: B.J. MASSE | CHECKED BY: S.M. GUNN |
| QUANTITY SHEET (2 OF 2) | SHEET 3 OF 58 |

# PROJECT NOTES:

GENERAL

1. ALL MATERIALS AND CONSTRUCTION SHALL CONFORM TO STATE OF VERMONT, AGENCY OF TRANSPORTATION, 2006 STANDARD SPECIFICATIONS FOR CONSTRUCTION, AND ITS LATEST REVISIONS.

2. ALL WORK AND ANY ASSOCIATED ACTIVITY ON THIS PROJECT SHALL BE PERFORMED WITHIN THE EXISTING RIGHT-OF-WAY LIMITS. THE RIGHT-OF-WAY FOR ALL HIGHWAYS OTHER THAN I-91, SHALL BE ASSUMED TO BE 3 RODS UNLESS SHOWN OTHERWISE ON REFERENCE PLANS.

3. STAGING AREAS OFF THE PAVEMENT SHALL UNDERGO VTRANS CONSTRUCTION STAGING REVIEW. ALL DISTURBED STAGING AREAS SHALL BE RESTORED TO THEIR ORIGINAL CONDITION. TEMPORARY STAGING AREAS OFF PAVEMENT, IF APPROVED, SHALL UTILIZE ITEMS 649.51 GEOTEXTILE FOR SILT FENCE AND 653.20 TEMPORARY EROSION MATTING TO PREVENT EROSION AND CONTROL SEDIMENT FROM THE STAGING AREAS.

4. ALL COSTS ASSOCIATED WITH EXTENDING OR FILLING THE DRAIN TUBES SHALL BE INCIDENTAL TO ITEM 900.645, SPECIAL PROVISION (QC/QA CLEAN AND PAINT EXISTING STEEL STRUCTURES, BARE STEEL).

5. GREASE COATING SHALL BE APPLIED TO ALL BEAMS AND DIAPHRAGMS WITHIN 20 FEET OF EACH ABUTMENT (FIXED AND EXPANSION JOINTS); AND AT PIERS FROM BEAM END TO A LENGTH EQUAL TO TWO TIMES THE BEAM DEPTH FROM POINT OF BEARING AND SHALL INCLUDE ALL EXPOSED SURFACE AREAS OF ATTACHMENTS OR MEMBERS WITHIN THE DISTANCE. COST SHALL BE INCIDENTAL TO ITEM 900.645, SPECIAL PROVISION (QC/QA CLEAN AND PAINT EXISTING STEEL STRUCTURES, BARE STEEL).

6. THE CONTRACTOR SHALL NOT DRILL OR DOWEL INTO THE PIERS FOR CONTAINMENT SUPPORT OR ANY OTHER WORK.

7. MINIMUM VERTICAL CLEARANCE BELOW CONTAINMENT STRUCTURES SHALL BE SHOWN ON THE CONTAINMENT SUBMITTAL AND TRAFFIC CONTROL SUBMITTAL. VERTICAL CLEARANCE OVER TRAFFIC SHALL NOT BE REDUCED TO LESS THAN 14'-6".

8. EXISTING MINIMUM VERTICAL CLEARANCE UNDER BRIDGES (FROM VTRANS BRIDGE INSPECTION REPORTS):

| BRIDGE NO. | CLEARANCE |
|---|---|
| 18 N | 17'-6" |
| 18 S | 14'-4" |
| 31 | 17'-0" |
| 39 N | 16'-10" |
| 39 S | 16'-4" |

| BRIDGE NO. | CLEARANCE |
|---|---|
| 40 N | N/A |
| 40 S | N/A |
| 46 | 15'-11" |
| 48 N | 15'-7" |
| 48 S | 14'-8" |

9. EXISTING GREASE PAINT REMOVAL SHALL BE PAID AS ITEM 900.645, SPECIAL PROVISION (QC/QA CLEAN AND PAINT EXISTING STEEL STRUCTURES, BARE STEEL).

10. BRIDGE-MOUNTED TRAFFIC SIGNS SHALL NOT BE COVERED AT ANYTIME.

11. PIER-MOUNTED JOINT DOWNSPOUTS SHALL BE CLEANED AND PAINTED UNDER CONTRACT ITEMS. THE CONTRACTOR SHALL PROTECT THE PIER FROM PAINT OVERSPRAY.

12. ALL WATERLINE HANGERS AT BRIDGE NO 46 SHALL BE CLEANED AND PAINTED UNDER CONTRACT ITEMS 900.645, SPECIAL PROVISION (CONTAINMENT AND DISPOSAL OF LEAD PAINT CLEANING RESIDUES) AND 900.645, SPECIAL PROVISION (QC/QA CLEAN AND PAINT EXISTING STEEL STRUCTURES, BARE STEEL). WATERLINE SHALL BE PROTECTED FROM OVERSPRAY AND SHALL NOT BE PAINTED.

13. ACCESS TO THE EXISTING HYDRANT AT BRIDGE NO. 39 SHALL BE MAINTAINED AT ALL TIMES.

14. THE EXISTING WIRES FOR DECK MONITORING AT BRIDGE NO. 18 SB HAVE BEEN CUT OR DISCONNECTED. THE CONTRACTOR SHALL VERIFY IT IS NOT A LIVE WIRE PRIOR TO COMMENCEMENT OF WORK.

TRAFFIC CONTROL

1. THE CONTRACTOR SHALL SUBMIT SITE SPECIFIC TRAFFIC CONTROL PLANS DEPICTING EACH PHASE OF THE PLANNED WORK FOR ANY WORK ON I-91 OR FROM THE ROADS ABOVE OR BELOW THE BRIDGES. THE DESIGN SHALL ENSURE STATE-REGULATED WIDE LOADS CAN BE ACCOMMODATED DURING LANE CLOSURES. TRAFFIC CONTROL PLANS SHALL BE DEVELOPED IN ACCORDANCE WITH THE 2009 M.U.T.C.D. AND VTRANS STANDARDS INCLUDING E-103 AND E-106. SITE CONDITIONS MAY WARRANT ADDITIONAL CONSIDERATIONS FOR SAFETY. MINIMUM VERTICAL CLEARANCE OVER LIVE TRAFFIC SHALL BE SHOWN ON TRAFFIC CONTROL PLAN SUBMITTALS. PLANS SHALL BE SUBMITTED IN ACCORDANCE WITH SUBSECTION 105.03 AND SHALL BE STAMPED BY A PROFESSIONAL ENGINEER LICENSED IN AN APPROPRIATE DISCIPLINE IN THE STATE OF VERMONT.

2. THE CONTRACTOR SHALL OBTAIN THE MOST CURRENT TRAFFIC VOLUMES FOR I-91 FOR USE IN THE PROJECT SPECIFIC TRAFFIC CONTROL PLANS.

3. THE TRAFFIC CONTROL PLANS SHALL SHOW ALL RAMPS, BIKE LANES, SIDEWALKS, INTERSECTIONS, AND I-91 ACCELERATION AND DECELERATION LANES AS APPLICABLE TO EACH BRIDGE SITE. PEDESTRIANS SHALL BE ACCOMMODATED IN ACCORDANCE WITH A.D.A. GUIDELINES.

4. UNIFORMED TRAFFIC OFFICERS ARE REQUIRED FOR THE TRAFFIC CONTROL DESIGN ON I-91.

5. NIGHT WORK WILL NOT BE ALLOWED UNLESS APPROVED BY THE RESIDENT ENGINEER.

6. UNLESS COVERED UNDER INDIVIDUAL PAY ITEMS, ALL COSTS FOR TEMPORARY TRAFFIC CONTROL DEVICES WILL BE CONSIDERED TO BE INCLUDED IN THE CONTRACT LUMP SUM PRICE FOR TRAFFIC CONTROL, ITEM 641.10.

7. THE PORTABLE CHANGEABLE MESSAGE SIGNS (PCMS) SHALL BE USED 2 WEEKS IN ADVANCE OF LANE CLOSURE AS DIRECTED BY THE ENGINEER. ADDITIONAL PCMS MAY BE NECESSARY FOR REDUCED VERTICAL CLEARANCE OVER I-91. PAYMENT SHALL BE MADE UNDER ITEM 641.15, PORTABLE CHANGEABLE MESSAGE SIGN.

8. RIGHT-OF-WAY FENCE MAY HAVE TO BE REMOVED AND RESET IN ACCORDANCE WITH SECTION 620 FOR EGRESS AND INGRESS. THIS WORK SHALL BE INCIDENTAL TO TRAFFIC CONTROL, ITEM 641.10.

9. ALL EQUIPMENT AND CONTAINMENT FACILITIES SHALL BE PROTECTED BY A CONCRETE BARRIER OVERNIGHT AND DURING NON-WORKING HOURS. PERMANENT LANE CLOSURES SHALL UTILIZE TEMPORARY TRAFFIC BARRIER AND SHALL BE INDICATED IN THE SITE SPECIFIC TRAFFIC CONTROL PLANS. ALSO SEE GENERAL SPECIAL PROVISION 621.07, TEMPORARY TRAFFIC BARRIER, FOR ADDITIONAL REQUIREMENTS.

UTILITIES

1. REFER TO UTILITIES SPECIAL PROVISIONS.

SCUPPERS

1. ALL DETERIORATED SCUPPERS WITH SIGNIFICANT DOWNSPOUT LOSS OF SECTION THAT CAN NOT BE SUFFICIENTLY REPAIRED BY CLEANING AND PAINTING SHALL BE CUT-OFF ABOVE DETERIORATION AND REPAIRED. IF THE DETERIORATION EXTENDS TO THE UNDERSIDE OF THE DECK, THE SCUPPER SHALL BE CUT-OFF AND REPLACED. THE ENGINEER SHALL APPROVE EACH DETERIORATED SCUPPER IDENTIFIED BY THE CONTRACTOR PRIOR TO BEING REPAIRED OR REPLACED. WORK SHALL BE PAID UNDER ITEM 506.60, STRUCTURAL STEEL.

2. ADHESIVE SIDE OF NEOPRENE SHALL BE PLACED ON UNDERSIDE OF CONCRETE DECK AND INTERIOR OF EXISTING SCUPPER AROUND PERIMETER OF DRAIN. NEOPRENE SHALL COVER ENTIRE SURFACE OF THE STEEL PLATE AND EXTEND A MINIMUM OF 1 INCH UP INTO THE INTERIOR OF THE EXISTING SCUPPER DRAIN. NEOPRENE, EXPANSION ANCHOR AND OTHER MATERIALS NECESSARY FOR SCUPPER REPAIR OR REPLACEMENT SHALL BE INCIDENTAL TO ITEM 506.60.

3. ALL EXISTING DIMENSIONS AND SCUPPER SIZES SHALL BE FIELD VERIFIED.

4. PLATE WILL BE CUT IN THE FIELD TO ACCOMMODATE HAUNCH.

5. BOLT HOLES SHALL BE FIELD DRILLED AND SHALL HAVE A MINIMUM EDGE DISTANCE OF 1.5 INCHES.

6. ALL NEW STEEL SHALL BE ZINC PRIMED AND PAINTED WITH THE PROJECT APPROVED PAINT SYSTEM.

7. ALL WELDING SHALL CONFORM WITH THE PROVISIONS OF SUBSECTION 506.10. THERE SHALL BE NO WELDING TO THE EXISTING BEAMS AND GIRDERS.

8. HOLLOW STRUCTURAL STEEL TUBING AND STRUCTURAL STEEL PIPE SHALL CONFORM TO ASTM A-500 GRADE B OR ASTM A-501.

9. STEEL PLATES AND ANGLES SHALL CONFORM TO AASHTO M270, GRADE 50 (ASTM A709, GRADE 50).

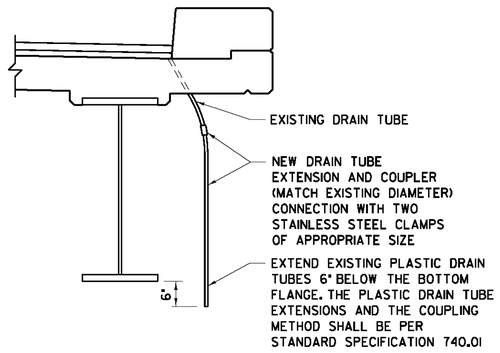
10. HIGH STRENGTH BOLTS, NUTS, AND CIRCULAR WASHERS SHALL CONFORM TO SUBSECTION 714.05 OF THE 2006 STANDARD SPECIFICATIONS.

VHB Vanasse Hangen Brustlin, Inc.

PROJECT NAME: WESTMINSTER-NORWICH

PROJECT NUMBER: IM BPNT (8)

| | |
|---|---|
| FILE NAME: z10a178not.dgn | PLOT DATE: 9/12/2011 |
| PROJECT LEADER: S. M. GUNN | DRAWN BY: B. J. MASSE |
| DESIGNED BY: S. M. GUNN | CHECKED BY: G. M. EDINGTON |
| PROJECT NOTES | SHEET 4 OF 58 |



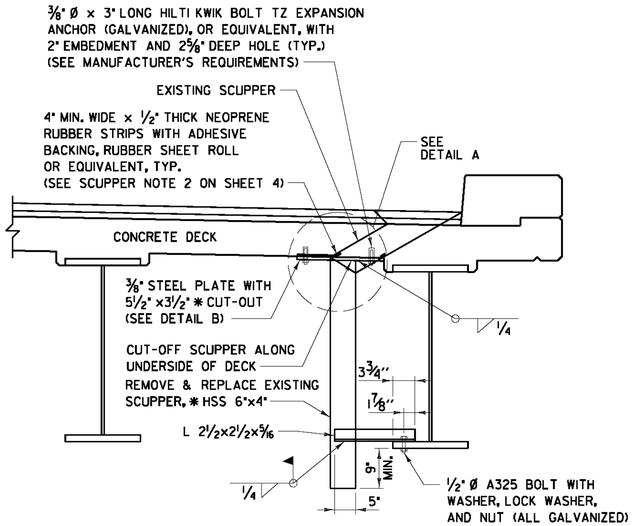

NOTES:

1. DRAIN TUBE EXTENSION DETAIL TO BE USED WHERE THE END OF EXISTING TUBES ARE LESS THAN 6" BELOW ADJACENT BEAM AS DIRECTED BY THE RESIDENT ENGINEER.

2. IF EXISTING DRAIN TUBE IS TOO SHORT TO PROVIDE AN ADEQUATE CONNECTION, THE CONTRACTOR SHALL COMPLETELY FILL THE TUBE WITH POLYURETHANE SEALANT CONFORMING TO SUBSECTION 707.05. TUBES TO BE FILLED WITH POLYURETHANE SEALANT SHALL BE APPROVED BY THE ENGINEER PRIOR TO BEING FILLED.

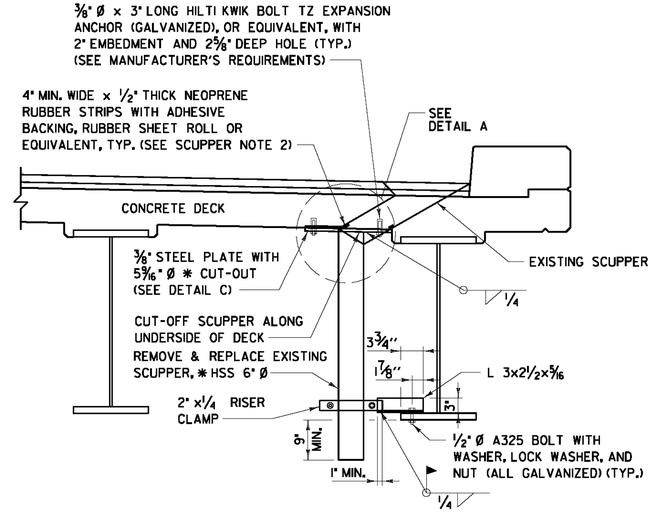
## DRAIN TUBE EXTENSION DETAIL

NOT TO SCALE



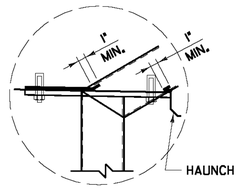

## RECTANGULAR SCUPPER REPLACEMENT DETAIL

NOT TO SCALE



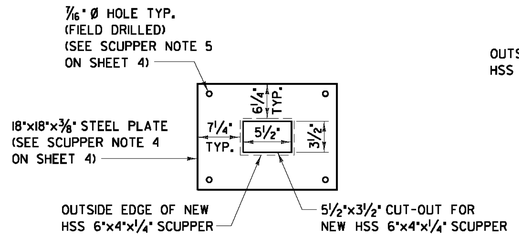

## ROUND SCUPPER REPLACEMENT DETAIL

NOT TO SCALE



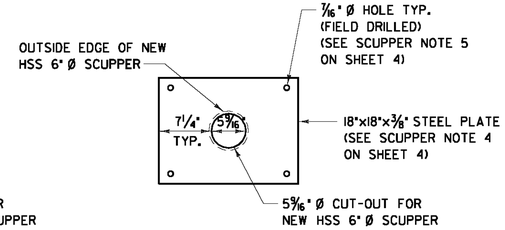

## DETAIL A

NOT TO SCALE




## DETAIL B *

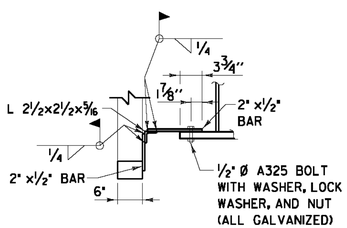
NOT TO SCALE




## DETAIL C *

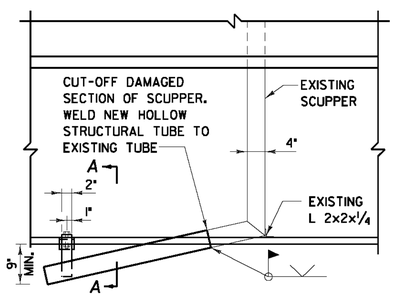
NOT TO SCALE

* EXISTING SCUPPER SIZES TO BE VERIFIED BY CONTRACTOR
SCUPPER PLATE MAY REQUIRE ADDITIONAL RESIZING IN THE FIELD



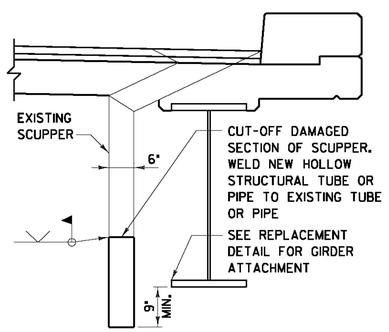

## VIEW A-A

NOT TO SCALE




## SCUPPER REPAIR DETAIL FOR ANGLED TUBING

(BRIDGES NO. 18 N&S ONLY)
NOT TO SCALE

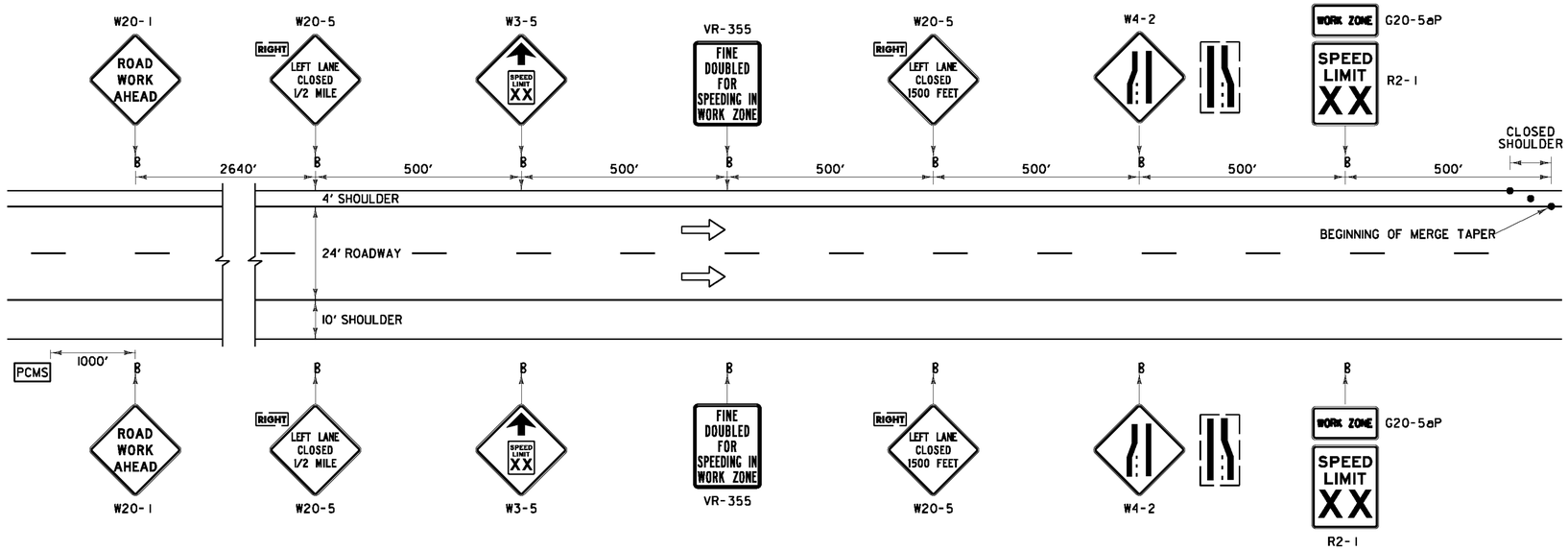



## SCUPPER REPAIR DETAIL

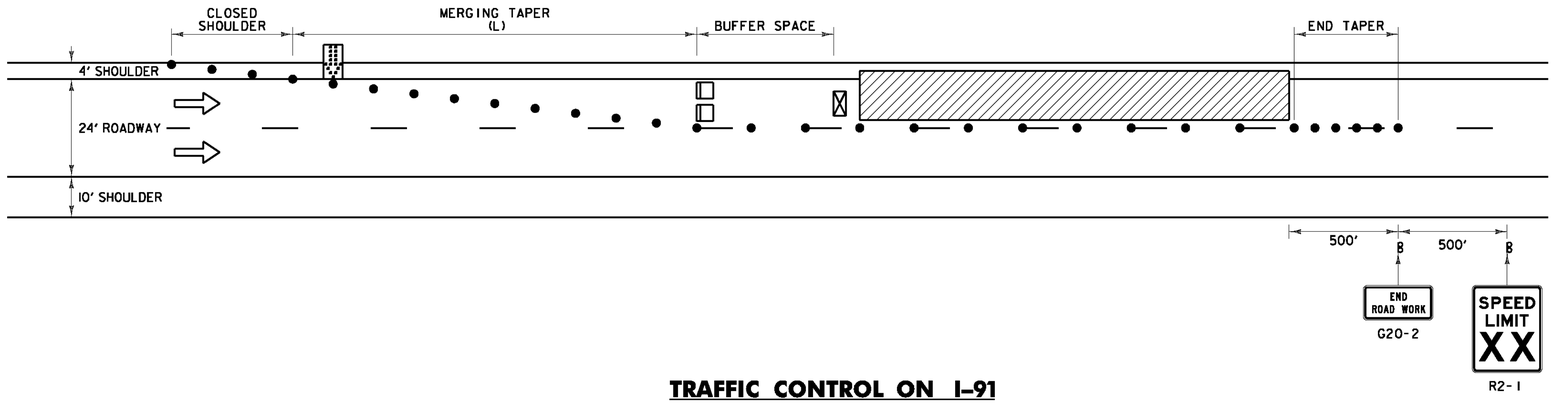
NOT TO SCALE

| | |
|---|---|
| PROJECT NAME: WESTMINSTER-NORWICH | |
| PROJECT NUMBER: IM BPNT (8) | |
| FILE NAME: z10a178det.dgn | PLOT DATE: 9/12/2011 |
| PROJECT LEADER: S. M. GUNN | DRAWN BY: B. J. MASSE |
| DESIGNED BY: S. M. GUNN | CHECKED BY: G. M. EDINGTON |
| STANDARD DETAILS | SHEET 5 OF 58 |

VHB Vanasse Hangen Brustlin, Inc.




## CONSTRUCTION APPROACH SIGNING ON I-91




## TRAFFIC CONTROL ON I-91

### LEGEND

- FLOW OF TRAFFIC
- RETROREFLECTIVE PLASTIC DRUM OR CONCRETE BARRIER
- PORTABLE ARROW BOARD
- TYPE III BARRICADE
- WORK AREA
- TRUCK/TRAILER MOUNTED ATTENUATOR
- PCMS — PORTABLE CHANGEABLE MESSAGE SIGN (SEE NOTE 15)

| POSTED SPEED (MPH) | TAPER LENGTHS (FT) | | TANGENT W=12 FT (L/2) | BARRIER FLARE RATE (MINIMUM) | MINIMUM BUFFER SPACE LENGTH (FT) | MAXIMUM CHANNELIZING DEVICE SPACING (FT) | |
|---|---|---|---|---|---|---|---|
| | SHOULDER W=10 FT (L/3) | MERGING 12 FT LANE (L) | | | | TAPER (S) | TANGENT (2S) |
| ≤40 | 90 | 320 | 160 | 1:9 | 305 | 40 | 80 |
| 45 | 150 | 540 | 270 | 1:9 | 360 | 45 | 90 |
| 50 | 170 | 600 | 300 | 1:11 | 425 | 50 | 100 |
| 55 | 185 | 660 | 330 | 1:13 | 495 | 55 | 110 |
| 60 | 200 | 720 | 360 | 1:13 | 570 | 60 | 120 |
| 65 | 215 | 780 | 390 | 1:13 | 645 | 65 | 130 |

TAPER RATES ARE DETERMINED USING THE FOLLOWING EQUATION:
L = WS FOR POSTED SPEEDS OF 45 MPH OR GREATER
L = WS²/60 FOR POSTED SPEEDS OF 40 MPH OR LESS

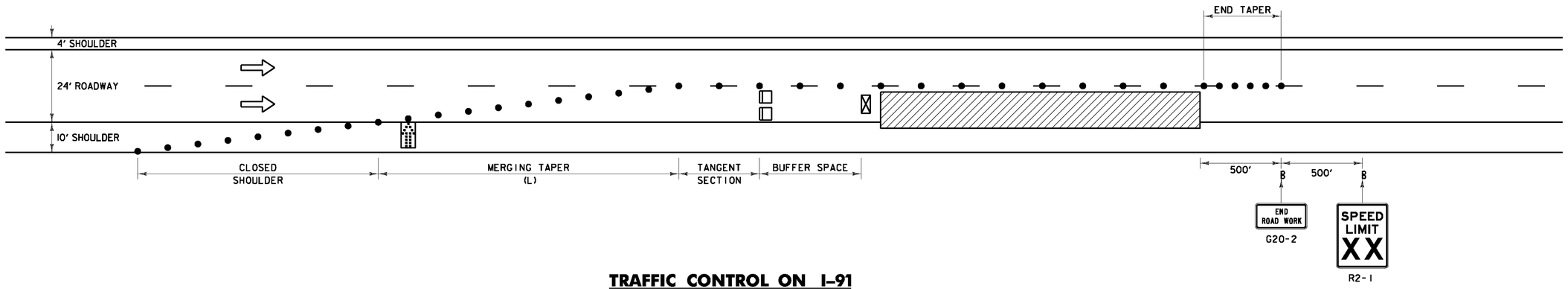
L = MINIMUM LENGTH OF TAPER
W = WIDTH OF OFFSET IN FEET. (TYPICAL)
S = POSTED SPEED IN MPH

## TRAFFIC CONTROL NOTES I-91:

1. THE TRAFFIC CONTROL PLAN SHOWN IS A SCHEMATIC ONLY AND SHOULD BE USED AS AN EXAMPLE ONLY. THE CONTRACTOR SHALL SUBMIT A SITE SPECIFIC TRAFFIC CONTROL PLAN FOR BRIDGES 18N & 18S, 31, 39N & 39S, 40N & 40S, 46, AND 48N & 48S TO VTRANS FOR APPROVAL. PAYMENT FOR PREPARING AND SUBMITTING THE TRAFFIC CONTROL PLAN, AND MAKING ANY NECESSARY REVISIONS TO THE PLAN, WILL BE INCLUDED IN THE UNIT PRICE BID FOR CONTRACT ITEM 641.10. THE CONTRACTOR SHALL ALLOW TWO WEEKS FOR APPROVAL OF THE TRAFFIC CONTROL PLAN. NO WORK SHALL COMMENCE UNTIL THE CONTRACTOR HAS AN APPROVED TRAFFIC CONTROL PLAN.
2. THE EXISTING SPEED LIMIT FOR I-91 IS 65 MPH. THE SPEED LIMIT WILL BE REDUCED TO 50 MPH IN THE WORK ZONE FOR THIS PROJECT. ANY EXISTING SPEED LIMIT SIGNS WITHIN THE SPEED REDUCTION AREA SHALL BE COMPLETELY COVERED.
3. SIGNS SHALL BE INSTALLED SO AS NOT TO OBSTRUCT EXISTING SIGNS.
4. ALL SIGNS SHALL BE IN ACCORDANCE WITH THE CURRENT EDITIONS OF THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES" (MUTCD) AND THE "STANDARD HIGHWAY SIGNS" BOOK (SHS) PUBLISHED BY THE FEDERAL HIGHWAY ADMINISTRATION (FHWA).
5. SOLID SUBSTRATE CONSTRUCTION SIGNS SHALL HAVE RETROREFLECTIVE SHEETING EQUAL TO OR EXCEEDING "AMERICAN SOCIETY FOR TESTING AND MATERIALS" (ASTM) TYPE VII, VIII OR IX REQUIREMENTS, UNLESS OTHERWISE NOTED.
6. ROLL UP SIGNS SHALL HAVE RETROREFLECTIVE SHEETING EQUAL TO OR EXCEEDING ASTM TYPE VI.
7. SIGNS SHALL BE ERECTED BEFORE THE START OF ANY WORK AND SHALL BE COVERED UNTIL WORK COMMENCES, DURING PERIODS OF INACTIVITY OR UPON COMPLETION OF THE WORK. EACH SIGN SHALL BE ERECTED IN A NEAT AND WORKMANLIKE MANNER. SIGNS SHALL BE REMOVED UPON COMPLETION OF THE WORK AT THE DISCRETION OF THE ENGINEER.
8. FIXED SIGNS SHALL BE SET SECURELY IN THE GROUND. THE BOTTOM OF A SIGN SHALL BE AT LEAST SEVEN FEET ABOVE THE EDGE OF PAVEMENT. THE NEAREST EDGE OF A SIGN SHALL BE AT LEAST SIX FEET OUTSIDE THE SHOULDER POINT OR FOUR FEET OUTSIDE GUARDRAIL.
9. PORTABLE SIGNS SHALL BE PLACED ON THE EDGE OF ROADWAY AND A ONE FOOT MINIMUM ABOVE TRAVELED WAY. ALL VEGETATION THAT INTERFERES WITH VISIBILITY OF THE SIGNS SHALL BE REMOVED. WHEN PLACED BEHIND GUARDRAIL, THE BOTTOM OF THE SIGN FACE SHALL BE ABOVE THE TOP OF THE GUARDRAIL.
10. WHERE SIGN INSTALLATIONS ARE NOT PROTECTED BY GUARDRAIL OR OTHER APPROVED TRAFFIC BARRIERS, ALL SIGN STANDS AND POST INSTALLATIONS SHALL BE "NATIONAL COOPERATIVE HIGHWAY RESEARCH PROGRAM" (NCHRP) REPORT 350 COMPLIANT. NO SIGN POSTS SHALL EXTEND OVER THE TOP OF THE SIGN INSTALLED ON SAID POST(S). WHEN ANCHORS ARE INSTALLED STUB SHALL NOT BE GREATER THAN FOUR INCHES ABOVE EXISTING GROUND.
11. THE CONTRACTOR SHALL HAVE SIGNS FOR CLOSURE OF RIGHT AND LEFT LANES ON PROJECT BEFORE WORK COMMENCES.
12. THE NUMBER OF CHANNELIZING DEVICES, TYPE III BARRICADE AND OTHER TRAFFIC CONTROL DEVICES SHOWN ARE FOR ILLUSTRATIVE PURPOSES ONLY, THE ACTUAL NUMBER REQUIRED ARE TO BE DETERMINED BASED ON INDIVIDUAL DETOUR CONDITIONS (TAPERS, SPEED LIMITS, LENGTH OF DETOUR, CURVE, ETC.). WARNING LIGHTS SHALL NOT BE USED ON CHANNELIZING DEVICES.
13. PLACE LAST CHANNELIZING DEVICE 100 FEET BEYOND THE ANTICIPATED WORK ZONE TERMINAL POINT EACH DAY AND THEN START THE END TAPER. THE END TAPER SHALL BE CONSTRUCTED OF 5 ADDITIONAL RETROREFLECTIVE DRUMS SPACED AT 10 FEET ON CENTER.
14. THE ARROW BOARD SHALL BE PLACED ON THE SHOULDER OF THE ROADWAY, OR IF PRACTICAL FURTHER FROM THE TRAVELED LANE AT THE END OF THE SHOULDER TAPER.
15. THE PORTABLE CHANGEABLE MESSAGE SIGNS (PCMS) SHALL BE USED AT THE DISCRETION OF THE ENGINEER, THE PCMS SHALL BE USED IN ACCORDANCE WITH SECTION 6F.55 OF THE MUTCD.
16. TRAVEL LANE SHALL BE MINIMUM 12 FEET WIDE.

Vanasse Hangen Brustlin, Inc.

| | |
|---|---|
| PROJECT NAME: WESTMINSTER-NORWICH | |
| PROJECT NUMBER: IM BPNT (8) | |
| FILE NAME: z10a178tc.dgn | PLOT DATE: 9/12/2011 |
| PROJECT LEADER: S. M. GUNN | DRAWN BY: VTRANS |
| DESIGNED BY: VTRANS | CHECKED BY: S. M. GUNN |
| TRAFFIC CONTROL (SHEET 1 OF 3) | SHEET 6 OF 58 |




## TRAFFIC CONTROL ON I-91

## LEGEND

- FLOW OF TRAFFIC
- RETROREFLECTIVE PLASTIC DRUM OR CONCRETE BARRIER
- PORTABLE ARROW BOARD
- TYPE III BARRICADE
- WORK AREA
- TRUCK/TRAILER MOUNTED ATTENUATOR
- PCMS — PORTABLE CHANGEABLE MESSAGE SIGN (SEE NOTE 15 ON TRAFFIC CONTROL SHEET 1)

| POSTED SPEED (MPH) | TAPER LENGTHS (FT) | | TANGENT W=12 FT (L/2) | BARRIER FLARE RATE (MINIMUM) | MINIMUM BUFFER SPACE LENGTH (FT) | MAXIMUM CHANNELIZING DEVICE SPACING (FT) | |
|---|---|---|---|---|---|---|---|
| | SHOULDER W=10 FT (L/3) | MERGING 12 FT LANE (L) | | | | TAPER (S) | TANGENT (2S) |
| ≤40 | 90 | 320 | 160 | 1:9 | 305 | 40 | 80 |
| 45 | 150 | 540 | 270 | 1:9 | 360 | 45 | 90 |
| 50 | 170 | 600 | 300 | 1:11 | 425 | 50 | 100 |
| 55 | 185 | 660 | 330 | 1:13 | 495 | 55 | 110 |
| 60 | 200 | 720 | 360 | 1:13 | 570 | 60 | 120 |
| 65 | 215 | 780 | 390 | 1:13 | 645 | 65 | 130 |

TAPER RATES ARE DETERMINED USING THE FOLLOWING EQUATION:
L = WS FOR POSTED SPEEDS OF 45 MPH OR GREATER
L = WS²/60 FOR POSTED SPEEDS OF 40 MPH OR LESS

L = MINIMUM LENGTH OF TAPER
W = WIDTH OF OFFSET IN FEET. (TYPICAL)
S = POSTED SPEED IN MPH

## TRAFFIC CONTROL NOTES:

SEE NOTES ON SHEET 6

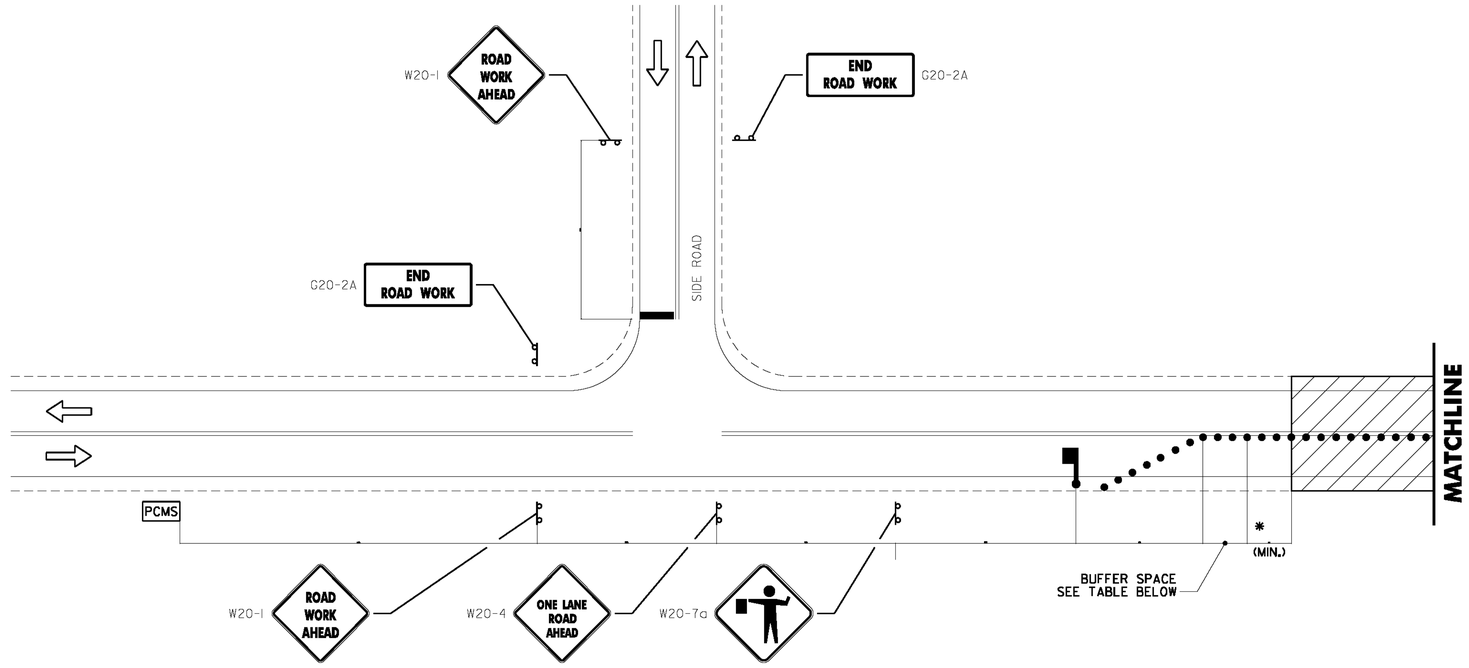
VHB Vanasse Hangen Brustlin, Inc.

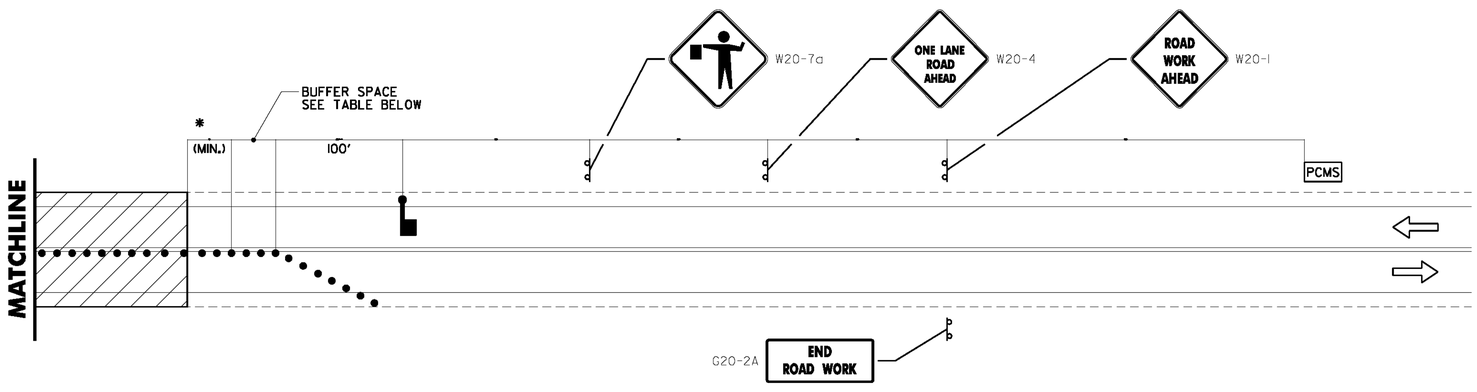
PROJECT NAME: WESTMINSTER-NORWICH

PROJECT NUMBER: IM BPNT (8)

FILE NAME: z10a178tc.dgn
PROJECT LEADER: S. M. GUNN
DESIGNED BY: VTRANS
TRAFFIC CONTROL (SHEET 2 OF 3)

PLOT DATE: 9/12/2011
DRAWN BY: VTRANS
CHECKED BY: S. M. GUNN




* - ACTUAL DIMENSION TO BE DETERMINED BY INDIVIDUAL BRIDGE SITE CONDITIONS AND TO BE SHOWN ON TRAFFIC CONTROL PLANS SUBMITTED BY THE CONTRACTOR.

## TRAFFIC CONTROL PLAN ON NON-INTERSTATE ROADWAYS

NOT TO SCALE

## LEGEND

- FLOW OF TRAFFIC
- RETROREFLECTIVE PLASTIC DRUM OR CONCRETE BARRIER
- WORK AREA
- FLAGGER
- PCMS — PORTABLE CHANGEABLE MESSAGE SIGN (SEE NOTE 13)

## TRAFFIC CONTROL NOTES OTHER HIGHWAYS:

1. THE TRAFFIC CONTROL PLAN SHOWN IS A SCHEMATIC ONLY AND SHOULD BE USED AS AN EXAMPLE ONLY. THE CONTRACTOR SHALL SUBMIT A SITE SPECIFIC TRAFFIC CONTROL PLAN FOR BRIDGES 18N & 18S, 31, 39N & 39S, 40N & 40S, 46, AND 48N & 48S TO VTRANS FOR APPROVAL. PAYMENT FOR PREPARING AND SUBMITTING THE TRAFFIC CONTROL PLAN, AND MAKING ANY NECESSARY REVISIONS TO THE PLAN, WILL BE INCLUDED IN THE UNIT PRICE BID FOR CONTRACT ITEM 641.10. THE CONTRACTOR SHALL ALLOW TWO WEEKS FOR APPROVAL OF THE TRAFFIC CONTROL PLAN. NO WORK SHALL COMMENCE UNTIL THE CONTRACTOR HAS AN APPROVED TRAFFIC CONTROL PLAN.
2. ANY PARKING AREAS OR DRIVES WITH AN ENTRANCE/EXIT BETWEEN THE FLAGGER AND THE WORK ZONE SHALL HAVE THAT ENTRANCE/EXIT CLOSED WITH CONES OR DRUMS, PROVIDED ADDITIONAL ENTRANCES/EXITS EXIST IN THE AREA APPROACHING THE FLAGGER.
3. ANY PUBLIC HIGHWAYS BETWEEN THE FLAGGER AND THE WORK ZONE WILL REQUIRE AN ADDITIONAL FLAGGER TO MAINTAIN TRAFFIC CONTROL FOR THE PUBLIC HIGHWAY.
4. SIGNS SHALL BE INSTALLED SO AS NOT TO OBSTRUCT EXISTING SIGNS OR CORNER SIGHT DISTANCE FROM TOWN HIGHWAYS OR DRIVES.
5. ALL SIGNS SHALL BE IN ACCORDANCE WITH THE CURRENT EDITIONS OF THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES" (MUTCD) AND THE "STANDARD HIGHWAY SIGNS" BOOK (SHS) PUBLISHED BY THE FEDERAL HIGHWAY ADMINISTRATION (FHWA).
6. SOLID SUBSTRATE CONSTRUCTION SIGNS SHALL HAVE RETROREFLECTIVE SHEETING EQUAL TO OR EXCEEDING "AMERICAN SOCIETY FOR TESTING AND MATERIALS" (ASTM) TYPE VII, VIII OR IX REQUIREMENTS, UNLESS OTHERWISE NOTED.
7. ROLL UP SIGNS SHALL HAVE RETROREFLECTIVE SHEETING EQUAL TO OR EXCEEDING ASTM TYPE VI.
8. SIGNS SHALL BE ERECTED BEFORE THE START OF ANY WORK AND SHALL BE COVERED UNTIL WORK COMMENCES, DURING PERIODS OF INACTIVITY OR UPON COMPLETION OF THE WORK. EACH SIGN SHALL BE ERECTED IN A NEAT AND WORKMANLIKE MANNER. SIGNS SHALL BE REMOVED UPON COMPLETION OF THE WORK AT THE DISCRETION OF THE ENGINEER.
9. FIXED SIGNS SHALL BE SET SECURELY IN THE GROUND. THE BOTTOM OF A SIGN SHALL BE AT LEAST SEVEN FEET ABOVE THE EDGE OF PAVEMENT. THE NEAREST EDGE OF A SIGN SHALL BE AT LEAST SIX FEET OUTSIDE THE SHOULDER POINT OR FOUR FEET OUTSIDE GUARDRAIL.
10. PORTABLE SIGNS SHALL BE PLACED ON THE EDGE OF ROADWAY AND AT ONE FOOT MINIMUM ABOVE TRAVELED WAY. ALL VEGETATION THAT INTERFERES WITH VISIBILITY OF THE SIGNS SHALL BE REMOVED. WHEN PLACED BEHIND GUARDRAIL, THE BOTTOM OF THE SIGN FACE SHALL BE ABOVE THE TOP OF THE GUARDRAIL.
11. WHERE SIGN INSTALLATIONS ARE NOT PROTECTED BY GUARDRAIL OR OTHER APPROVED TRAFFIC BARRIERS, ALL SIGN STANDS AND POST INSTALLATIONS SHALL BE "NATIONAL COOPERATIVE HIGHWAY RESEARCH PROGRAM" (NCHRP) REPORT 350 COMPLIANT. NO SIGN POSTS SHALL EXTEND OVER THE TOP OF THE SIGN INSTALLED ON SAID POST(S). WHEN ANCHORS ARE INSTALLED STUB SHALL NOT BE GREATER THAN FOUR INCHES ABOVE EXISTING GROUND.
12. THE NUMBER OF CHANNELIZING DEVICES SHOWN ARE FOR ILLUSTRATIVE PURPOSES ONLY, THE ACTUAL NUMBER REQUIRED ARE TO BE DETERMINED BY THE CONTRACTOR AND SHOWN ON THE TRAFFIC CONTROL PLAN SUBMITTED BY THE CONTRACTOR. WARNING LIGHTS SHALL NOT BE USED ON CHANNELIZING DEVICES.
13. THE PORTABLE CHANGEABLE MESSAGE SIGN (PCMS) SHALL BE USED AT THE DISCRETION OF THE ENGINEER. THE PCMS SHALL BE USED IN ACCORDANCE WITH SECTION 6F.55 OF THE MUTCD. THE PCMS SHALL READ "ONE WAY TRAFFIC AHEAD BE PREPARED TO STOP".

## BUFFER SPACE TABLE

| POSTED SPEED (MPH) | MINIMUM BUFFER SPACE LENGTH (FT) |
|---|---|
| 35 | 250 |
| 40 | 305 |
| 45 | 360 |
| 50 | 425 |

Vanasse Hangen Brustlin, Inc.

PROJECT NAME: WESTMINSTER-NORWICH

PROJECT NUMBER: IM BPNT (8)

FILE NAME: z10a178tc.dgn | PLOT DATE: 9/12/2011
PROJECT LEADER: S. M. GUNN | DRAWN BY: VTRANS
DESIGNED BY: VTRANS | CHECKED BY: S. M. GUNN
TRAFFIC CONTROL (SHEET 3 OF 3) | SHEET 8 OF 58

| R.P.W. DIV. NO. | STATE | PROJECT NO. | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|---|
| 1 | VT. | I 91-1(13)21 | 13K | 535 |

135'-3 3/16"
37'-8 1/2"
55'-11 7/16"
39'-2 5/16"

℄ Bearing Abutment No.1
Face of Coping
℄ Pier A
℄ Pier B
℄ Bearing Abutment No.2
Face of Curb
Point of minimum vertical clearance 14'-6"
Scupper
Approach slab
℄ Left Lane
23'-0"
32'-0"
58°-37'-30"
55°-37'-30"
Begin Bridge Sta. 1359+86.61 Finished Grade El. 357.51
Sta. 1359+89.82
Sta. 1360+27.93 Finished Grade El. 356.75
Sta. 1360+83.45 Finished Grade El. 356.1
End Bridge Sta. 1361+25.87 Finished Grade El. 355.76
Sta. 1361+22.68
Face of Curb
Face of Coping
Tangent to ℄ SA-4 (Relocated) Sta. 2+35.51
℄ SA-4 (relocated)
62°-15'-24"
For Details of Expansion Joints over Piers and at Abutments see Std. Sheet No. SB-22-56
℄ Construction Interstate
N 14°-06'-42" E
1360+00
1361+00
Sta. 1360+29.28 ℄ Construction Interstate
Sta. 2+36.51 ℄ SA-4 (Relocated)
30°-0" Diameter Hill
℄ Bearing Abutment No.3
℄ Pier C
Pier D
Face of Coping
℄ Bearing Abutment No.4
Face of Curb
Sta. 1360+60.76
R=10' For End Copings
Scupper
℄ Right Lane
68°-22'-33"
Begin Bridge Sta. 1359+49.14 Finished Grade El. 357.51
Sta. 1359+50.22
Sta. 1359+90.30 Finished Grade El. 357.10
Sta. 1360+39.45 Finished Grade El. 356.61
End Bridge Sta. 1360+81.32 Finished Grade El. 356.18
Approach slab
Face of Curb
Face of Coping
40'-0 7/8"
49'-0 3/8"
41'-3 15/16"
132'-8 5/8"

## PLAN
Scale: 3/32" = 1'-0"

For Details of Expansion Joints over Piers and at Abutments see Std. Sheet No. SB-22-56

12" Sub-Base of Crushed Rock Item 204 (Mod.)
Exp.
Fixed
Steel piles
Slope 1:1 Normal
Approximate Existing Ground

## EASTERLY ELEVATION
## WESTERLY ELEVATION (SIMILAR)
Scale: 3/32" = 1'-0"

### RAILING POST SPACING SCHEDULE

| | A | B | C | D |
|---|---|---|---|---|
| LEFT LANE | 7'-2 3/16" | 16 @ 7'-1"=113'-4 | 7'-2 3/16" | 127'-8 1/8" |
| RIGHT LANE | 8'-11 7/16" | 16 @ 7'-0"=112'-0" | 8'-11 7/16" | 129'-11 7/16" |

Notes: 1. Railing posts to be set normal to grade. Omit vertical sense at high end of railing panel at each of joints over pier.
2. All stationing refers to ℄ Construction Interstate excluding stationing along SA-4 (Relocated).
3. For scupper layout see Framing Plan Sheet No. 13K
4. For railing details see standard Sheet SB-50-57 (18 ℄)
5. All dimensions are horizontal dimensions.
6. For Bridge Marker See Drawing SB-20-56 (Detail A)

### ESTIMATED QUANTITIES

| ITEM NO. | DESCRIPTION | UNIT | NET | OVER-RUN | TOTAL | FINAL |
|---|---|---|---|---|---|---|
| 556 C | Granite Bridge Curb Type I - Left Lane | L.F. | 409 | | 409 | 369 |
| 572 | Bridge Railing - Left Lane | L.F. | 259 | | 259 | 234 |
| 556 C | Granite Bridge Curb Type I - Right Lane | L.F. | 409 | | 409 | 300 |
| 572 | Bridge Railing - Right Lane | L.F. | 261 | | 261 | 234 |

WESTMINSTER-NORWICH
IM BPNT (8)
SHEET 9 OF 58
BRIDGE 18

FOR REFERENCE ONLY

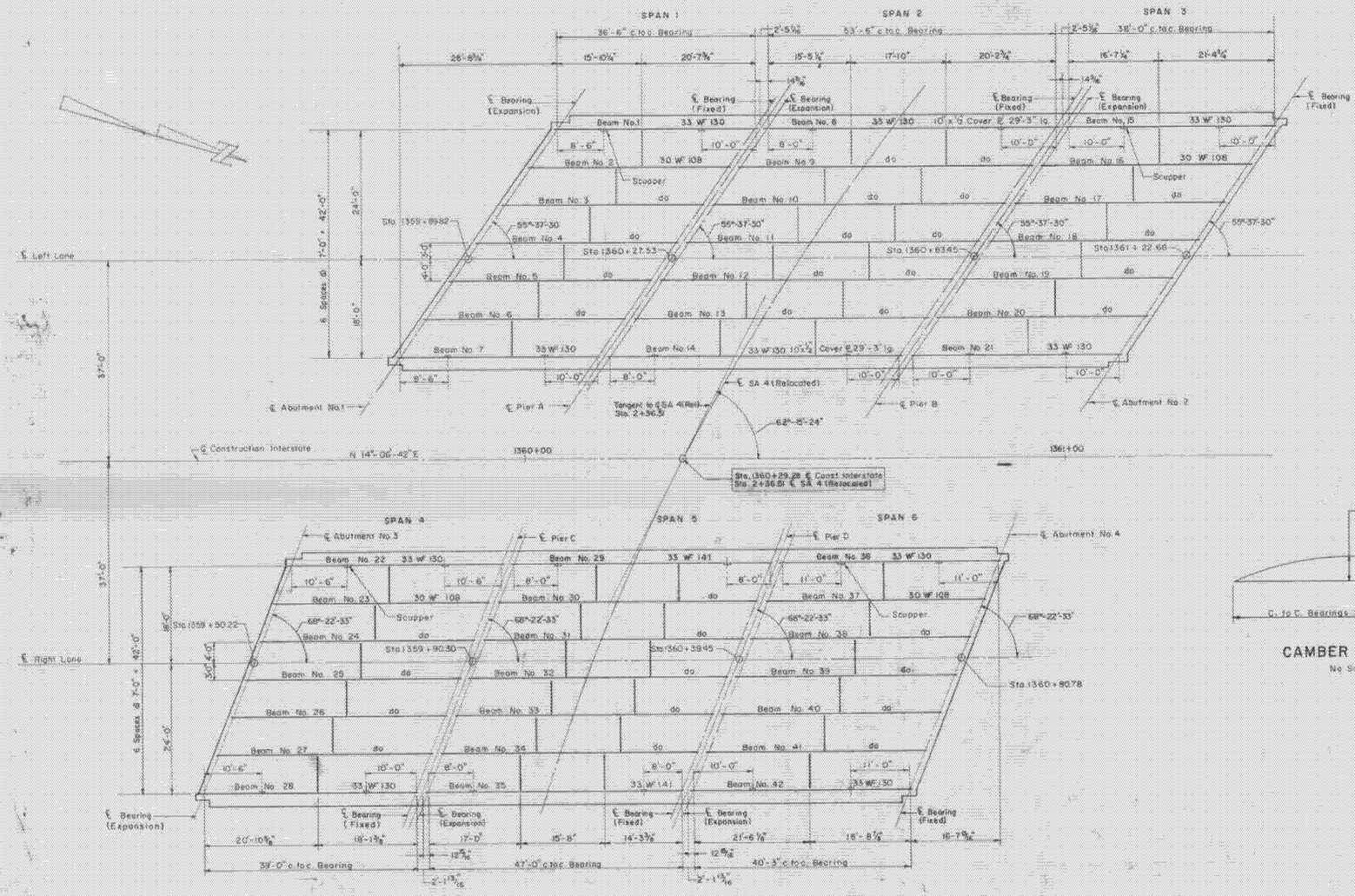
IR-DECK(26)
BR18N&S
THIS SHEET FOR INFORMATION ONLY

PLAN AND ELEVATION
STATE OF VERMONT
DEPARTMENT OF HIGHWAYS
INTERSTATE PROJECT in the town of
WESTMINSTER
INTERSTATE STA. 1360+23.22
OVER
SA-4 (RELOCATED) STA. 2+36.51

THE CLARKESON ENGINEERING CO. INC.
CONSULTING ENGINEERS
BOSTON
CONCORD, N.H.
PROJECT NO. S.P. I 91-1(13)21 DATE

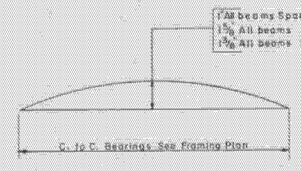
SHEET 40 OF 76

| B.P.R. DIV. NO. | STATE | PROJECT NO. | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|---|
| 1 | VT. | I 91-1(11) | 198 | 555 |




FRAMING PLAN
SCALE 1/16"=1'-0"

Notes: 1. Diaphragms to be 18 ℄ 42.7 for Spans 2 & 5, 16 ℄ 33.9 for Spans 1, 3, 4, & 6.
2. For Superstructure Sections and Details, see Sheet No. 199.
3. All beams shall be rolled to true circular camber with the middle ordinate as shown on this sheet.
4. For Bearing Details, see Standard Sheet No. SB-20-56.
5. Cut flanges as per Standard Sheet No. SB-22-56.
6. All stationing refers to ℄ Construction Interstate excepting stationing along SA-4 (Relocated).
7. All beams and cover plates shall conform to A.S.T.M. Designation A 373. All other structural steel shall conform to Designation A7 or A 373.




CAMBER DIAGRAM
No Scale

WESTMINSTER-NORWICH
IM BPNT (8)
SHEET 10 OF 58
BRIDGE 18

FOR REFERENCE ONLY

IR-DECK (26)
BR 18 N&S
THIS SHEET FOR
INFORMATION ONLY

SHEET 46 OF 76

STRUCTURAL STEEL PLAN
STATE OF VERMONT
DEPARTMENT OF HIGHWAYS
INTERSTATE PROJECT in the town of
WESTMINSTER
INTERSTATE STA. 1360 + 29.28
0+SR
SA 4 (RELOCATED) STA. 2 + 36.51
THE CLARKESON ENGINEERING CO., INC.
CONSULTING ENGINEERS
BOSTON MASSACHUSETTS
SURVEYED BY — CHECKED BY J.M.S. & C.F. SCALE AS NOTED
DRAWN BY R.E. IN CHARGE J.M.S. DATE 11-25-57
PROJECT NO. I 91-1(11) SHEET 198 OF 555
CONTRACT NO.

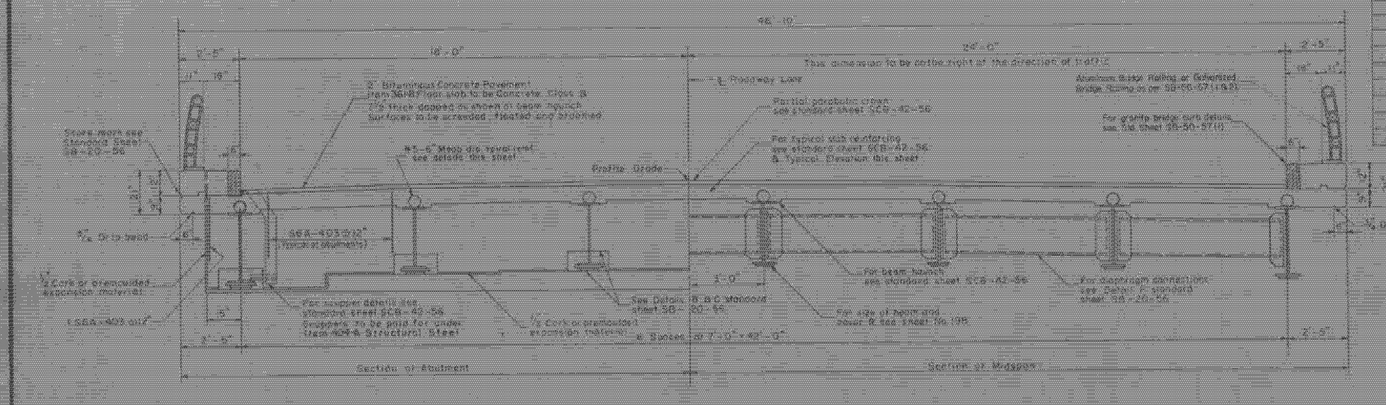
| E.P.R. DIV. NO. | STATE | PROJECT NO. | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|---|
| 1 | VT | I-91-1(11) | 199 | 205 |

## BEAM SCHEDULE

| BEAM NO. | A | B | C | D |
|---|---|---|---|---|
| 1 & 7 | 9" | 11½" | 36'-6" | 38'-2½" |
| 2 - 6 | 9" | 8" | 36'-6" | 38'-0" |
| 8 & 14 | 11½" | 13½" | 53'-6" | 55'-5" |
| 9 - 13 | 9" | 8" | 53'-6" | 55'-0" |
| 15 & 21 | 11½" | 9" | 36'-0" | 37'-8½" |
| 16 - 20 | 9" | 8" | 35'-0" | 37'-5" |
| 22 & 28 | 9" | 8⅜" | 39'-0" | 40'-0⅝" |
| 23 - 27 | 9" | 8" | 39'-0" | 40'-6" |
| 29 & 35 | 9⅝" | 8⅝" | 42'-0" | 43'-7½" |
| 30 - 34 | 9" | 9" | 42'-0" | 43'-6" |
| 36 & 42 | 9⅝" | 8" | 40'-3" | 41'-9⅝" |
| 37 - 41 | 9" | 9" | 40'-3" | 41'-3" |

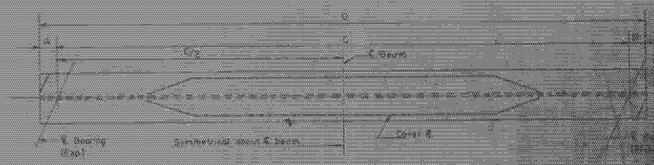
## SPIRAL SCHEDULE

| LENGTH OF SPAN | 32' | 44' | 48' | 58' |
|---|---|---|---|---|
| SPIRAL PITCH 0'-10' FROM BRGS. | DOUBLE @ 8" | DOUBLE @ 8" | DOUBLE @ 8" | DOUBLE @ 8" |
| " " 10'-20' OR ℄ SPAN | 4" | 4" | DOUBLE @ 7½" | DOUBLE @ 9½" |
| " " 20'-30' OR ℄ SPAN | ——— | 7½" | 8" | 8" |

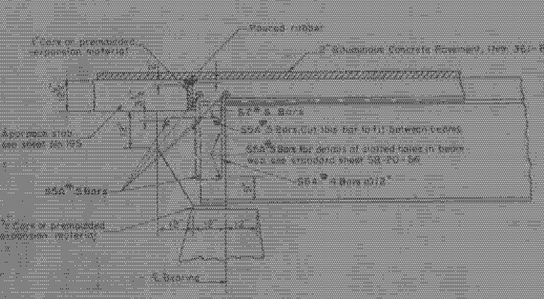



TYPICAL SECTION
Scale: ½" = 1'-0"

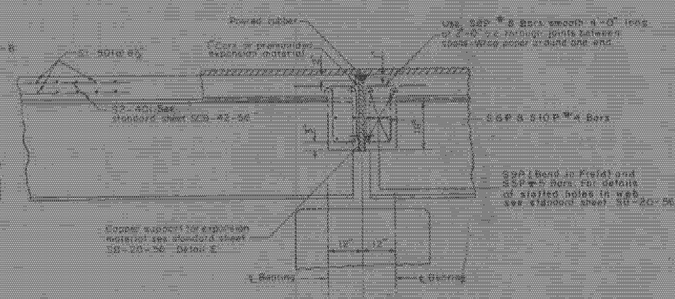
ELEVATION OF BEAM
No Scale




PLAN OF BEAM
No Scale



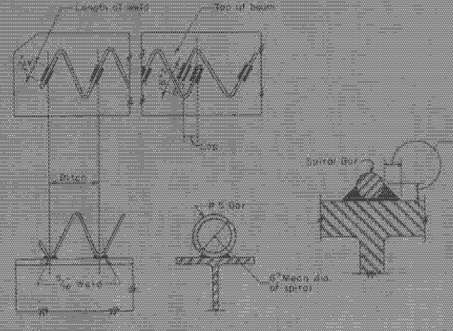

ELEVATION AT ABUTMENTS



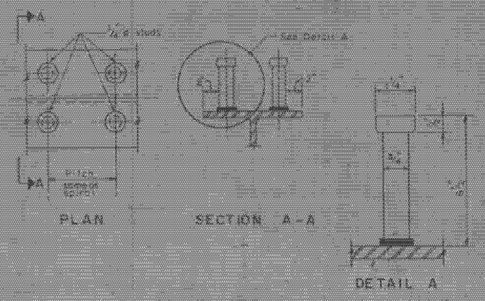

TYPICAL ELEVATION OF BEAM (SQUARE)
Scale: ½" = 1'-0"

ELEVATION AT PIERS

NOTE: WHERE A DOUBLE SPIRAL IS CALLED FOR IN THE SCHEDULE (4) FOUR 6 1/2" LONG STUDS ARE REQUIRED PER PITCH.




SPIRAL WELDING DETAILS
No Scale




ALTERNATE SHEAR CONNECTOR
No Scale

## ESTIMATED QUANTITIES

| ITEM NO. | DESCRIPTION | UNIT | RIGHT LANE NET | RIGHT LANE OVER-RUN | RIGHT LANE TOTAL | RIGHT LANE FINAL | LEFT LANE NET | LEFT LANE OVER-RUN | LEFT LANE TOTAL | LEFT LANE FINAL |
|---|---|---|---|---|---|---|---|---|---|---|
| 361-R | Bituminous Concrete Pavement | Tons | 95 | 4m | 99 | 77 | 89 | 4m | 93 | 72 |
| 404-B | Concrete, Class B (Mod.) | C.Y. | 195 | 10 | 205 | 202 | 199 | 10 | 209 | 207 |
| 602 | Reinforcing Steel | Lbs. | See Reinforcing Steel Schedule Sheet No. 200 | | | | | | | |
| 603 | Spiral Reinforcement (12,270 LB) | L.S. | 1 | | 1 | 1 | 1 | | 1 | 1 |
| 404-A | Structural Steel | Lbs. | 129750 | 2510 | 132260 | 132260 | 126800 | 2580 | 129380 | 129380 |

Notes: 1. For plan and cover R. sizes, see Framing Plan Sheet No. 198
2. For cover R details see Standard Sheet SCB-42-56.
3. For bearing details see Standard Sheet SB-20-56.
4. For sidewalk centering see Standard Sheet SCB-42-56.

IR-DECK(26)
BR 18N&S
THIS SHEET FOR INFORMATION ONLY

WESTMINSTER-NORWICH
IM BPNT (8)
SHEET 11 OF 58
BRIDGE 18

FOR REFERENCE ONLY

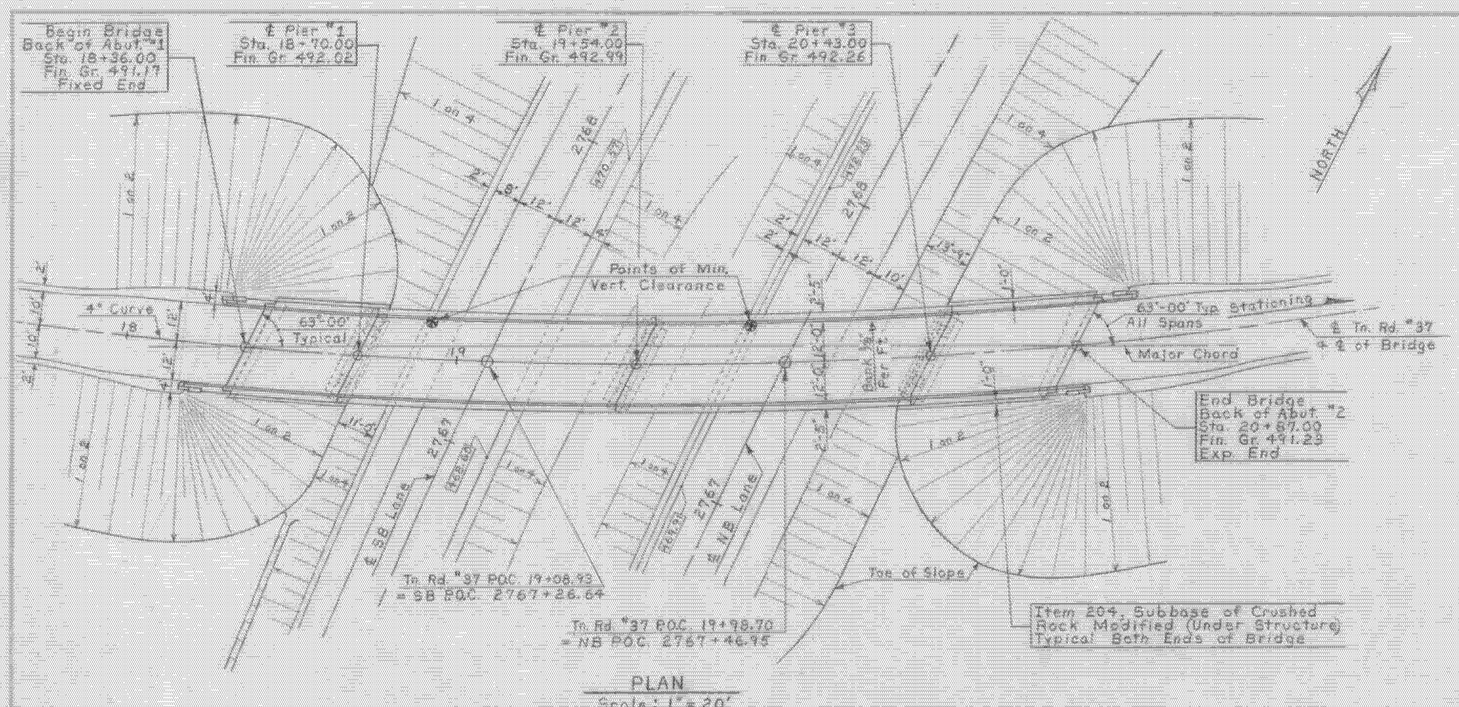
STRUCTURAL STEEL DETAILS

STATE OF VERMONT
DEPARTMENT OF HIGHWAYS
INTERSTATE PROJECT in the town of
WESTMINSTER
INTERSTATE STA. 1560+29.38
OVER
SA # 4 (RELOCATED) STA. 2+55.00

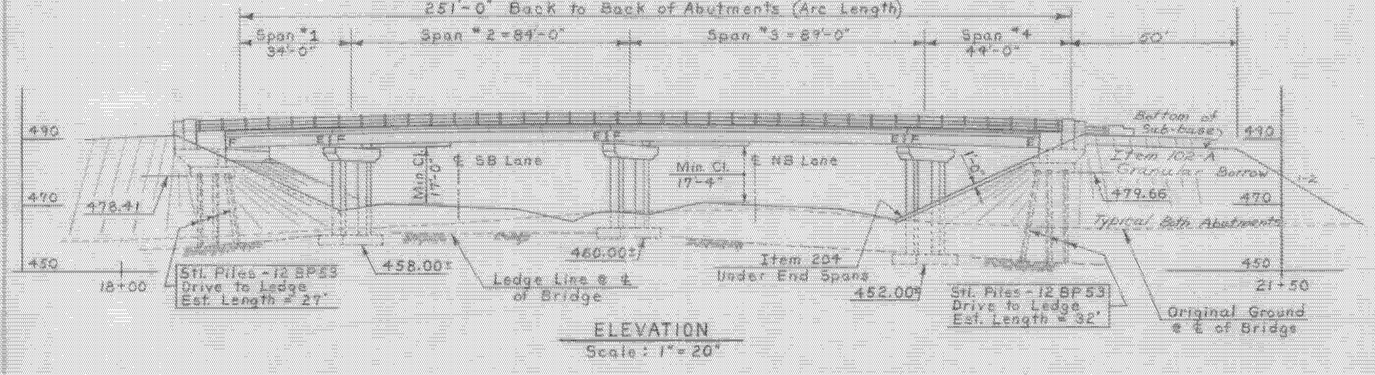
THE CLARKSON F. ENGINEERING CO., INC.
CONSULTING ENGINEERS

DESIGN | DRAWN BY | TRACED BY | DETAILED BY | CHECKED BY | QUANTITIES BY | CHECKED BY
PROJECT NO. [illegible]

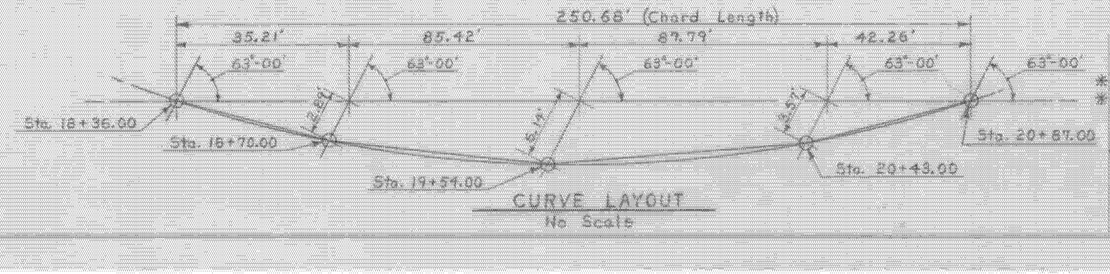
SHEET 47 OF 76




PLAN
Scale: 1" = 20'




ELEVATION
Scale: 1" = 20'




CURVE LAYOUT
No Scale

## LIST OF BRIDGE SHEETS

| | |
|---|---|
| BR-100 | GENERAL PLAN & ELEVATION |
| BR-101 | BRIDGE QUANTITY SHEET |
| BR-102 | PRELIMINARY INFORMATION SHEET |
| BR-103 | BORING LOGS |
| BR-104 | FRAMING PLAN, RAILING & GRANITE CURB LAYOUT |
| BR-105 | ABUTMENT "1 DETAILS |
| BR-106 | " " " " "2 " " " |
| BR-107 | PIER LAYOUT DETAILS |
| BR-108 | PIER REINFORCING DETAILS |
| BR-109 | REINFORCING SCHEDULE |

## BRIDGE STANDARDS

STD. DWGS. - SCB-24-62, SCB-01-62 through SCB-09-62, (9 Sheets), and SB-56-62, Sheets "1 & "2.

## REFERENCE SHEETS

REFER. - INTERSTATE PLAN (Scale: 1" = 50')

PROFILE OF INTERSTATE, NB & SB, STA. 2756+00 to 2772+00.

PLAN & PROFILE OF TOWN ROAD NO 37.

INTERSTATE SECTIONS (2 Sheets) - SB STA. 2761+50 to 2771+50.

INTERSTATE SECTIONS (1 Sheet) - NB STA. 2767+00 to 2772+00.

TOWN ROAD NO. 37 (Sideline) SECTIONS, (1 Sheet) - STA. 16+00 to 21+00.

## NOTES

① For General Notes see Std. Dwg. SCB-01-62.

② The Superstructure is of Composite W^e Beam - Simple Span Design for a 24-ft Roadway as per Std. Dwg. SCB-24-62.

③ The Granite Bridge Curb Layout and Details are shown on the Framing Plan, Railing & Granite Curb Layout, Sheet BR-104, and Std. Dwg. SCB-06-62, Det. A.

④ For Bridge Railing Layout and Details see Sheet BR-104 and Std. Dwg. SB-56-62, Sheets "1 & 2.

⑤ Bridge Seat Elevations shown on these plans are for the centerline of bearings.

⑥ For Summary of Estimated Bridge Quantities see Bridge Quantity Sheet, BR-101.

⑦ Quantity Items marked with an Asterik (*) are to be included in Roadway Quantities only.

⑧ Preformed Neoprene Rubber Joint Material, Item 372-C, Shall Be Used Wherever Item 373 is indicated in the Standards.

WESTMINSTER-NORWICH
IM BPNT (8)
SHEET 12 OF 58
BRIDGE 31

FOR REFERENCE ONLY

## ESTIMATED SUPERSTRUCTURE QUANTITIES

| NO. | ITEM | UNIT | | TOTAL | FINAL |
|---|---|---|---|---|---|
| * 318 | Tar Emulsion For Bridge Floors | Gal. | | 270 | |
| *361-B | Bituminous Concrete Pavement, Mod (Dense Graded Top Course) | Ton | | 66 | |
| 372-C | Joint Sealer, Preformed | L.F. | | 22 | 38 |
| 401-AA | Concrete Class AA, Mod. | C.Y. | | 234 | 232 |
| 402 | Reinforcing Steel | Lb. | | 52590 | 52568 |
| 403 | Spiral Reinforcement (3650*) | L.S. | | 1 | 1 |
| 404-A | Structural Steel | Lb. | | 251300 | 251300 |
| 556-C | Granite Bridge Curb, Mod. | L.F. | | 504 | 504 |
| 572 | Bridge Railing | L.F. | | 522 | 522 |

STATE OF VERMONT
DEPARTMENT OF HIGHWAYS

WEATHERSFIELD - WINDSOR - HARTLAND
TOWN OF
ROUTE NO. I 91 LOG STA.

GENERAL PLAN & ELEVATION
TOWN RD. "37 over I 91

SCALE: As Noted
SURVEYED BY: Martin
DRAWN BY: E.W.B. CHECKED BY: J.J.C.
5/16/63
PROJECT NO. I 91-1(21) Contr "1
SHEET 44 OF 180

BR-100

Begin Bridge
Back of Abut. #1
Sta. 18+36.00
Fin. Gr. 491.19
Fixed End

℄ Pier #1
Sta. 18+70.00
Fin. Gr. 492.02

℄ Pier #2
Sta. 19+54.00
Fin. Gr. 492.99

℄ Pier #3
Sta. 20+43.00
Fin. Gr. 492.26

End Bridge
Back of Abut #2
Sta. 20+67.00
Fin. Gr. 491.23
Exp. End

NORTH

Stationing

Minor Chord

Major Chord

Fixed

Exp.

℄ Brngs.

Typical all Spans

18[ 42.7 Diaphragms
Typical for Spans #2, 3, 4.

Bm. #1
Bm. #2
Bm. #3
Bm. #4
Bm. #5
Bm. #6
Bm. #7
Bm. #8
Bm. #9
Bm. #10
Bm. #11
Bm. #12
Bm. #13
Bm. #14
Bm. #15
Bm. #16

61'-20'-24" Typ. @ Span #1
64'-58'-48" Typ. @ Span #2
61'-31'-12" Typ. @ Span #3
63'-00'-00" Typ. all Spans
58'-51'-36" Typ. @ Span #4

31'-10" c.c. Brngs. @ Span #1
81'-9 3/8" c.c. Brngs. @ Span #2
86'-8 1/2" c.c. Brngs. @ Span #3
41'-7 15/16" c.c. Brngs. @ Span #4

30 WF 108
Camber 5/8"

36 WF 230
Btm. Cover Pl 14"x1 5/16" x 49'-5"
Camber 3 5/8"

36 WF 230
Btm. Cover Pl 14"x1 5/16" x 59'-5"
Camber 3 5/8"

36 WF 135
Camber 7/8"

Note
Intermediate diaphragms for Span #1 are 18[ 33.9. All pier diaphragms are 18[ 42.7.

## FRAMING PLAN
Scale: 1"=10'-0"

DETAIL A

DETAIL B

Rail Post Spacing – 36 Spcs. @ 7'-0 3/8" = 253'-1 1/2" (Arc Length)

Back of Abut #1

℄ Pier #1

℄ Pier #2

℄ Pier #3

Back of Abut #2

252'-5 1/4" = Arc Length of Granite Bridge Curb Between Joints at Abuts.

251'-0" (Arc Length)

36 Spcs. @ 7'-0" = 252'-0" (Arc Length)

℄ of Rail Post Anchor Bolts

℄ Bridge ℄ Tn. Rd. #37

## RAIL POST SPACING ℄ GRANITE BRIDGE CURB
Scale: 1"=10'-0"

℄ Bridge
2'-5" 12'-0" 12'-0" 2'-5"
7½" Conc. Slab
1½" Bit. Conc. Pavm't.
12" Granite Br. Curb
Bank 3/8" per ft.
Varies 7'-6" Varies Varies 7'-6" Varies

## TYPICAL SECTION
Scale: 1"=4'-0"

## NOTES

① For General Notes see Std. Dwg. SCB-D1-62.

② For Details not shown on the Typical Section see Std. Dwg. SCB-24-62.

③ For Curb Details refer to Std. Dwg. SCB-D6-62, Det. A

④ For Structural Steel Details not shown see Std. Dwgs. SCB-D2-62, SCB-D3-62, SCB-D7-62, and SCB-D8-62, and SCB-D9-62, Det. A.

⑤ For Bridge Railing Details see Std. Dwgs. SB-56-62, Sheets 1 and 2.

⑥ Bridge Railing on this Sheet is detailed for Aluminum. If Steel Railing is substituted in lieu of Aluminum, post spacing must be detailed not to exceed 10'-0" in accordance with Std. Dwg. SB-56-62, Sheet #1.

⑦ The beams are parallel to the minor chords of their respective spans. The abutments and piers are parallel to each other.

⑧ No scuppers are to be used on this bridge.

⑨ Struct. Stl. is designed for 20000 psi. (ASTM-A36-62 T).

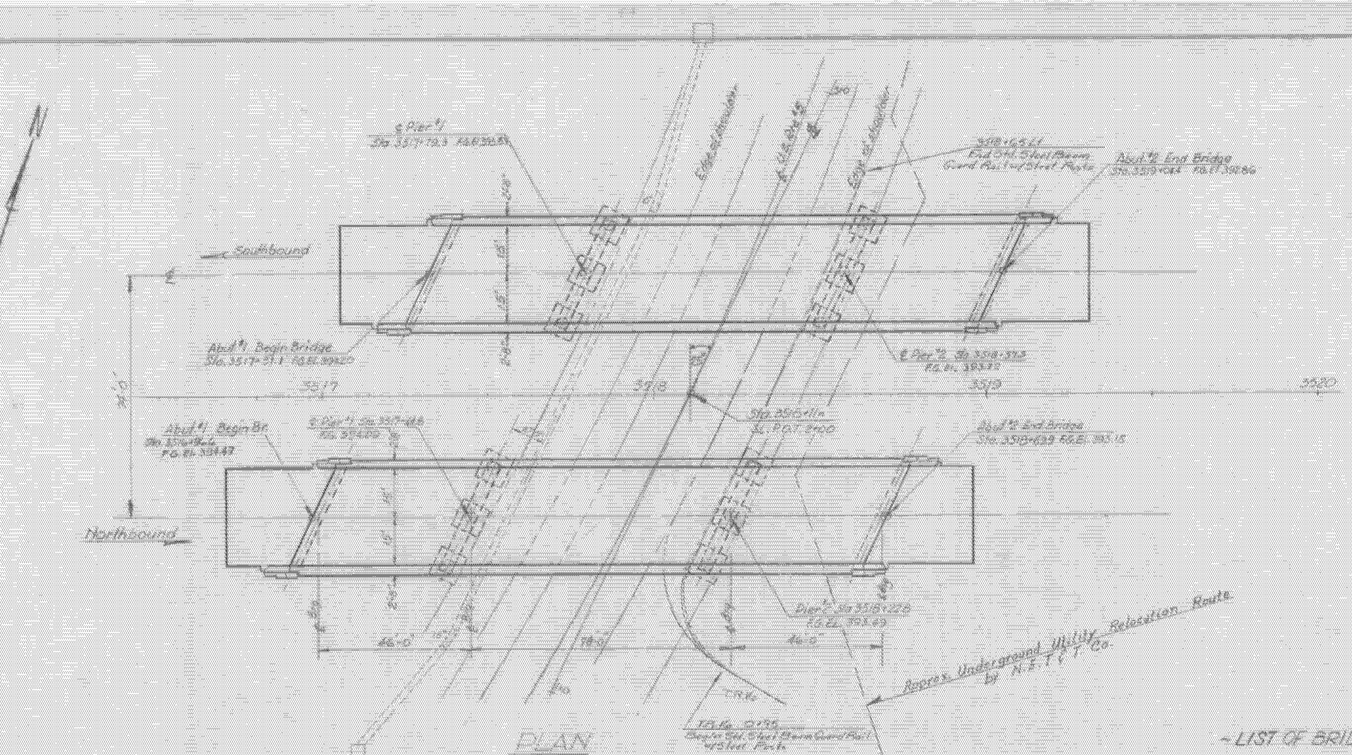
WESTMINSTER-NORWICH
IM BPNT (8)
SHEET 13 OF 58
BRIDGE 31

FOR REFERENCE ONLY

STATE OF VERMONT
DEPARTMENT OF HIGHWAYS

TOWN OF WEATHERSFIELD - WINDSOR - HARTLAND
ROUTE NO. I 91 LOG STA.
FRAMING PLAN, RAILING & GRANITE CURB LAYOUT
TOWN RD. #37 over I 91
SCALE As Noted
SURVEYED BY Martin
DRAWN BY F.W.B. CHECKED BY J.J.C. 4/15/63
PROJECT NO. I 91-1(21) Contr. #1
SHEET 48 OF 180

BR-104




## GENERAL NOTES

1. All traffic construction shall conform to the State of Vermont, Dept. of Highways, Standard Specifications for Road & Bridge Construction, dated Jan. 1956, and the AASHO Standard Specs. dated 1961 designed for H20-S16-44 loading, Modified for National System of Interstate Highways, applied in accordance with the provision of the AASHO Standard Specifications, Article 1.2.6.
2. All structural steel shall conform to the requirements of the Specs. for Steel Bridges and Buildings, A.S.T.M. designation A36, unless noted otherwise.
   The contractor shall submit complete details of the Structural Steel to the State of Vermont, Dept. of Highways, and receive their written approval prior to start of fabrication. H.S. Bolts shall meet requirements of A.S.T.M. A325. Final coat of field paint shall be given. Spray painting of shop coat will be permitted.
3. All exposed edges of concrete shall be chamfered 1"x1" unless otherwise indicated.
4. The minimum covering, measured from the face of the concrete to the face of the reinf. shall be 1½" for tops of slabs, 1" for bottom of slabs, 3" in footings, and 2" in other locations.
5. All Rock Excavation within 10 feet of the structure shall be completed before the placing of any concrete.
6. All dimensions given are measured horizontally or vertically unless otherwise noted, and given at 68° F.
7. Borings indicated on the drawings have been made for design purposes only & are not warranted to show actual subsurface conditions.
8. Elevation datum, sea levels, based on nearest U.S. Government Vertical Control.
9. Cross slope of approach slab to conform to cross slope of bridge.
10. All expansion material shall be Premolded Cork, containing no bitumen or asphalt unless otherwise noted.
11. The top surfaces of piers & abutments shall be sloped ½" per foot from the front edge of abutment cutoff wall, or centerlines of piers, except for brg. pad areas which shall be level. Elevation of bridge seats are given for centerline bearings. The entire exposed top surface of abutments and piers shall be coated with Asphaltic-Asbestos Coating "A" thick as per Item 402. The application of this item shall be after all painting and incidental items are completed.
12. Where Granular Material is indicated around bridge abutments, Rock Fill if available, shall be substituted except in area where piles are to be driven. Wherever materials from excavation are used in embankments requiring granular material they shall be paid for as indicated under Item 101, Excavation.
13. Water Repellent, Item 240, shall be applied to exterior concrete surfaces on top of safety walks, on the fascia, and back to the drip bead under the slab.

## STANDARD DRAWINGS

SB-21-64, Sheets #1 & #2
SB-23-64
SCB-D2-62, Det. A
SCB-D4-62
SCB-D6-62, Det. B E F
SCB-30-62

## LIST OF BRIDGE SHEETS

| | |
|---|---|
| BR. 100 | PLAN & ELEVATION |
| BR. 101 | BRIDGE QUANTITIES |
| BR. 102 | PRELIMINARY INFORMATION |
| BR. 103 | BORING LOG |
| BR. 104 | " " " |
| BR. 105 | " " " |
| BR. 106 | FRAMING PLAN & BEARINGS |
| BR. 107 | TYPICAL SECTION & DETAILS |
| BR. 108 | ABUTMENT #1 N.B. & S.B. |
| BR. 109 | ABUTMENT #2 N.B. & S.B. |
| BR. 110 | PIER #1 & 2 N.B. & S.B. |
| BR. 111 | APPROACH SLAB NO. 1 & 2 N.B. & S.B. |
| BR. 112 | REINFORCING STEEL DETAILS |

M. Use Item 372-C, Type A or B, in all cases where Std. Dwg. SCB-D2-62 calls for Item 373.

WESTMINSTER-NORWICH
IM BPNT (8)
SHEET 14 OF 58
BRIDGE 39

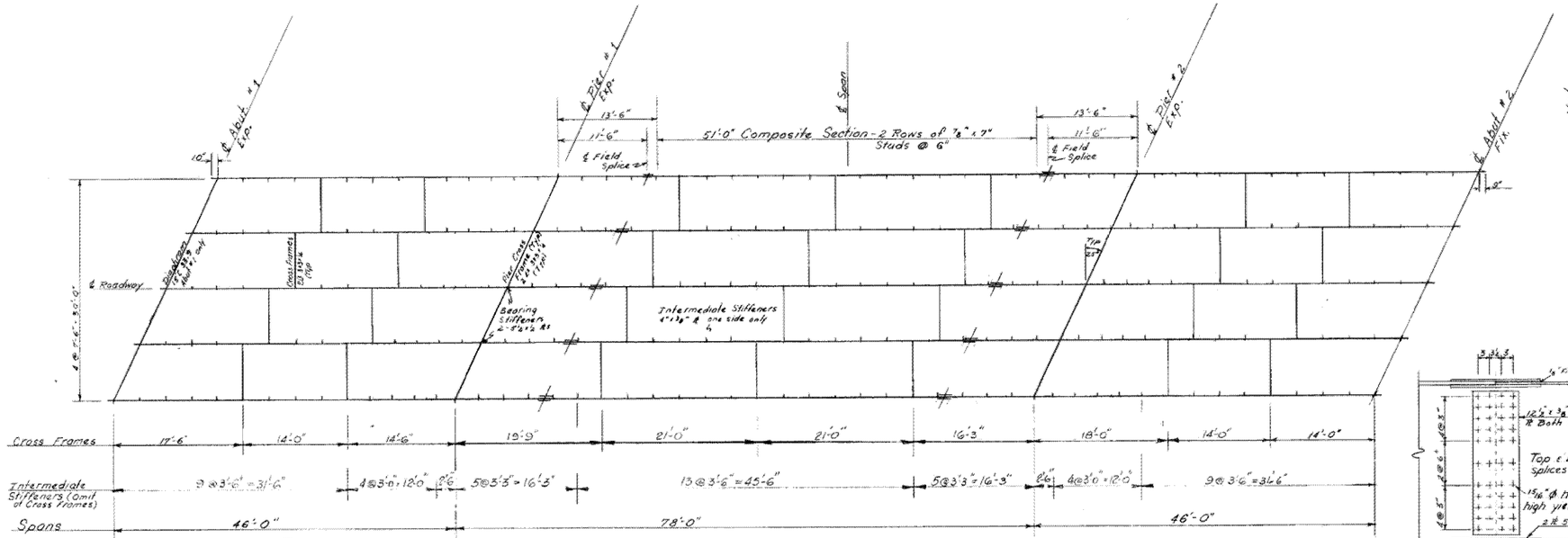
FOR REFERENCE ONLY

## SUPERSTRUCTURE QUANTITIES

| ITEM NO. | ITEM | UNIT | N.B. EST. | N.B. FINAL | S.B. EST. | S.B. FINAL |
|---|---|---|---|---|---|---|
| | CHAN. EXCAV. IN EARTH | C.Y. | | | | |
| | CHAN. EXCAV. IN ROCK | C.Y. | | | | |
| | UNCLASS. CHAN. EXCAV. | C.Y. | | | | |
| | MARG'L. EXCAV. | C.Y. | | | | |
| | CONC. CLASS AA (MOD.) | C.Y. | ~~188~~ | 186 | ~~188~~ | 187 |
| | CONC. CLASS B (MOD.) | C.Y. | | | | |
| | REINF. STEEL | LBS. | ~~43,000~~ | 43,748 | ~~43,000~~ | 43,758 |
| | ASPHALTIC-ASB. COATING | C.Y. | | | | |
| | TREATED TIMBER PILING | L.F. | | | | |
| 240 | WATER REPELLENT | GAL. | ~~85.0~~ | 128 | ~~85.0~~ | 16 |
| 516-C | GRANITE BRIDGE CURB (MOD.) | L.F. | ~~344~~ | 343 | ~~344~~ | 343 |
| 373 | BRIDGE RAILING | | ~~356~~ | 356 | ~~356~~ | 356 |
| 518 | PAVEMENT FOR BRIDGE FLOORS | SQ. YD. | 22 ½ | By Card | 22 ½ | By Card |
| 344-B | BITUMINOUS CONCRETE PAVEMENT (HOT) | TON | 40 | - - | 40 | - - |
| 512-A | JOINT SEALER - HOT POURED | L.F. | 33 | - - | 33 | - - |
| 406-A | STRUCTURAL STEEL | LBS. | ~~139,000~~ | 136,944 | ~~139,000~~ | 139,948 |
| 501 | PILE DRIVING EQUIPMENT FOR DRIVING PILES | L.S. | 1 | 1 | 1 | 1 |

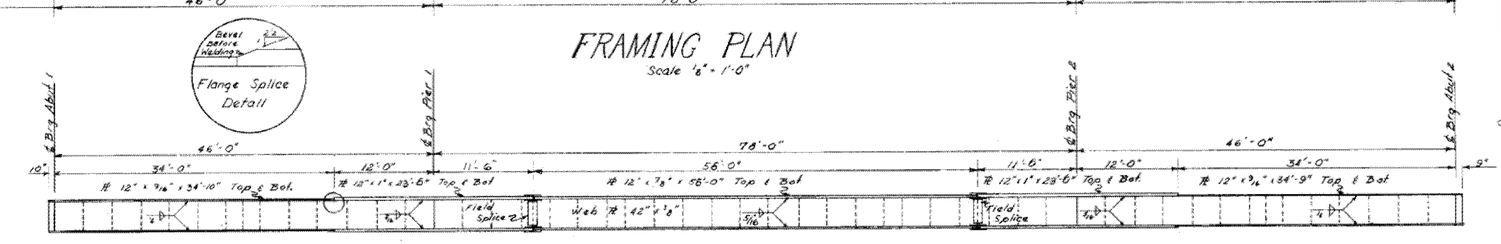
STATE OF VERMONT
DEPARTMENT OF HIGHWAYS

TOWN OF HARTLAND-HARTFORD
ROUTE NO. I-91 STA. 3518+0
INTERSTATE over U.S. Rt. 5
PLAN & ELEVATION
SCALE 1"=30'-0"
SURVEYED BY
DRAWN BY [illegible] CHECKED BY D.H.S.
PROJECT NO. I-91-1(24) comb 4 (31)
BR-100 SHEET 38 OF 102 Sheet 163 of 242




## FRAMING PLAN

Scale 1/8" = 1'-0"




## GIRDER ELEVATION

Scale 1/8" = 1'-0"




EXPANSION
Abut #1, Piers #1 & 2

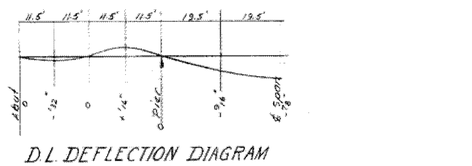
## BEARING DETAILS

Scale 1" = 1'-0"

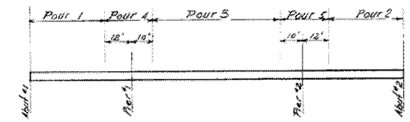
FIXED
Abut #2

## PINTLE DETAIL

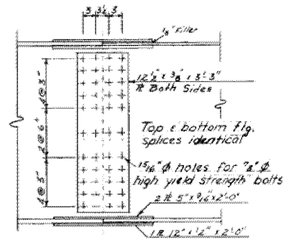
Scale 1" = 1'-0"

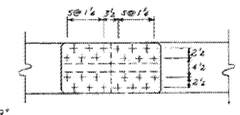



D.L. DEFLECTION DIAGRAM
N.T.S.

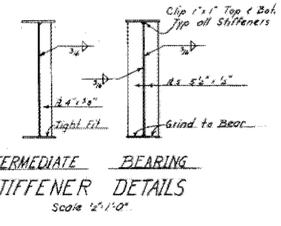



POURING SEQUENCE DIAGRAM (SEE NOTES)
N.T.S.




SPLICE DETAILS
Scale 3/4" = 1'-0"




INTERMEDIATE BEARING
STIFFENER DETAILS
Scale 2" = 1'-0"

## NOTES

1. Plates for expansion bearings shall be high yield strength structural alloy steel (M-II). Steel for rollers shall be cold finished carbon steel ASTM-A108 (Grade 1045) turned and polished. Rollers shall be preheated in furnace to 400° F. held at this temp. until welding is completed, and then allowed to cool slowly. Side bars shall be ASTM-A36. Plates shall be straightened to plane surfaces.
2. All steel for fixed bearings shall be ASTM A-36
3. All bolts shall be 7/8" diameter high yield strength bolts, and shall conform to ASTM-A 325
4. In lieu of the above pouring sequence the slab may be placed in one continuous pour, under the direction of the Engineer, using a retarding admixture for concrete meeting the requirements of the General Special Provisions as specified under Concrete Item 401, section 401.02-H, General.

WESTMINSTER-NORWICH
IM BPNT (8)
SHEET 15 OF 58
BRIDGE 39

FOR REFERENCE ONLY

| ITEM NO. | ITEM | UNIT | NET | | TOTAL | FINAL |
|---|---|---|---|---|---|---|
| | CHAN. EXCAV. OF EARTH | C.Y. | | | | |
| | CHAN. EXCAV. OF ROCK | C.Y. | | | | |
| | UNCLASS. CHAN. EXCAV. | C.Y. | | | | |
| | STRUCT. EXCAV. | C.Y. | | | | |
| | CONC. CLASS AA (MOD.) | C.Y. | | | | |
| | CONC. CLASS B (MOD.) | C.Y. | | | | |
| | REINF. STEEL | LBS. | | | | |
| | ASPHALTIC-ASB. COATING | S.Y. | | | | |
| | TREATED TIMBER PILING | L.F. | | | | |
| | SPLICES FOR STEEL PILING | EA. | | | | |
| | STEEL PILING | L.F. | | | | |
| | UNTREATED TIMBER PILING | L.F. | | | | |

STATE OF VERMONT
DEPARTMENT OF HIGHWAYS

TOWN OF HARTLAND-HARTFORD
ROUTE NO. I 91 STA. 351.8
INTERSTATE OVER U.S. #5
FRAMING PLAN & BEARING DETAILS
SCALE As Noted
SURVEYED BY
DRAWN BY DHR CHECKED BY RWK
PROJECT NO. I 91-1 (22) Cont: 4
BR.106 SHEET 44 OF 103

SECTION (NON-COMPOSITE shown) scale 3/8"=1'ft

see framing plan for studs in composite sections

END DIAPHRAGM ABUT. #1 scale 1"=1ft

LONGITUDINAL SECTION AT ABUTMENT #1 scale 3/4"=1ft

SECTION B-B scale 1½"=1ft

SECTION A-A

SECTION CC scale 1"=1ft

PLAN AT ABUT. #1 EXPANSION DAM scale 3/4"=1ft

PLAN OF CURTAIN WALL AT BEARING DEVICE (ABUT. #2) SCALE 3/4"=1'-0"

PIERS

CROSS FRAME DETAILS scale 1"=1ft

INTERMEDIATE

BACKWALL AT ABUTMENT #2 scale 1"=1ft

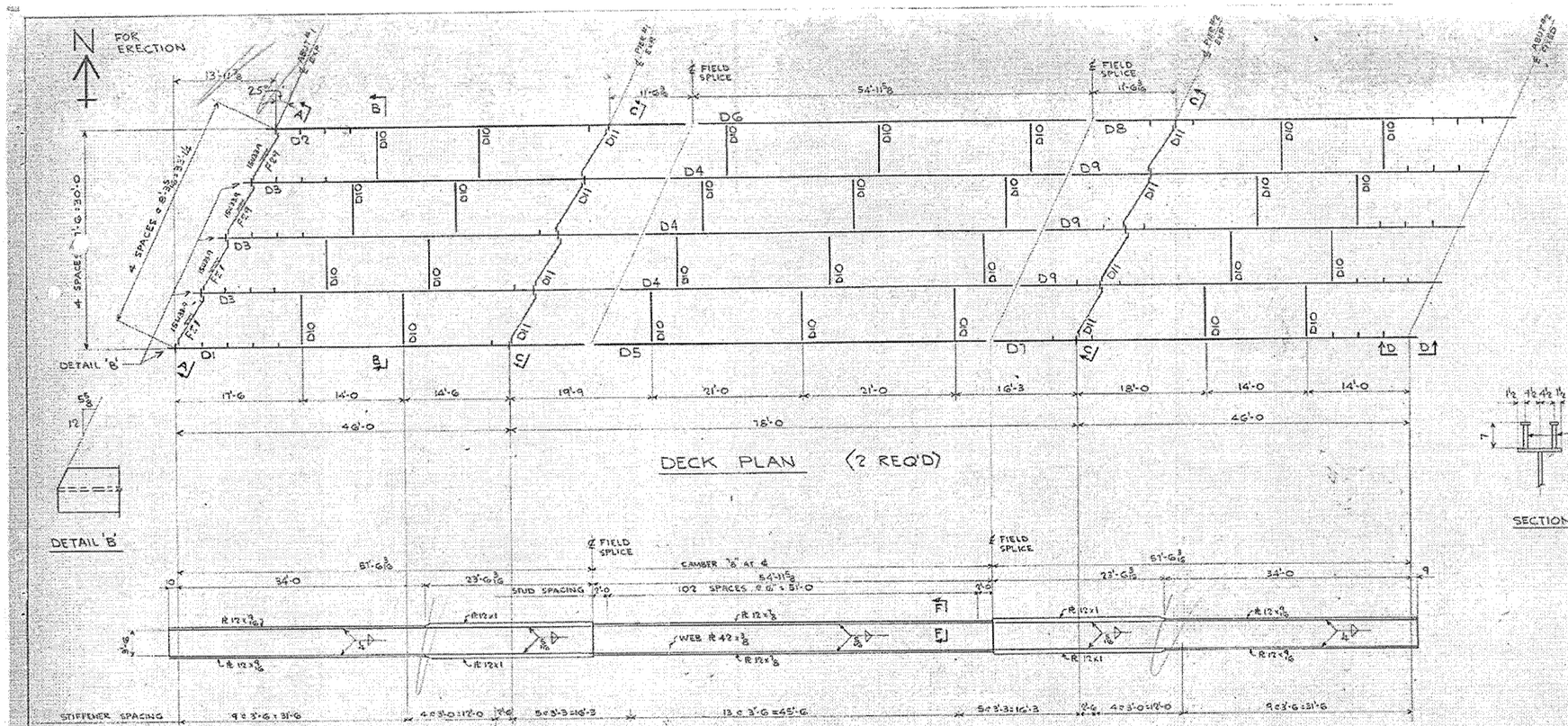
WESTMINSTER-NORWICH
IM BPNT (8)
SHEET 16 OF 58
BRIDGE 39

FOR REFERENCE ONLY

| ITEM NO | ITEM | UNIT | NET | | TOTAL | FINAL |
|---|---|---|---|---|---|---|
| | CHAN. EXCAV. OF EARTH | C.Y. | | | | |
| | CHAN. EXCAV. OF ROCK | C.Y. | | | | |
| | UNCLASS. CHAN. EXCAV. | C.Y. | | | | |
| | STRUCT. EXCAV. | C.Y. | | | | |
| | CONC. CLASS AA (HCO) | C.Y. | | | | |
| | CONC. CLASS B (HCO) | C.Y. | | | | |
| | REINF. STEEL | LBS. | | | | |
| | ASPHALTIC MEL. COATING | S.Y. | | | | |
| | TREATED TIMBER PILING | L.F. | | | | |
| | SPLICES FOR STEEL PILING | EA. | | | | |
| | STEEL PILING | L.F. | | | | |
| | GALVANIZED TIMBER PILING | L.F. | | | | |

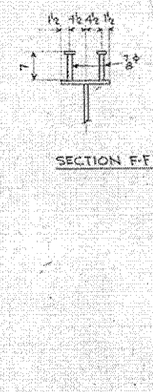
STATE OF VERMONT
DEPARTMENT OF HIGHWAYS

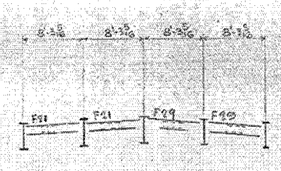
TOWN OF Hartland - Hartford
ROUTE NO. I-91 STA. 35/8+10
INTERSTATE OVER U.S. RT. 5
TYP. SUPERSTRUCTURE DETAILS
SCALE AS NOTED
SURVEYED BY
DRAWN BY CARPENTER CHECKED BY DHD
PROJECT NO. F-91-1(51)
BR 107 SHEET 45 OF 103 SHEETS OF 242

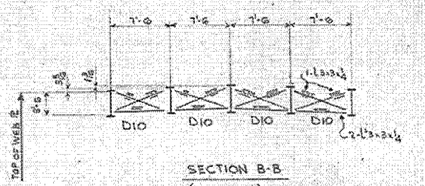


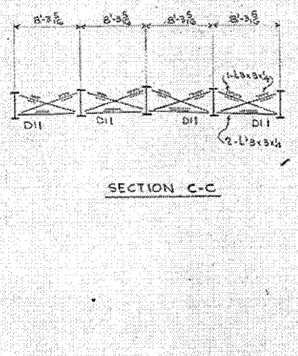


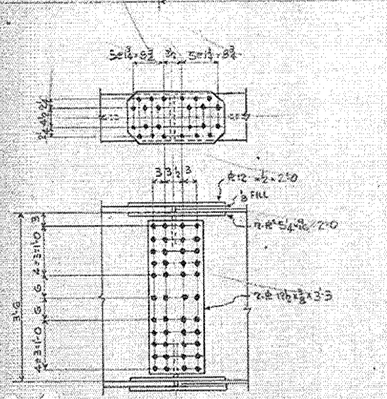


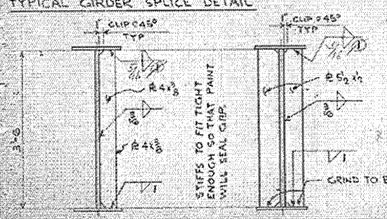


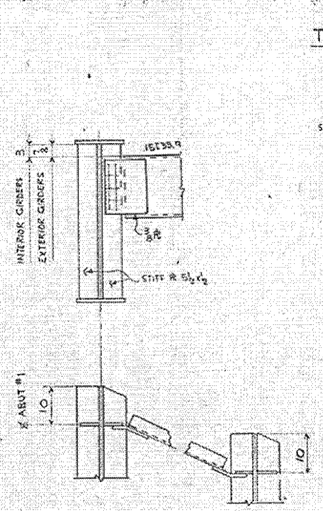



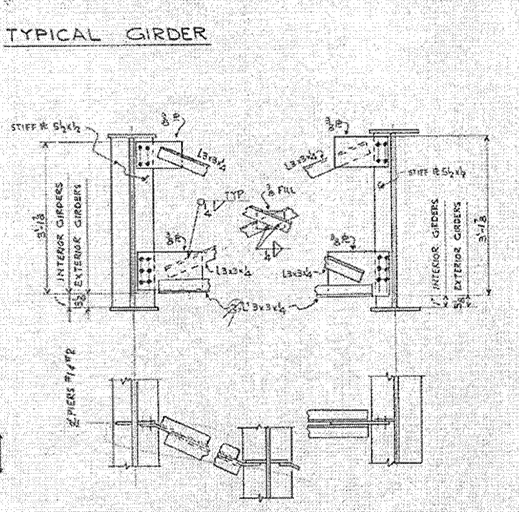



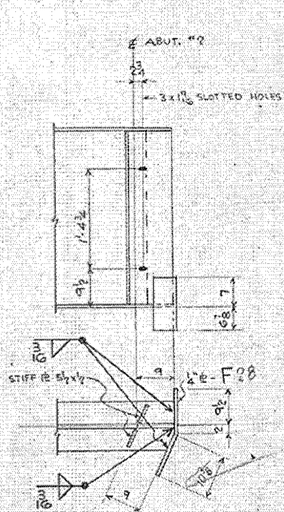




TYPICAL GIRDER

WESTMINSTER-NORWICH
IM BPNT (8)
SHEET 17 OF 58
BRIDGE 39

FOR REFERENCE ONLY

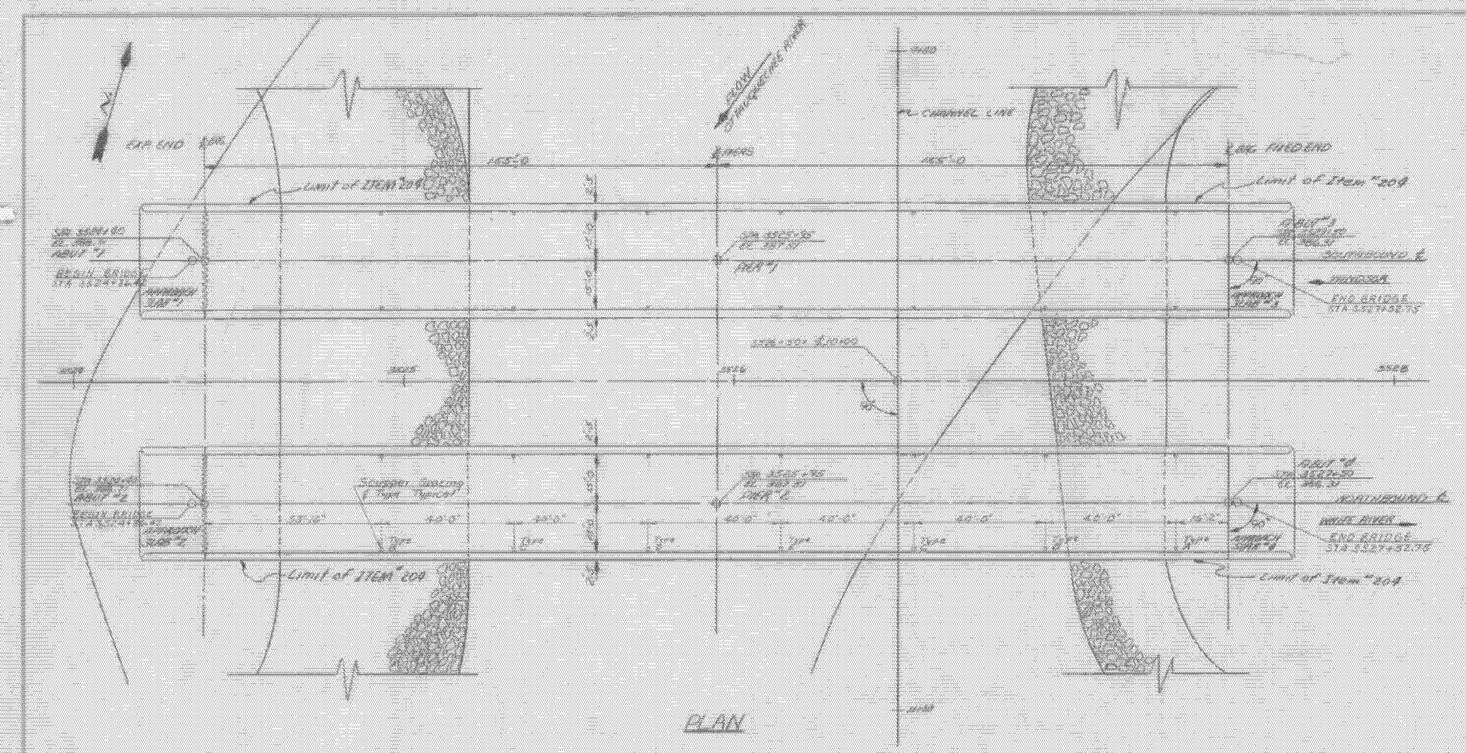
RECEIVED SEP 1 1965
CK'D BY CRD OK'D BY RMW
RESUBMIT APPROVED
BY DATE

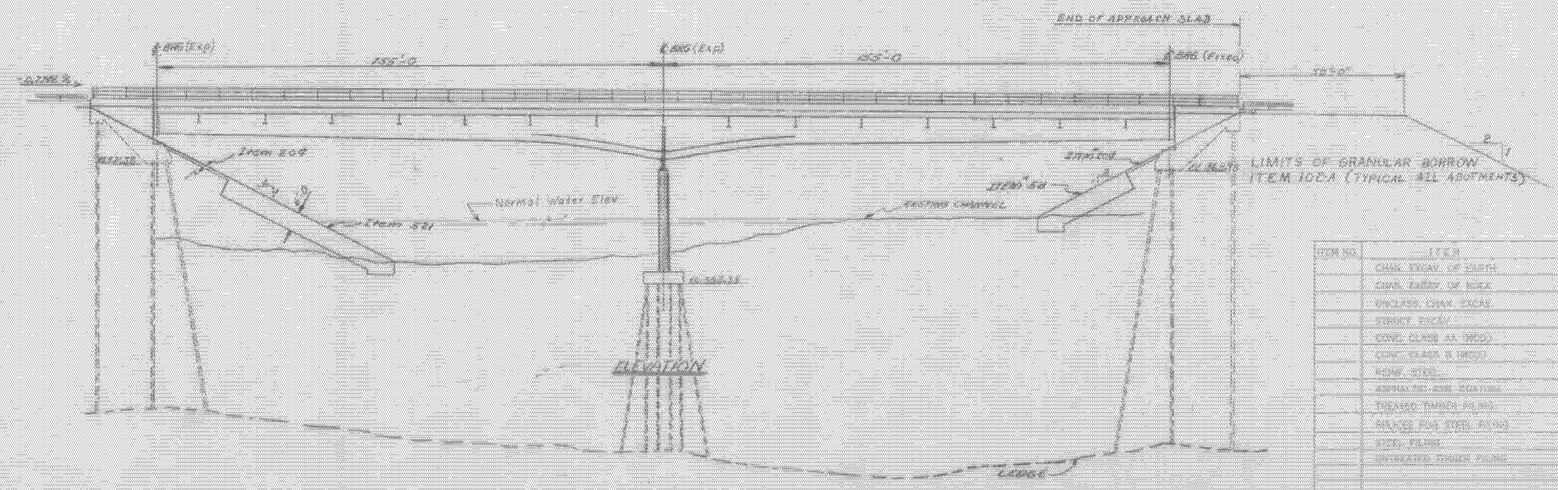
FOR GENERAL NOTES SEE DIAG E1

I 91-1(22) CONT 4

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | | | | | DRAWN D1 DATE MAY 65 | MADE IN CANADA MATERIAL BILL | DOMINION BRIDGE COMPANY LIMITED |
| | | | | | CK'D PE DATE MAY 65 | SHIPPING BILL | DESCRIPTION BRIDGE FOR INTERSTATE ROUTE #91 OVER U.S. #5 — VAULT NO. — DRAWING NO. E2 |
| | | | | | SCALE — DEPT. | | DETAIL DECK PLAN GIRDER DETAILS |
| NO. | REVISIONS | MADE | DATE | NO. | REVISIONS | MADE | DATE PROPRIETOR STATE OF VERMONT — CONT. 1-9487 |
| | | | | | | | PURCHASER |

4 3 2 1




NOTES

1. ELEVATION DATUM SEA LEVEL BASED ON NEAREST U.S. GOVERNMENT VERTICAL CONTROL.
2. FOR ADDITIONAL NOTES SEE SCB-D1-62
3. APPROACH SLABS SHALL BE CONSTRUCTED AS PART OF STAGE I CONSTRUCTION.

LIST OF SHEETS

BR. 200 ~ PLAN AND ELEVATION
201 ~ BRIDGE QUANTITY SHEET
202 ~ PRELIMINARY INFORMATION SHEET
203, 204, 205 ~ BORINGS
206 ~ SLAB DETAILS
207 ~ FRAMING PLAN
208 ~ FLOOR BEAM & BRACING DETAILS
209 ~ BRACING DETAILS
210 ~ BRIDGE RAILING DETAILS
211, 212 ~ EXPANSION DAM DETAILS
213 ~ BEARING DEVICE DETAILS
214 ~ ABUTMENTS NO. 1, 2, 3 & 4
215 ~ PIERS 1 & 2 DETAILS
216 ~ REINFORCING STEEL SCHEDULES
BR. 217-222 ~ CHANNEL SECTIONS

STANDARD SHEETS
~ 634 ~
~ SCB-D6-62, DETAILS A, B & E
~ SCB-D1-62, GENERAL NOTES
~ SB-R1-64, Sheets 1 & 2 of 2

Allowable Unit Stresses

$f'_c$ = 3000 psi
$f_c$ = 1200 psi
$f_s$ = 20,000 psi

WESTMINSTER-NORWICH
IM BPNT (8)
SHEET 18 OF 58
BRIDGE 40

FOR REFERENCE ONLY

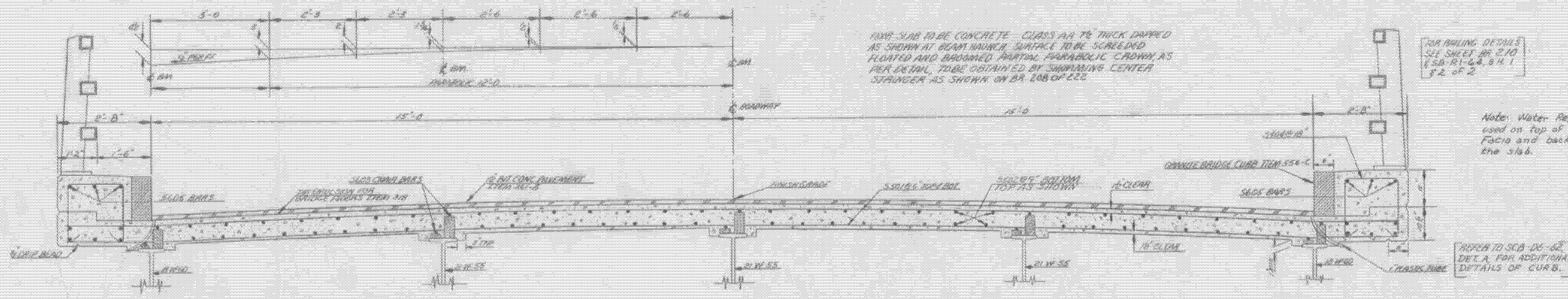
BR. 200 OF 222

Revisions
1. Scuppers added to Plan 1-11-66 W. Tripp

| ITEM NO. | ITEM | UNIT | EST. | | TOTAL | FINAL |
|---|---|---|---|---|---|---|
| | CLASS EXCAV. OF EARTH | C.Y. | | | | |
| | CLASS EXCAV. OF ROCK | C.Y. | | | | |
| | UNCLASS. CHAN. EXCAV. | C.Y. | | | | |
| | DIRECT EXCAV. | C.Y. | | | | |
| | CONC. CLASS AA (MOD.) | C.Y. | | | | |
| | CONC. CLASS B (MOD.) | C.Y. | | | | |
| | REINF. STEEL | LBS. | | | | |
| | APPROVED SOIL BORROW | C.Y. | | | | |
| | TIMBERED TIMBER PILING | L.F. | | | | |
| | SHOES FOR STEEL PILING | EA. | | | | |
| | STEEL PILING | L.F. | | | | |
| | SPLICED TIMBER PILING | L.F. | | | | |

STATE OF VERMONT
DEPARTMENT OF HIGHWAYS

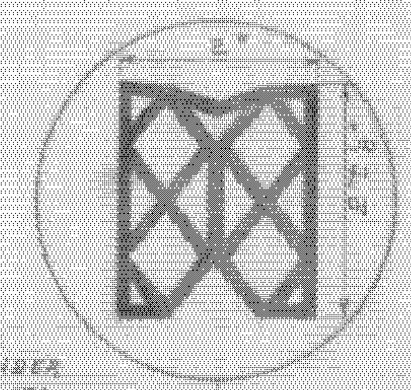
TOWN OF HARTLAND-HARTFORD
ROAD NO. ..... BRIDGE NO. .....
PLAN & ELEVATION
I-91 OVER THE OTTAUQUECHEE RIVER
SCALE 1"=20'-0"
SURVEYED BY: JENATT
DRAWN BY: SALS CHECKED BY: AGC
PROJECT NO. I-91-1(20)17 (31)
SHEET 57 OF 103 Sheets 167 to 242



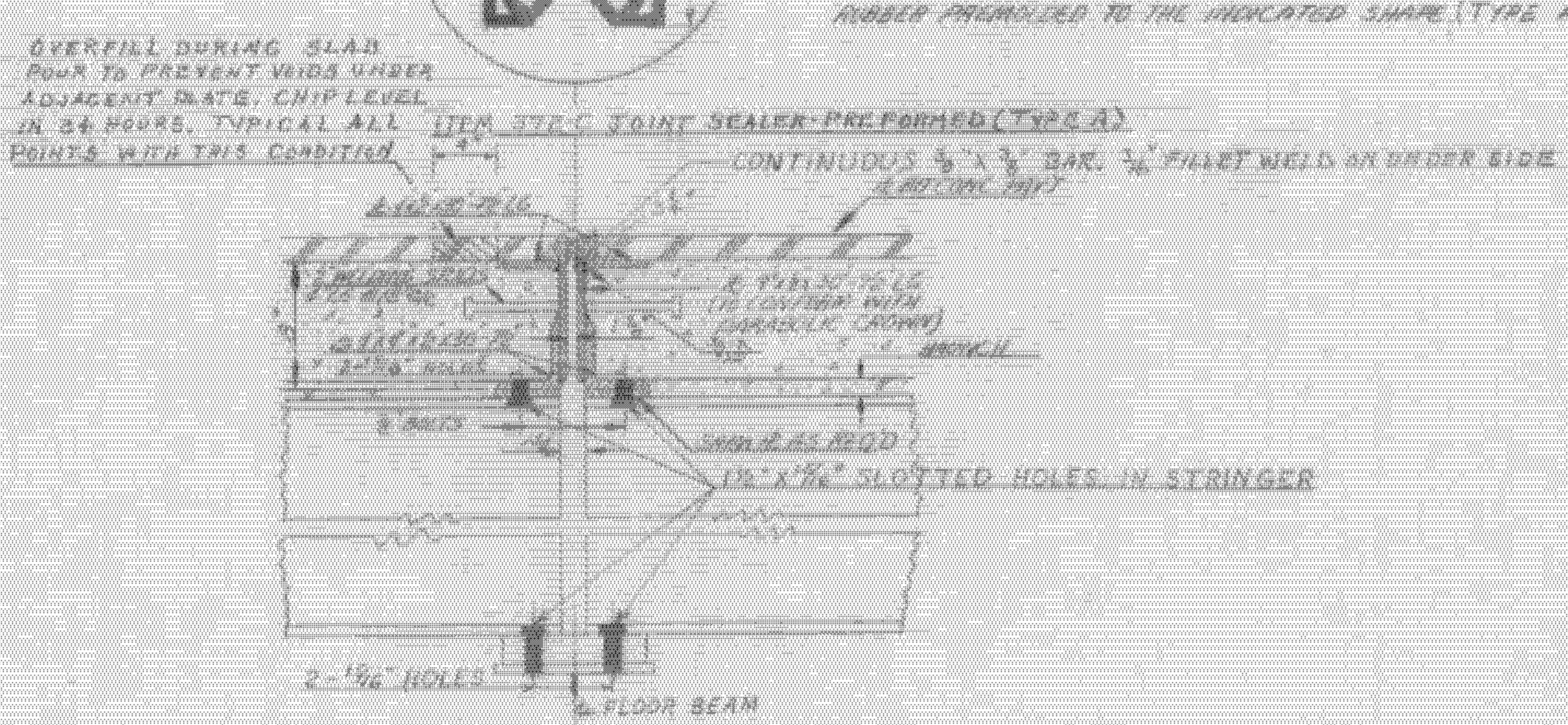

FORM SLAB TO BE CONCRETE - CLASS AA 7½" THICK DAPPED AS SHOWN AT BEAM HAUNCH. SURFACE TO BE SCREEDED FLOATED AND BROOMED. PARTIAL PARABOLIC CROWN, AS PER DETAIL, TO BE OBTAINED BY SHIMMING CENTER STRINGER AS SHOWN ON BR. 208 OF 222.

Note: Water Repellent, Item 440, shall be used on top of Safety Walk, and on the Facia and back to the Drip Bead under the slab.

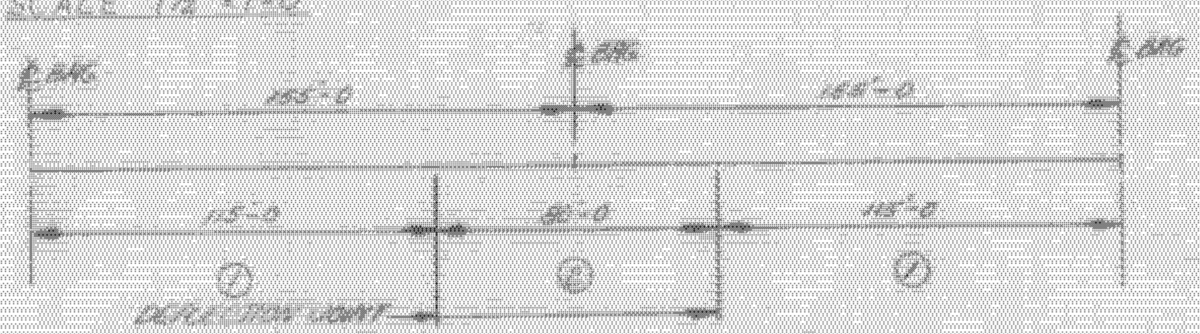
NEOPRENE SEAL AT CURB
NOT TO SCALE



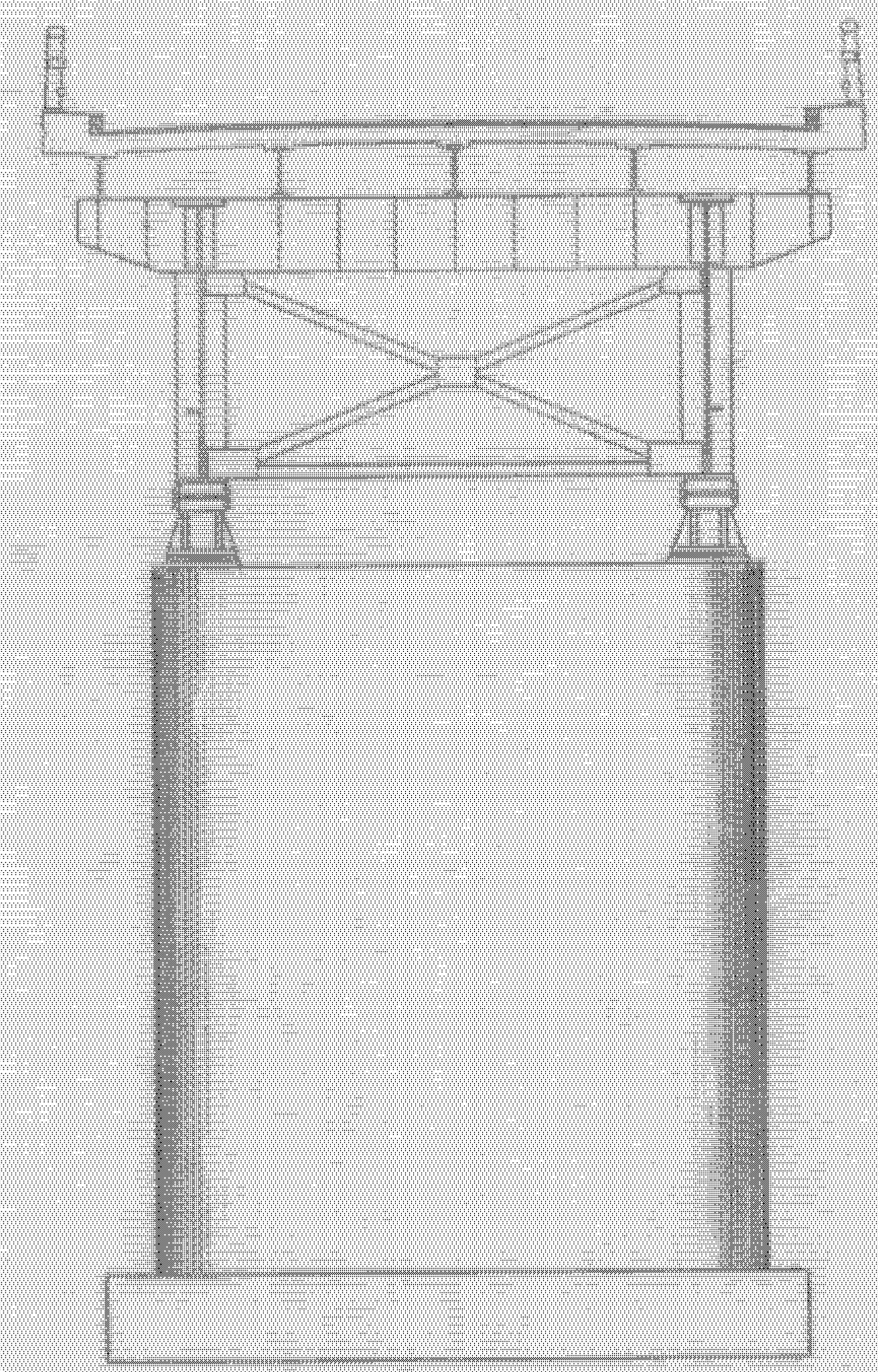

NOTE:
PREFORMED SEALER SHALL BE NEOPRENE RUBBER PREMOLDED TO THE INDICATED SHAPE (TYPE A)



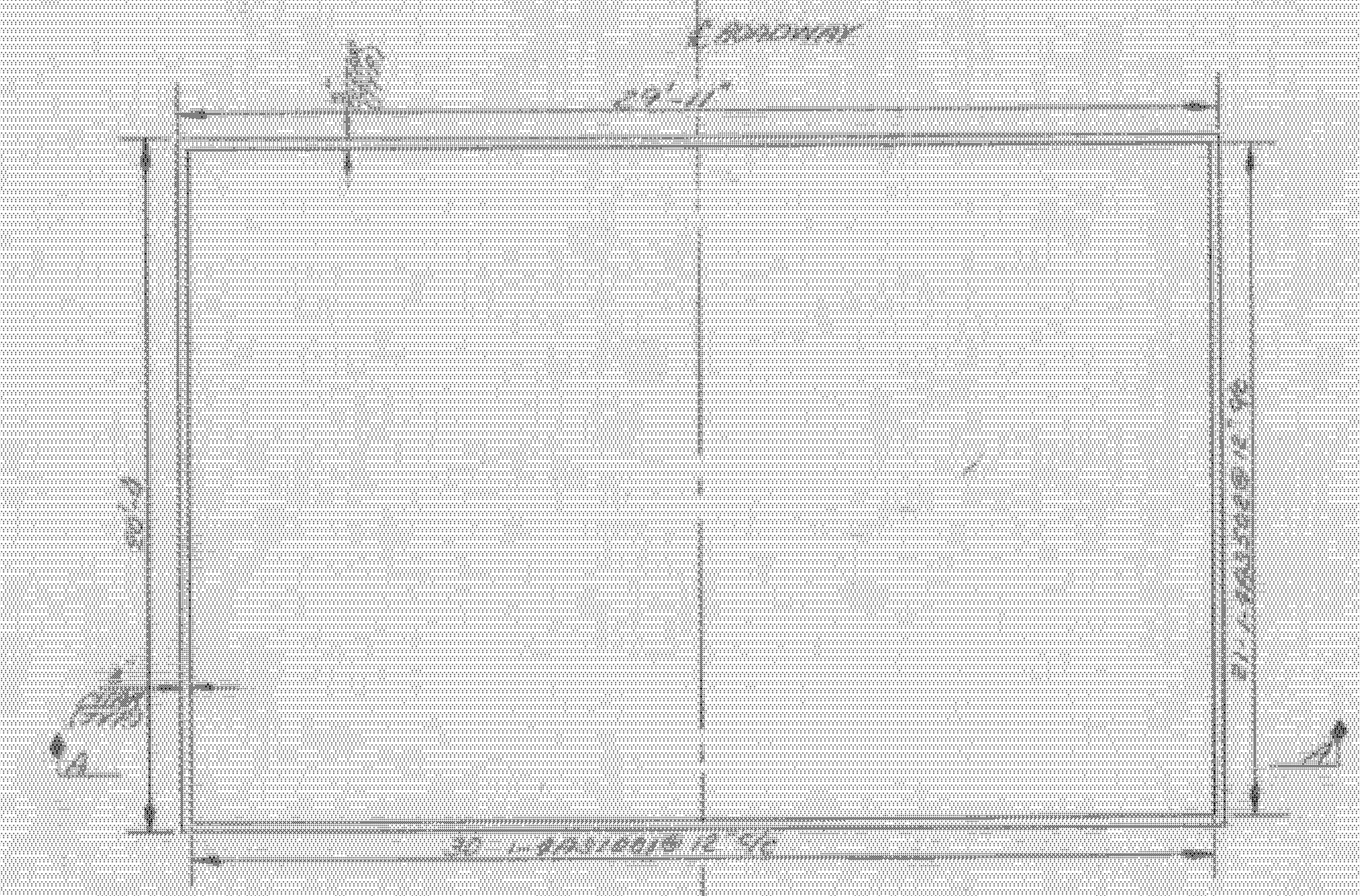

DETAIL OF DEFLECTION JOINT
SCALE 1½" = 1'-0"




SLAB POUR SEQUENCE



SECTION AT PIER
SCALE 1" = 6'-0"




PLAN OF APPROACH SLAB
SCALE ¼" = 1'-0

SECTION A-A
SCALE ¼" = 1'-0

WESTMINSTER-NORWICH
IM BPNT (8)
SHEET 19 OF 58
BRIDGE 40

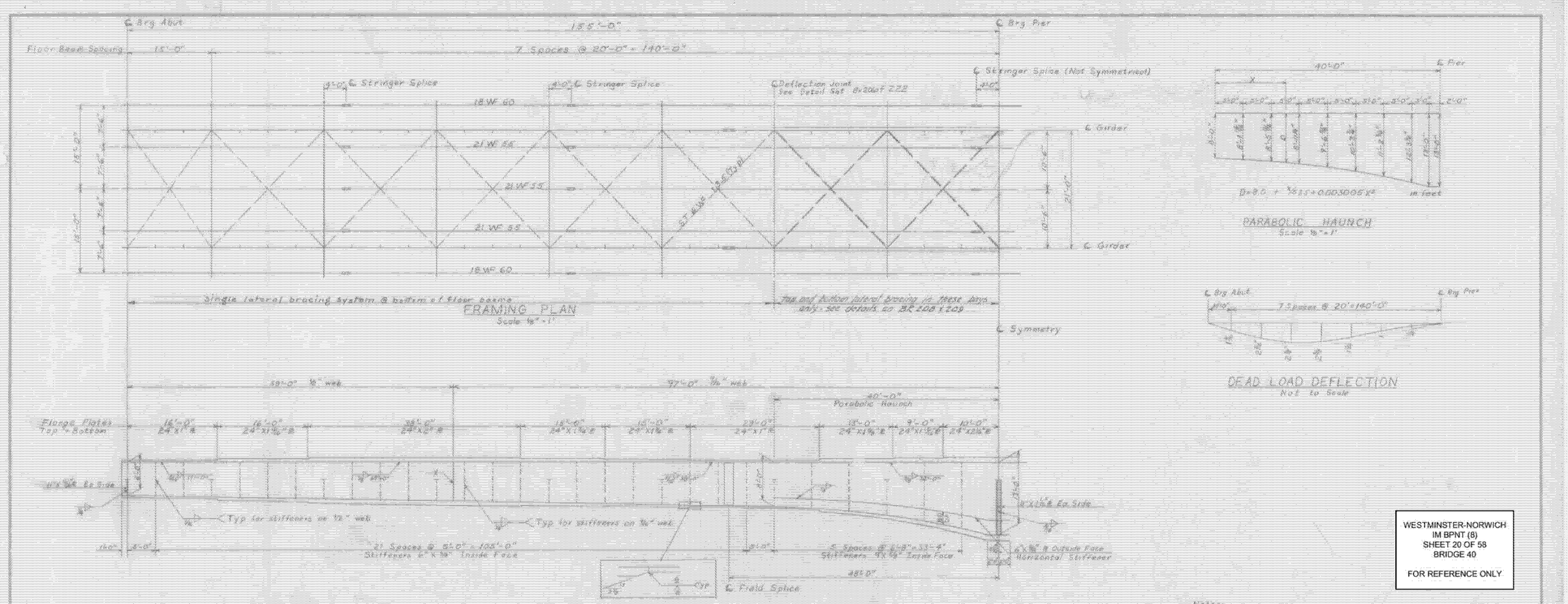
FOR REFERENCE ONLY

BR 206 OF 222

| ITEM NO. | ITEM | UNIT | EST. | | TOTAL | FINAL |
|---|---|---|---|---|---|---|
| | CHAN. EXCAV. OF EARTH | C.Y. | | | | |
| | CHAN. EXCAV. OF ROCK | C.Y. | | | | |
| | UNCLASS. CHAN. EXCAV. | C.Y. | | | | |
| | STRUCT. EXCAV. | C.Y. | | | | |
| | CONC. CLASS AA (REQD) | C.Y. | | | | |
| | CONC. CLASS B (REQD) | C.Y. | | | | |
| | REINF. STEEL | LBS. | | | | |
| | ASPHALTIC ARM. COATING | S.Y. | | | | |
| | TREATED TIMBER PILING | L.F. | | | | |
| | SPLICES FOR STEEL PILING | EA. | | | | |
| | STEEL PILING | L.F. | | | | |
| | UNTREATED TIMBER PILING | L.F. | | | | |

STATE OF VERMONT
DEPARTMENT OF HIGHWAYS

TOWN OF **HARTLAND-HARTFORD**
ROAD NO. I-91 BRIDGE NO. ____
**I-91 OVER THE OTTAUQUECHEE RIVER SLAB DETAILS**
SCALE AS SHOWN
SURVEYED BY ____
DRAWN BY SHS CHECKED BY AGC
PROJECT NO. I-91-1 (31) [redacted]
SHEET 57 OF 103 Sheet 169 of 242




WESTMINSTER-NORWICH
IM BPNT (8)
SHEET 20 OF 58
BRIDGE 40

FOR REFERENCE ONLY

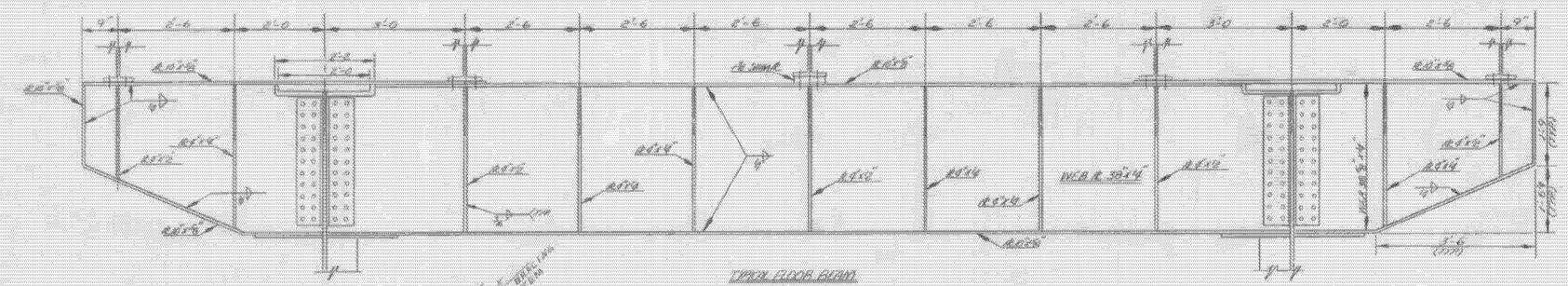
Notes:
1. For general notes see Std. Sht SCB-D1-62
2. Flange welds shown are typical for top and bottom flanges
3. Transverse stiffeners to be welded to web and top flange for 16" stiffeners and web and bottom flange for 18" stiffeners
4. Each span to be cambered 4"
5. For floor beam and bracing details see Br. 208 & 209 or 222
6. Structural Steel shall be ASTM A36-62T unless otherwise called for on the plans.

Br 207 of 222

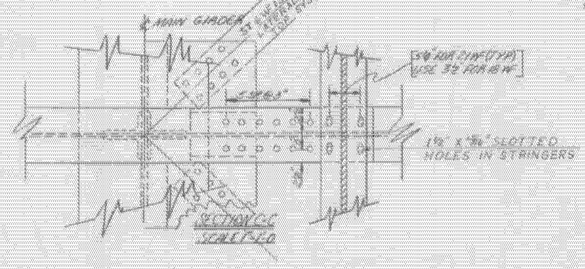
| ITEM NO. | ITEM | UNIT | NET | — | TOTAL | FINAL |
|---|---|---|---|---|---|---|
| | CHAN. EXCAV. OF EARTH | C.Y. | | | | |
| | CHAN. EXCAV. OF ROCK | C.Y. | | | | |
| | UNCLASS. CHAN. EXCAV. | C.Y. | | | | |
| | STRUCT. EXCAV. | C.Y. | | | | |
| | CONC. CLASS AA (BOD.) | C.Y. | | | | |
| | CONC. CLASS B (BOD.) | C.Y. | | | | |
| | REINF. STEEL | LBS. | | | | |
| | ASPHALTIC EXP. COMPOS. | S.Y. | | | | |
| | TREATED TIMBER PILING | L.F. | | | | |
| | SPLICED F/H STEEL PILING | EA. | | | | |
| | STEEL PILING | L.F. | | | | |
| | UNTREATED TIMBER PILING | L.F. | | | | |

STATE OF VERMONT
DEPARTMENT OF HIGHWAYS

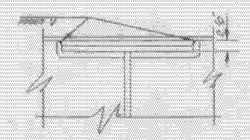
TOWN OF HARTLAND
ROUTE NO. I-91 LOG STA. 362E+85
I-91 OVER OTTAUQUECHEE RIVER
FRAMING PLAN
SCALE AS SHOWN
SURVEYED BY
DRAWN BY ASC CHECKED BY RLO
PROJECT NO. I-91-1(82) Cont 4
SHEET 58 OF 103




TYPICAL FLOOR BEAM
SCALE 1"=1'-0"

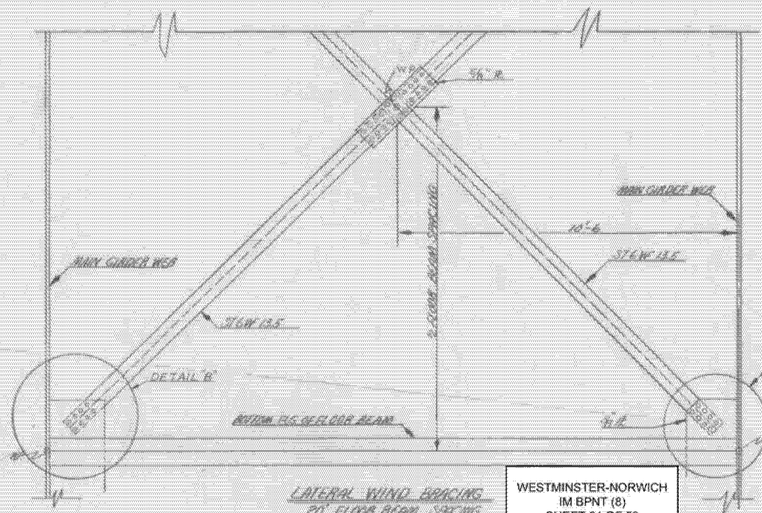



SCALE 1"=1'-0"

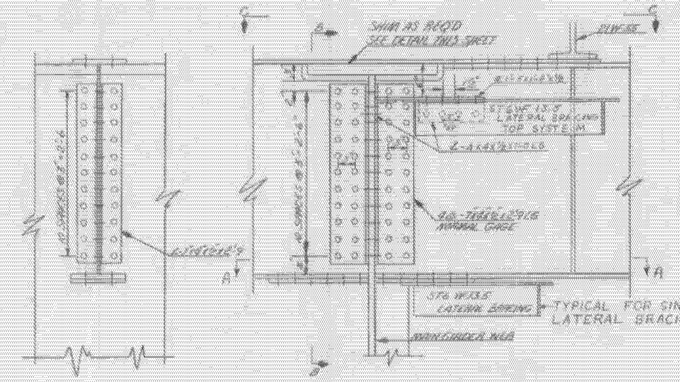


SHIM PLATE FOR FLOOR BEAMS EXCEPT AT PIER
THICKNESS VARIES WITH GIRDER FLANGE SIZE

SCALE 1"=1'-0"

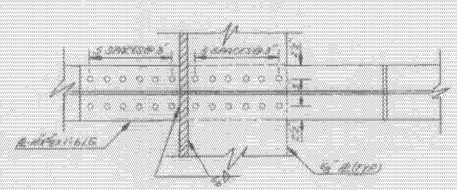



LATERAL WIND BRACING
20' FLOOR BEAM SPACING
15' FLOOR BEAM SPACING
SCALE 3/8"=1'-0"

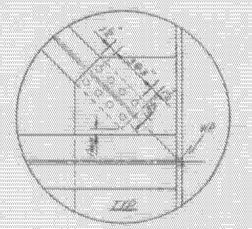



SECTION B-B
SCALE 1"=1'-0"

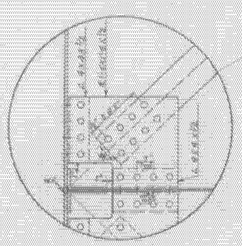
TYPICAL FLOOR BEAM SPLICE
SCALE 1"=1'-0"




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




DETAIL A
SCALE 1"=1'-0"




TOP LATERAL BRACING
DETAIL B
SCALE 1"=1'-0"

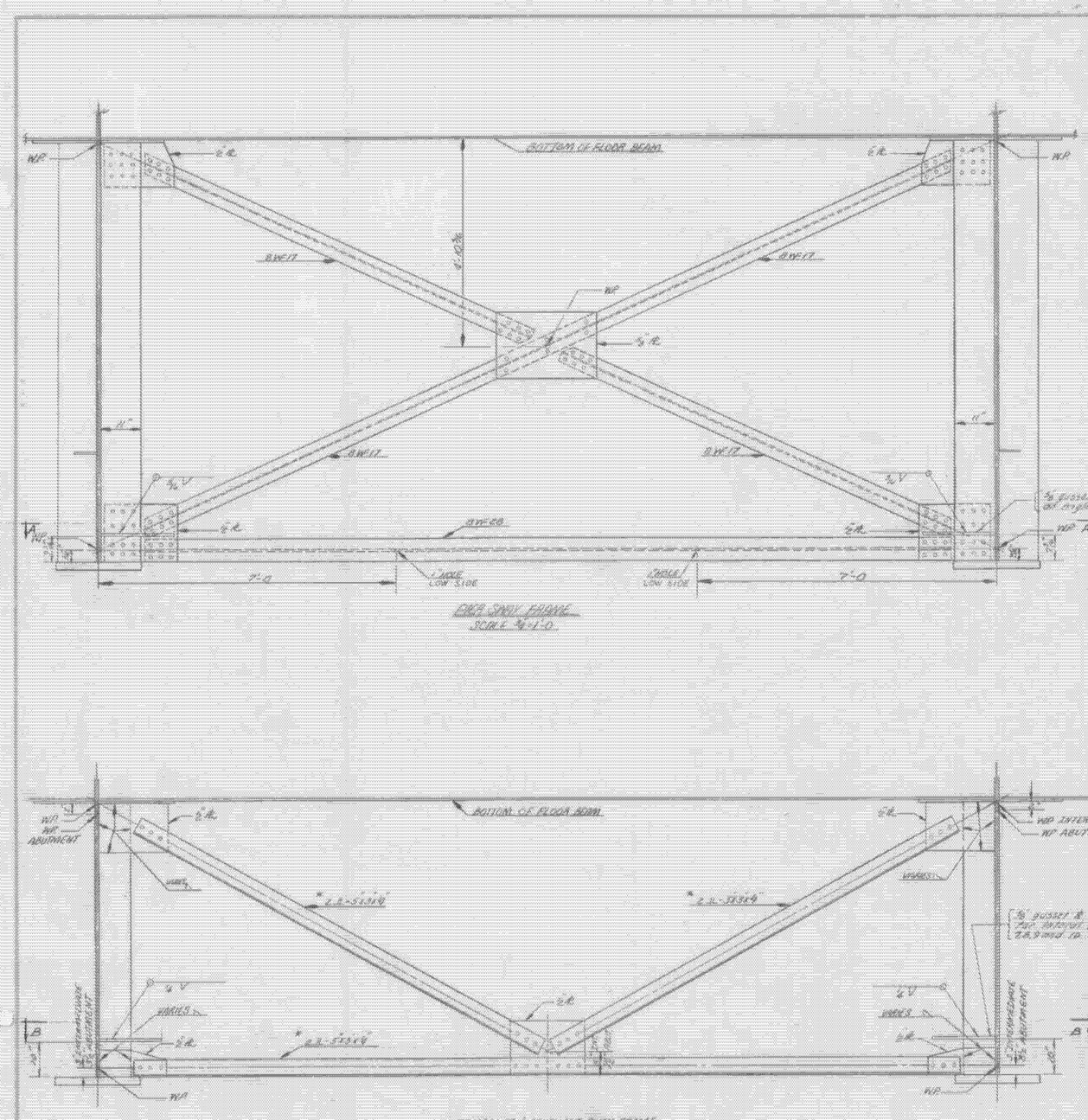
| ITEM NO. | ITEM | UNIT | NET | | TOTAL | FINAL |
|---|---|---|---|---|---|---|
| | CHAN. EXCAV. OF EARTH | C.Y. | | | | |
| | CHAN. EXCAV. OF ROCK | C.Y. | | | | |
| | UNCLASS. CHAN. EXCAV. | C.Y. | | | | |
| | STRUCT. EXCAV. | C.Y. | | | | |
| | CONC. CLASS AA (BDG.) | C.Y. | | | | |
| | CONC. CLASS B (BDG.) | C.Y. | | | | |
| | REINF. STEEL | LBS. | | | | |
| | ASPHALTIC ASS COATING | S.Y. | | | | |
| | TREATED TIMBER PILING | L.F. | | | | |
| | SPLICES FOR STEEL PILING | EA. | | | | |
| | STEEL PILING | L.F. | | | | |
| | UNTREATED TIMBER PILING | L.F. | | | | |

STATE OF VERMONT
DEPARTMENT OF HIGHWAYS

TOWN OF HARTLAND - HARTFORD
ROAD NO. ____ BRIDGE NO. ____
I-91 OVER THE OTTAUQUECHEE RIVER
FLOOR BEAM AND BRACING DETAILS
SCALE AS SHOWN
SURVEYED BY ____
DRAWN BY SMS CHECKED BY RLO
PROJECT NO. I-91-1(62)JOINT '91
SHEET 57 OF 103

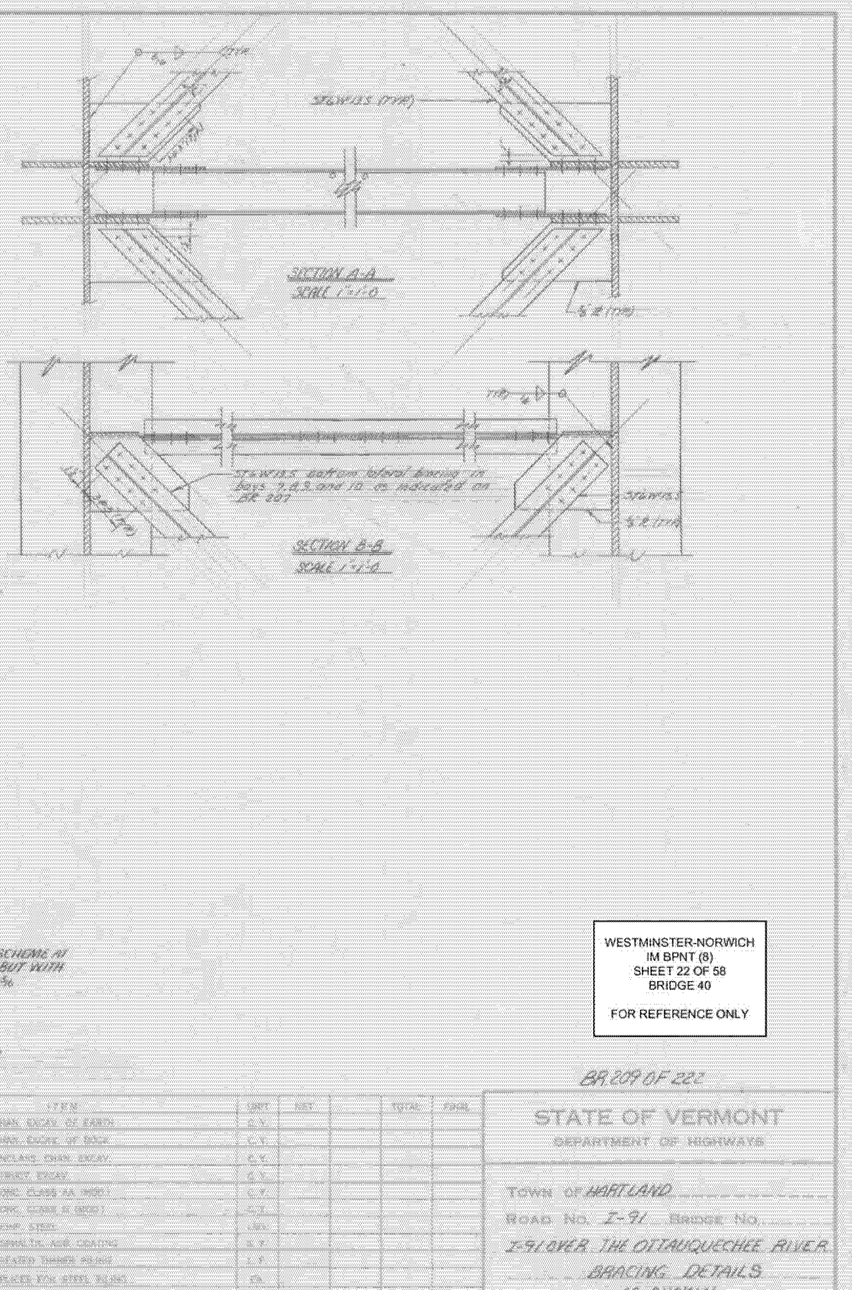
WESTMINSTER-NORWICH
IM BPNT (8)
SHEET 21 OF 58
BRIDGE 40

FOR REFERENCE ONLY




END SWAY FRAME
SCALE 3/4"=1'-0"

INTERMEDIATE ABUTMENT SWAY FRAME
SCALE 3/4"=1'-0"




WESTMINSTER-NORWICH
IM BPNT (8)
SHEET 22 OF 58
BRIDGE 40

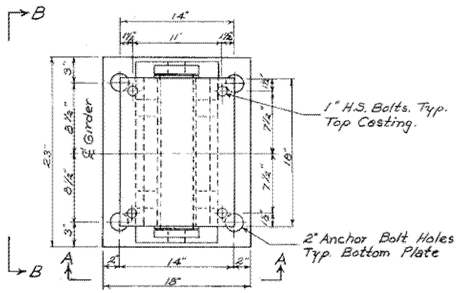
FOR REFERENCE ONLY

BR 209 OF 222

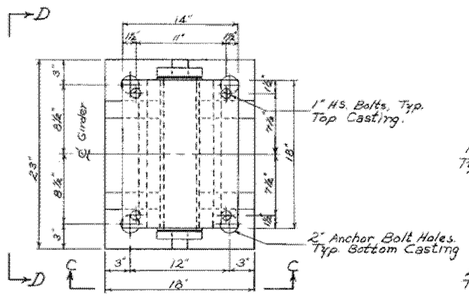
| ITEM NO. | ITEM | UNIT | REV. | | TOTAL | FINAL |
|---|---|---|---|---|---|---|
| | CHAN. EXCAV. OF EARTH | C.Y. | | | | |
| | CHAN. EXCAV. OF ROCK | C.Y. | | | | |
| | UNCLASS. CHAN. EXCAV. | C.Y. | | | | |
| | STRUCT. EXCAV. | C.Y. | | | | |
| | CONC. CLASS AA (HPC) | C.Y. | | | | |
| | CONC. CLASS B (RED.) | C.Y. | | | | |
| | REINF. STEEL | LBS. | | | | |
| | ASPHALTIC ADH. COATING | S.Y. | | | | |
| | TREATED TIMBER PILING | L.F. | | | | |
| | SPLICES FOR STEEL PILING | EA. | | | | |
| | STEEL PILING | L.F. | | | | |
| | ENCASED TIMBER PILING | L.F. | | | | |

STATE OF VERMONT
DEPARTMENT OF HIGHWAYS

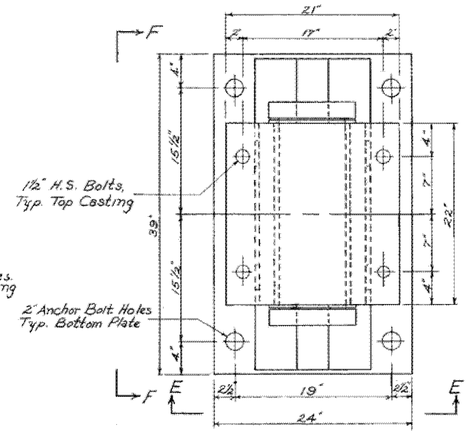
TOWN OF HARTLAND
ROAD NO. I-91 BRIDGE NO.
I-91 OVER THE OTTAUQUECHEE RIVER
BRACING DETAILS
SCALE: AS SHOWN
SURVEYED BY
DRAWN BY SHS CHECKED BY AGC
PROJECT NO. I-91-1(82) CONT. #4
SHEET GO OF 103




Plan - Exp. End Abut. Bearing Device




Plan - Fixed End Abut. Bearing Device




Plan - Pier Bearing Device

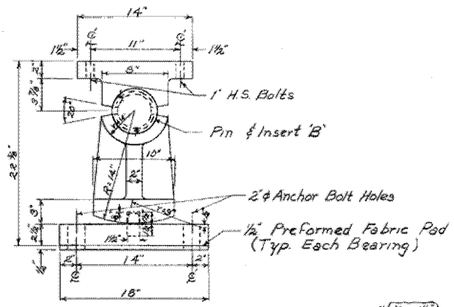
## Notes

1. Preformed Fabric Pads ½" thick, equal in size to the bearing plates, shall be used under each bearing to conform with AASHO Standard Specifications For Highway Bridges 1961, Section 2.10.3(K)

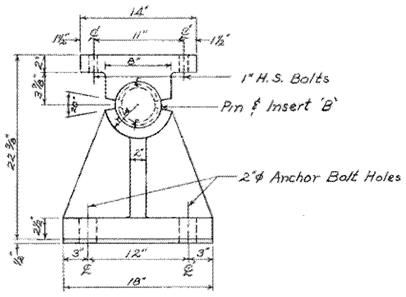
2. The Fabricator may furnish the bearing devices either as steel castings conforming with "Steel Castings For Highway Bridges," AASHO Designation M-192 Class 70 or as welded assemblies using structural steel conforming with AASHO Designation M 183 in which case the weldment shall be stress relieved by heat treatment in accordance with A.W.S. Specifications Section A12. Should the fabricator elect to furnish a weldment in lieu of the details indicated for castings he may submit details for modifying the devices to facilitate welding the assembly.

3. Align devices so that all rocker arm shafts will be vertical at 45° F.

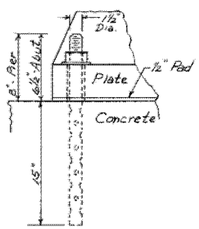
Weight of Fixed Bearing = 1000 lbs.
Weight of 22 3/8" Expansion Bearing = 1000 lbs.
Weight of 42" Expansion Bearing = 3900 lbs.



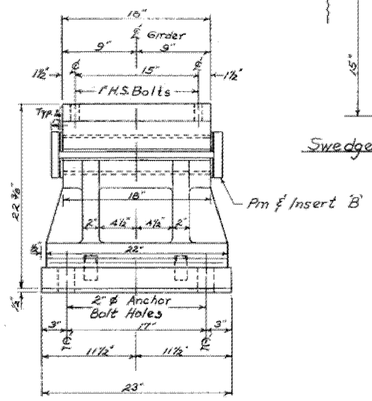

Elev. A-A



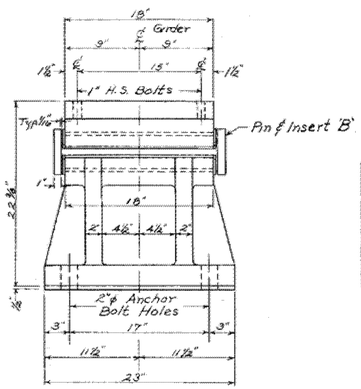

Elev. C-C



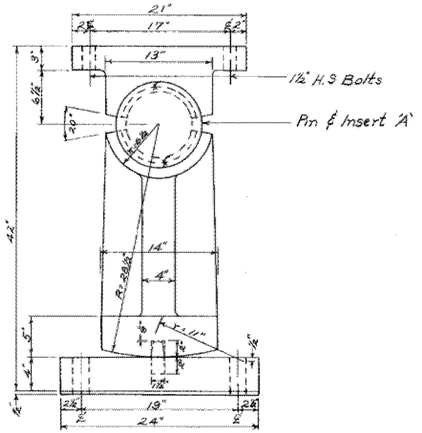

Swedge Bolt Detail



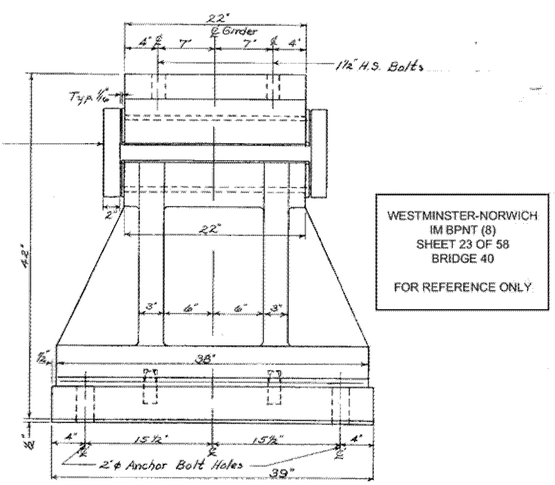

Elev. B-B




Elev. D-D



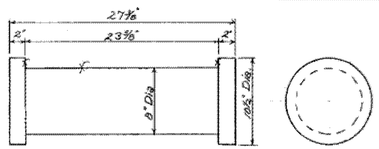

Elev. E-E



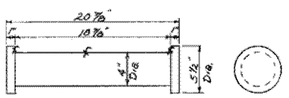

Elev. F-F

WESTMINSTER-NORWICH
IM BPNT (8)
SHEET 23 OF 58
BRIDGE 40

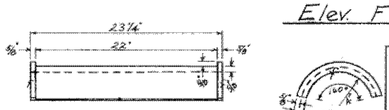
FOR REFERENCE ONLY




Detail - Pin 'A'

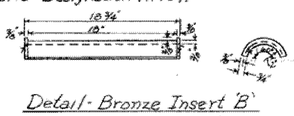



Detail - Pin 'B'




Detail - Bronze Insert 'A'

Note: Bronze Inserts to be Cast Bridge Bearing Bronze - ASTM B-22-52, Alloy E, AASHO Designation M 107.

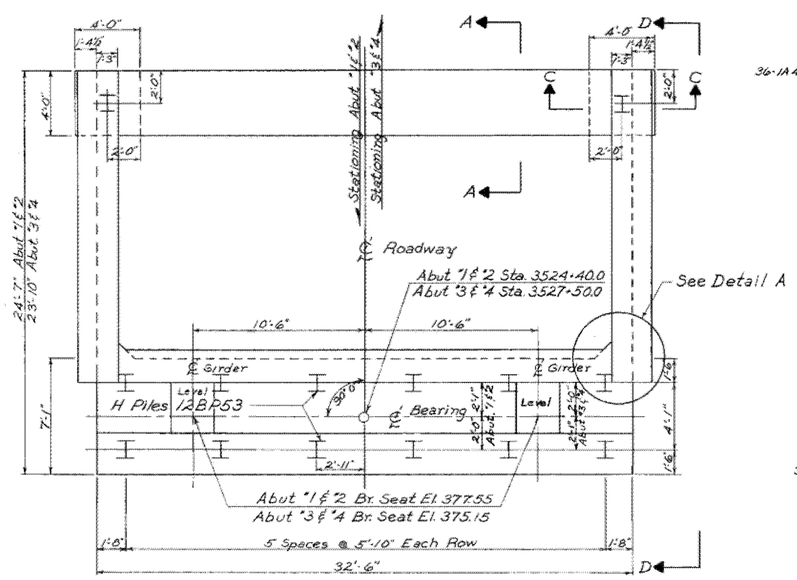



Detail - Bronze Insert 'B'

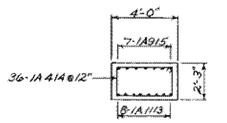
Br 213 of 222

STATE OF VERMONT
DEPARTMENT OF HIGHWAYS

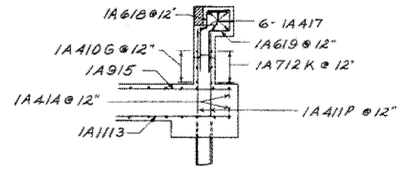
TOWN OF Hartland
ROUTE NO. I91 LOG STA. 3525-95
I91 over Ottauquechee River
Abut. & Pier Bearing Devices
SCALE 1½" = 1'-0"
SURVEYED BY
DRAWN BY WBT CHECKED BY AGC
PROJECT NO. I91-1(22)Cont. A
SHEET 6A OF 103



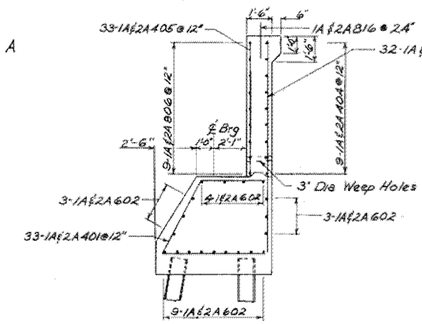

Plan View
Abut. "1, "2, "3, & "4



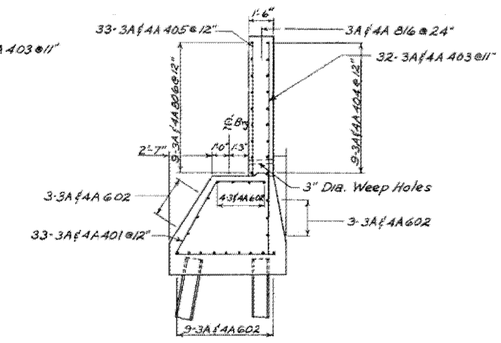

Section A-A
Abut "1, "2 "3, & "4




Section C-C
Abut "1, "2, "3, & "4




Section B-B
Abut. "1 & "2
Exp End




Section B-B
Abut. "3 & "4
Fixed End

## Notes

1. Slope Bridge Seats ¼" per Ft to drain except under bearing devices and coat with ½" of Asphaltic-Asbestos Coating, Item 407.

2. All reinforcing steel to be 2" clear except in Footings where it shall be 3" clear.

3. Front face of Backwall above Bridge Seats to be mopped with two (2) coats of Emulsified Asphalt, Type RS-1, as specified in Item 407.02-A1, State of Vermont, Department of Highways, Standard Specifications dated 1956. Cost of this work to be included in the unit price bid for Item 401-B Concrete Class B, Mod. Typical all abutments.

4. Steel Piles are designed for a maximum load of 45 Tons each.

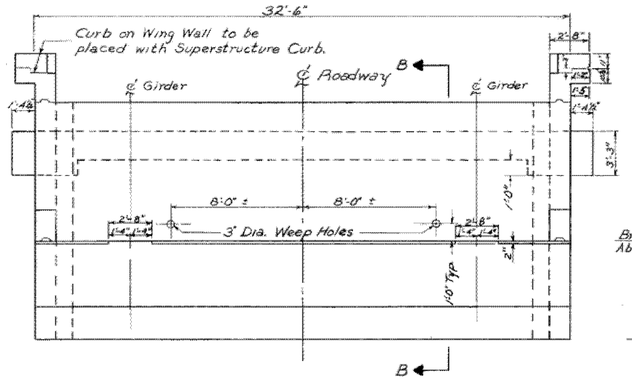
5. For Construction Details see Std. Sheet SCB-D6-62.

6. All concrete above the top of the Backwall shall be placed after stringers are profiled.

7. FOR DETAILS OF CABLE GUARD RAIL POST ANCHORAGE SEE STANDARD SHEET 63A.

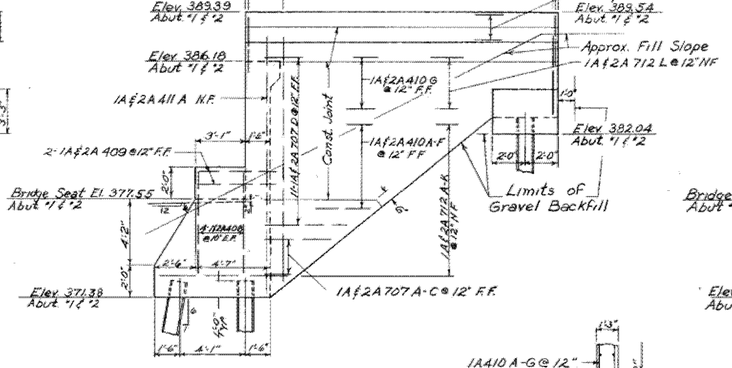
8. Inside face of backwall and wings to be coated as per note 3 above.

9. Water Repellent, Item 440, shall be used on all exposed areas of Abutments not otherwise treated.

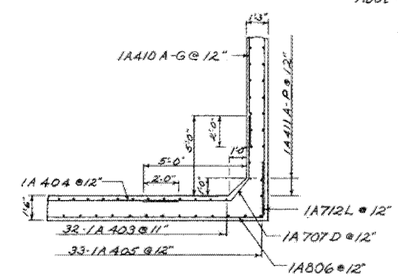



Front Elevation
Abut "1, "2, "3, & "4

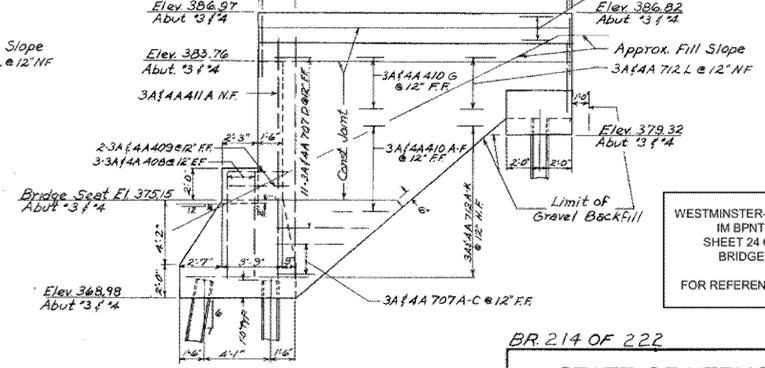
| Abut. No. | No. of Piles | Size | Est. Lgth. of Piles | Splices allowed for piles not exceeding plan length. (To be paid for only if used) | Splices estimated for piles exceeding plan length. (To be paid for only if used) |
|---|---|---|---|---|---|
| 1 | 14 | 12BP53 | 75' | 14 | 3 |
| 2 | 12 | 12BP53 | 65' | 12 | 2 |
| | 2 | 12BP53 | 75' | 2 | 1 |
| 3 | 7 | 12BP53 | 75' | 7 | 2 |
| | 6 | 12BP53 | 85' | 6 | 1 |
| | 1 | 12BP53 | 90' | 1 | |
| 4 | 12 | 12BP53 | 80' | 12 | 2 |
| | 2 | 12BP53 | 90' | 2 | 1 |




Elevation D-D
Abut "1 & "2




Detail A
Abut "1, "2, "3, & "4




Elevation D-D
Abut "3 & "4

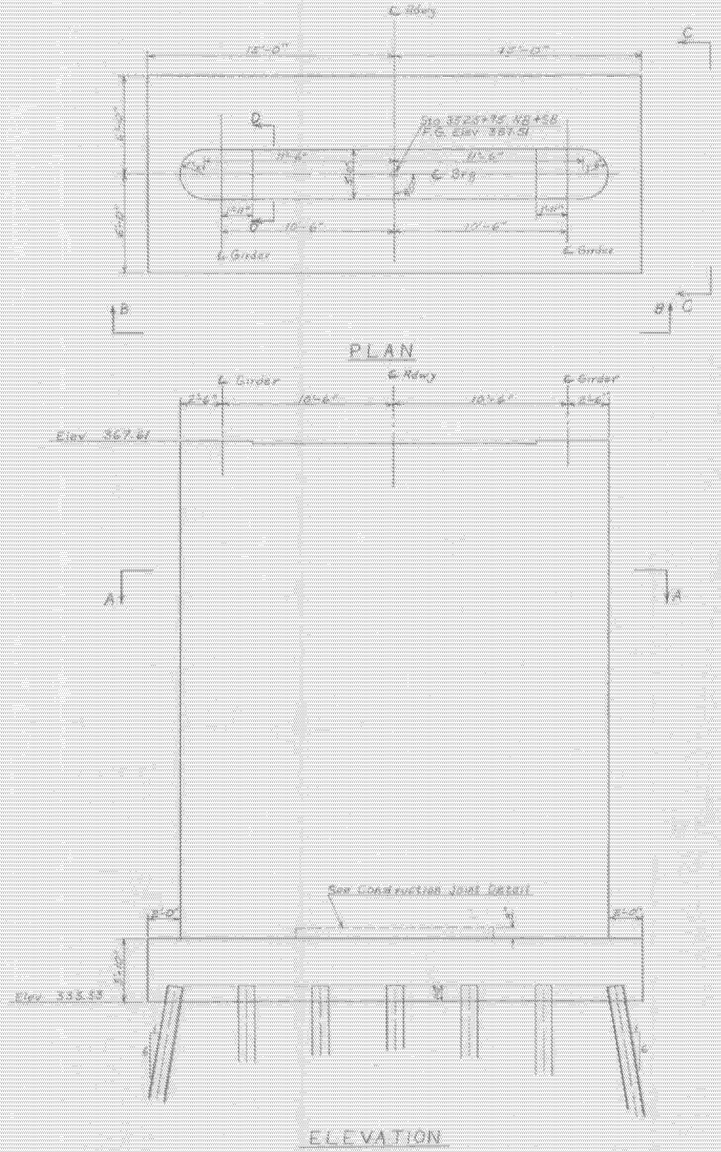
WESTMINSTER-NORWICH
IM BPNT (8)
SHEET 24 OF 58
BRIDGE 40

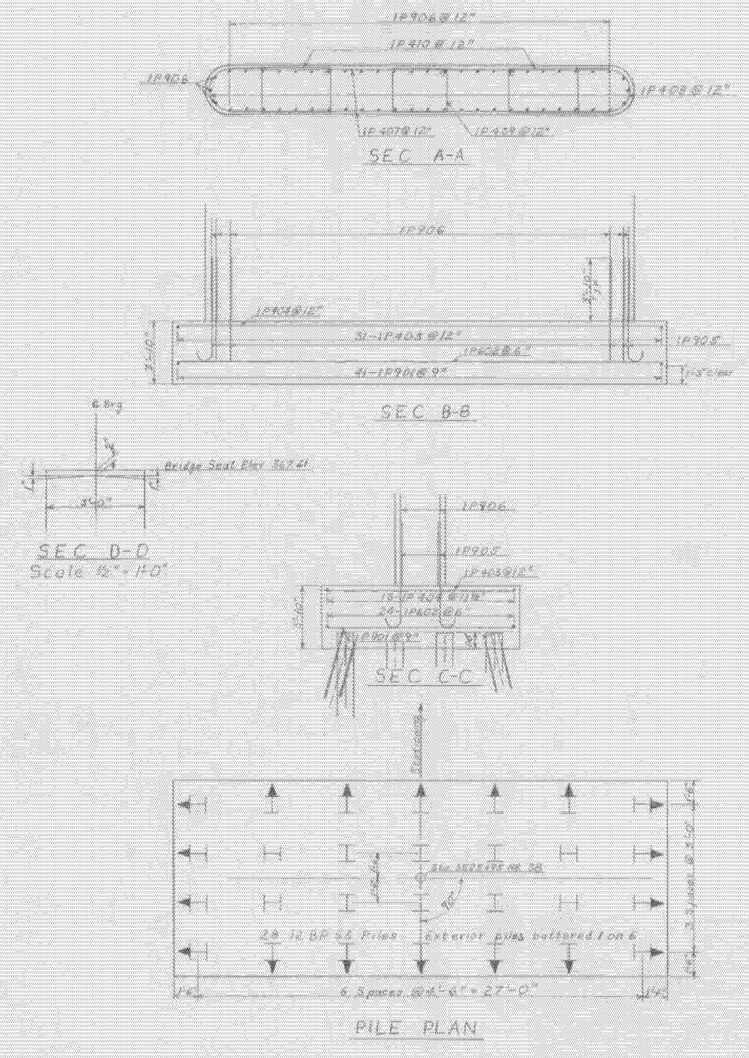
FOR REFERENCE ONLY

BR. 214 OF 222

STATE OF VERMONT
DEPARTMENT OF HIGHWAYS

TOWN OF Hartland
ROUTE NO. I 91 LOG STA 3525+95
I-91 over Ottauquechee River
Abutments No. 1, 2, 3 & 4
SCALE 1/4" = 1'-0"
SURVEYED BY
DRAWN BY WBT CHECKED BY RLO
PROJECT NO. I 91-1(22) Cont. "4
SHEET 65 OF 103



CONSTRUCTION JOINT DETAIL

PILE SPLICES

| No. of Piles | Size | Est. Length of Piles | Spring Allowance on Piles not Exceeding this Length is to be paid for only if used | Spacer Extender for Piles Exceeding this Length (to be paid for only if used) |
|---|---|---|---|---|
| Pier 1 | 28 | 12 BP 53 | 45' | 0 | 6 |
| Pier 2 | 28 | 12 BP 53 | 66' | 0 | 6 |

WESTMINSTER-NORWICH
IM BPNT (8)
SHEET 25 OF 58
BRIDGE 40

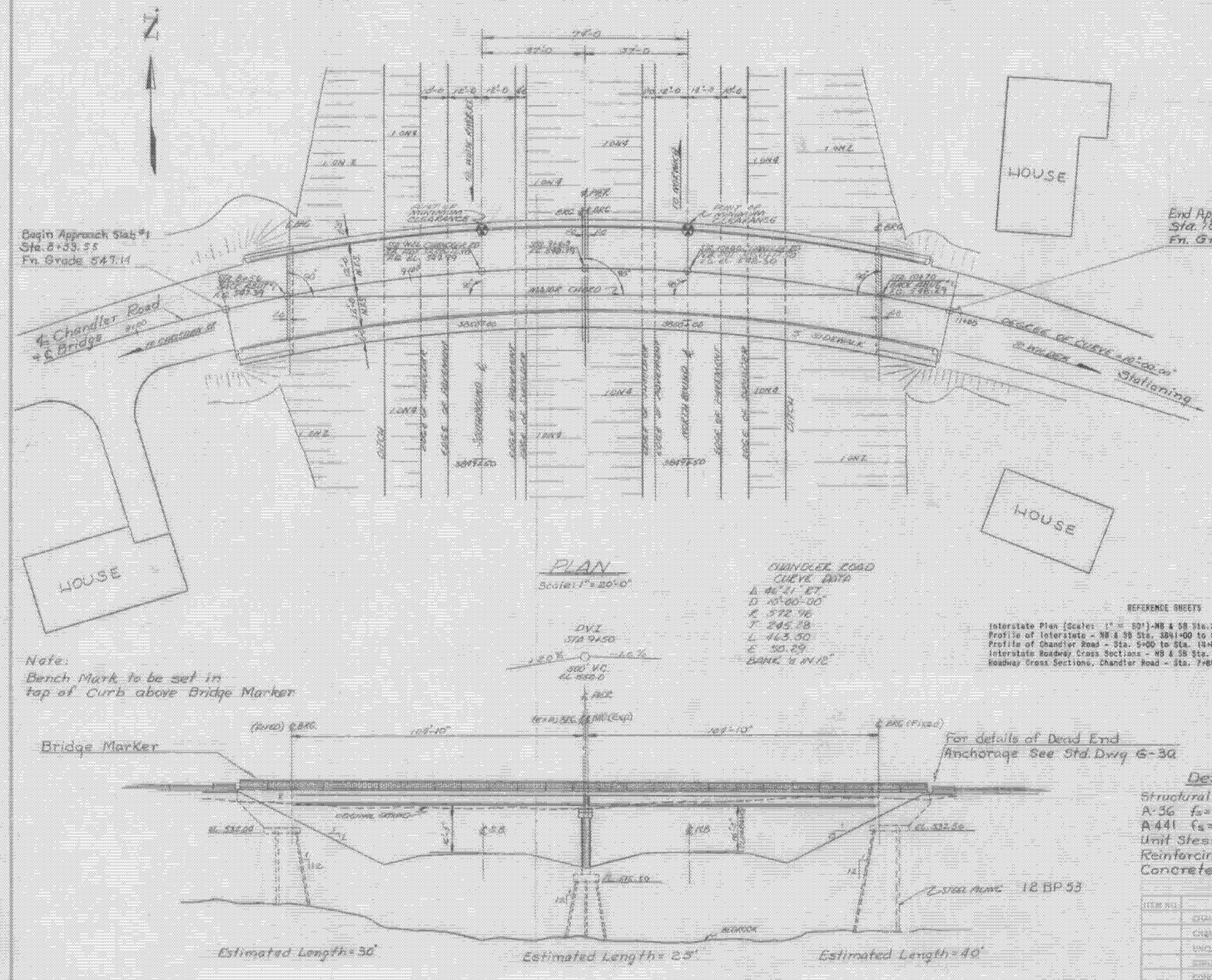
FOR REFERENCE ONLY

Notes:
1. For general notes see Std Sht SCB-01-02.
2. All reinforcing steel to have 3" cover.
3. Pier 2 reinforcing steel same as Pier 1 except mark is 2P---.
4. Maximum pile load 45 tons.
5. Top of Piers to be treated as per Note 7, Sht 2/4.

Br 215 of 222

STATE OF VERMONT
DEPARTMENT OF HIGHWAYS

TOWN OF HARTLAND
ROUTE NO. I-91 LOC. STA. 352+55
I-91 OVER OTTAUQUECHEE RIVER
PIER 1+2 DETAILS
SCALE 1/4" = 1'
SURVEYED BY
DRAWN BY ABC CHECKED BY RLO
PROJECT NO. I-91-(122), Cont. 4
SHEET 66 OF 103




## GENERAL NOTES

SPECIFICATIONS: All materials and construction shall conform to the State of Vermont, Department of Highways, Standard Specifications for Highway and Bridge Construction dated April 1963, and the A.A.S.H.O. Standard Specifications for Highway Bridges dated 1961 together with the latest revisions. Welding shall conform to Specifications for Welded Highway and Railway Bridges of the American Welding Society, AWS D2.0-63.

Design is for H520-44 loading modified for The National System of Interstate Highways, applied in accordance with the provisions of the A.A.S.H.O. Standard Specifications, Article 1.2.6.

STRUCTURAL STEEL: All girder flange plates, webs and stiffeners shall conform to A.S.T.M. Designation A441-63T. Unless otherwise noted on the plans, all other structural steel shall conform to A.S.T.M. Designation A36-62T.

Unless otherwise detailed, all field connections shall be made with 7/8" high strength bolts (A325) using 15/16" holes. Where connections are not detailed on the plans, they shall be detailed by the fabricator and submitted to the State for approval.

Details of shear connectors shall be submitted to the State for approval. The camber shall approximate a simple Circular curve from end to end of plate girder. After the structural steel has been erected, elevations on the top of the plate girders shall be taken under the direction of the engineer to determine the final grade.

No scuppers are required.

PAINT: The final coat of field paint shall be dark green, unless otherwise directed by the engineer.

All exposed edges of concrete shall be chamfered 1" x 1".

Construction joints shall be as indicated on the Standards, unless otherwise indicated on the plans.

REINFORCING STEEL: Minimum cover for reinforcing steel, measured from the surface of the reinforcement, shall be 2" unless otherwise specified.

PILES: Steel piles shall be driven to point bearing on ledge unless the designed bearing capacity of 45 tons per pile is attained above ledge elevation.

GENERAL: All dimensions given are at 68°F. and are measured horizontally or vertically unless otherwise noted.

Borings indicated on the drawings have been made for design purposes only and are not warranted to show actual sub-surface conditions.

The entire exposed top surface of the abutment bridge seats and pier shall be coated with Item 407, Asphaltic-Asbestos Coating 1/2" thick. This item shall be applied after all painting and incidental items are completed.

Unless otherwise designated, all expansion material shall not contain asphalt or bituminous material and it shall conform with A.A.S.H.O. Designation: M153 Type II.

Where bituminous concrete pavement is called for as a wearing surface on bridge decks and approach slabs, it shall be a dense graded top course material, applied in one course, one and one-half inches (1 1/2") thick.

Item 440, Water Repellent, shall consist of furnishing and applying water repellent on exterior concrete surfaces on top of the safety walk, sidewalk, on the fascia and back to the drip bead under the slab, on the sides, ends and bottoms of all pier caps, and on exposed areas of abutments not otherwise treated.

Bridge seat elevations shown on these plans are for the centerline of bearings.

## LIST OF BRIDGE SHEETS


| | |
|---|---|
| BR 300 | Plan & Elevation |
| 301 | Bridge Quantity Sheet |
| 302 | Preliminary Information Sheet & Boring Plan |
| 303 | Boring Logs |
| 304 | Framing Plan, Girder & Bearing Details |
| 305 | Expansion Dam Details |
| 306 | Rail & Curb Layout & Typical Section |
| 307 | Details of Abutment No. 1 |
| 308 | Details of Abutment No. 2 |
| 309 | Pier Layout Details |
| 310 | Details of Pier - reinforcing Steel |
| 311 | Details of Approach Slabs |
| 312 | Reinforcing Steel Schedule |
| 304-A | Water Main Details Across Bridge |
| BRIDGE STANDARDS | |
| SCB-D3-65 & SCB-D4-65 | - Details of WF Beam Bridges |
| SB-53-58 (Sheets 1 & 2) | - Details of Bridge Railing, Item 572. |
| G-2A | - Dead End Anchorage at Bridge Approach |
| SCB-D7-65 | - Details of WF Beam Bridges |
| SCB-D6-65 | Modified to 12" Vertical Curb as shown on Sheet 142 of 261. |

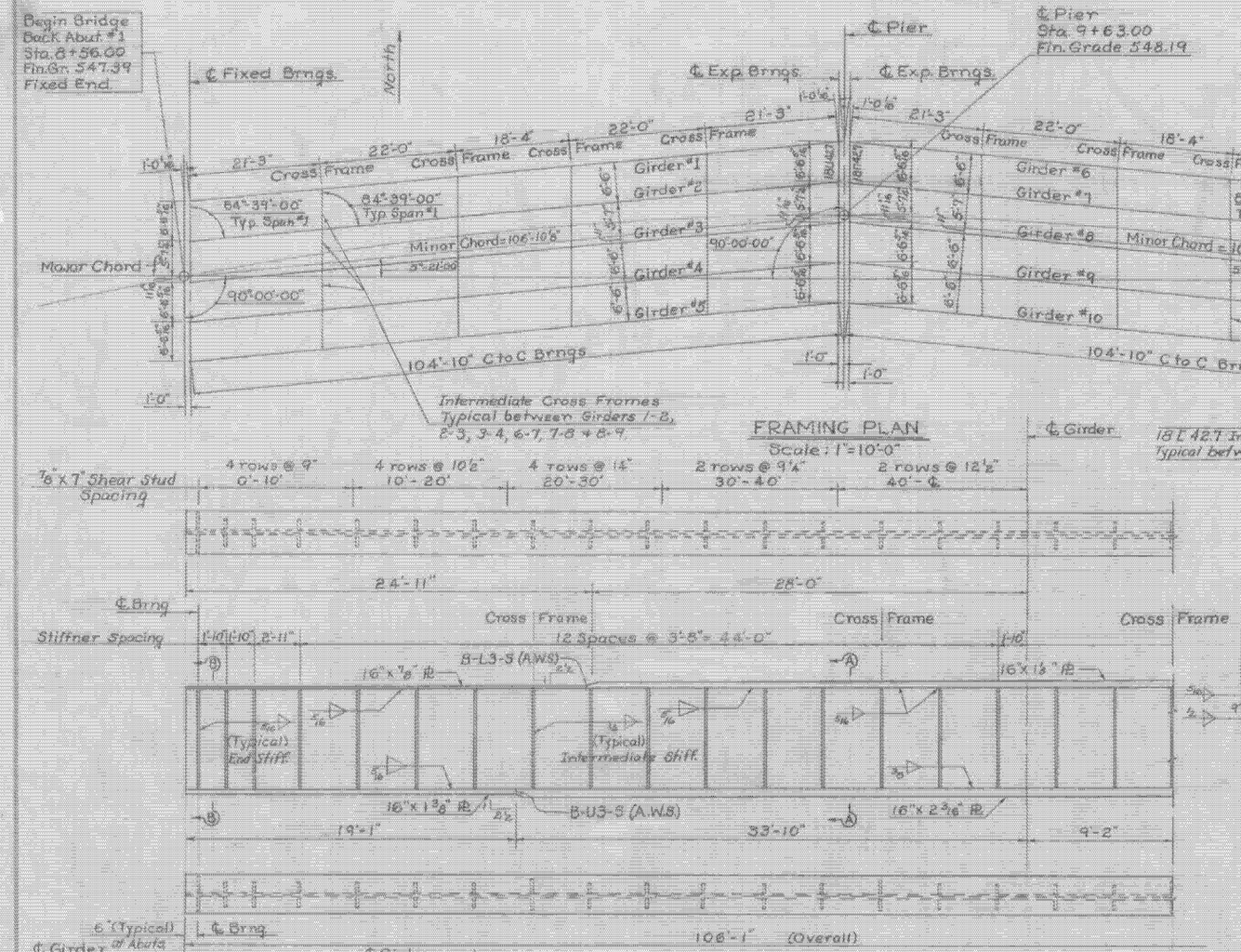

| ITEM NO. | TITLE | UNIT | N.T. | | | | |
|---|---|---|---|---|---|---|---|
| | CLASS EXCAV. OF EARTH | C.Y. | | | | | |
| | CLASS EXCAV. OF ROCK | C.Y. | | | | | |
| | UNCLASS. CLASS EXCAV. | C.Y. | | | | | |
| | DIRECT EXCAV. | C.Y. | | | | | |
| | CONC. CLASS AA (AIR) | C.Y. | | | | | |
| | CONC. CLASS A (AIR) | C.Y. | | | | | |
| | REINF. STEEL | LBS. | | | | | |
| | ASPHALTIC-ASB. COATING | S.Y. | | | | | |
| | TWISTED TUBULAR PILING | L.F. | | | | | |
| | SPLICES FOR STEEL PILING | EA. | | | | | |
| | CUTOFF PILING | L.F. | | | | | |
| | NON-METALLIC SHEETING | S.F. | | | | | |

STAGE I CONSTRUCTION

STATE OF VERMONT
DEPARTMENT OF HIGHWAYS

TOWN OF HARTFORD (Urban)
ROAD NO. ____ BRIDGE NO. S9-83
CHANDLER ROAD OVER I-91
PLAN & ELEVATION
SCALE As Noted
SURVEYED BY Singleton
DRAWN BY S.H.S. CHECKED BY R.L.D.
PROJECT NO. I-91-2(10)
SHEET 136 OF 261

BR-300




NOTES

1. For General Notes see Sheet GR 300.
2. Spiral Reinforcement, Item 403; Channels, spiral reinforcing or other mechanical shear connector devices may be substituted for the indicated welded studs.
3. Camber indicated is the ordinate at midpoint of girder.
4. Steel in the Fixed Bearings shall be ASTM A36-62T.
5. Shop splices in the web and flanges shall be A.W.S. prequalified, full penetration type and shall be fully detailed on the shop drawings.
6. ** Plates for Expansion Bearings shall be of high strength Steel Casting meeting ASTM Specification A148-60 (Grade 90-60) finished as indicated and straightened to plane surfaces.
7. Rollers & Pintles shall be of cold finished carbon steel meeting ASTM Specification A108 (AISI Grade 1045) turned and finished as indicated. Rollers shall be preheated to 300°F. held at this temperature until welding is completed and allowed to cool slowly. Minimum yield point is to be 60000 psi.
8. The cost of furnishing and installing all Bearing Devices shall be included in the unit price bid for Structural Steel, Item 404-A.
9. All girder flange plates, webs and stiffeners shall conform to A.S.T.M. Designation A441-63T. Unless noted on the plans, all other structural steel shall conform to A.S.T.M. Designation A36-62T.
10. Expansion Bearings are to be Set Vertical @ 45°
11. For details of 12" Water Main between girders 4-5 and 9-10 See Sheet BR-304A.

** Rolled steel with a minimum yield point of 60000 psi may be substituted for the expansion bearing plates.

Estimated Superstructure Quantities

| ITEM NO. | ITEM | UNIT | NET | | TOTAL | FINAL |
|---|---|---|---|---|---|---|
| * 318 | Tar Emulsion for Bridge Floors | Gal. | | | 227 | |
| * 361-B | Bituminous Concrete Pavm't. (Dense Graded Bottom and Top Course) | Ton | | | 48 | |
| 401M | Concrete Class AA | C.Y. | | | ~~252~~ | 164 |
| 402 | Reinforcing Steel | LB. | | | ~~51809~~ | 51,805 |
| 403 | Shear Connectors (2710#) | L.S. | | | 1 ✓ | 1 |
| (WPG) 404-A | Structural Steel (Sta 382+11) | LB. | | | ~~244570~~ | 214,373 |
| A40 | Water Repellent | Gal. | | | ~~333~~ | 333 |
| 556-C | Granite Bridge Curb | L.F. | | | ~~426~~ | 427 |
| 572 | Bridge Railing (S8-SS-S8) | L.F. | | | 499 | 498 |

STAGE I CONSTRUCTION

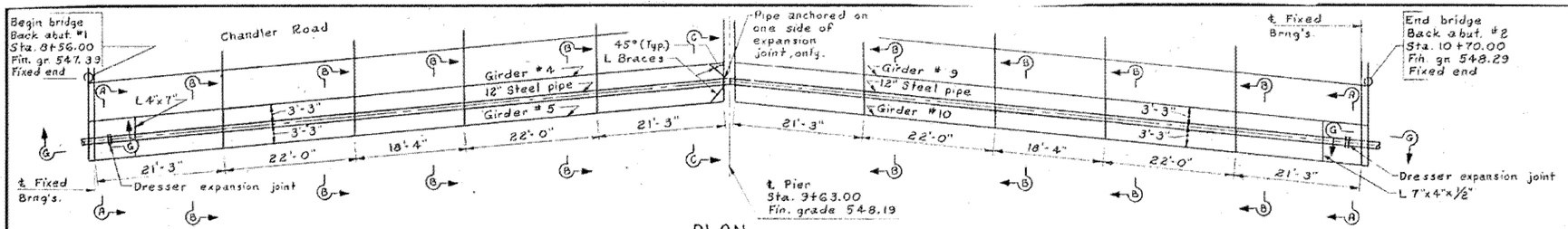
STATE OF VERMONT
DEPARTMENT OF HIGHWAYS

TOWN OF HARTFORD (Urban)
ROUTE NO. ____ LOG STA. ____
Chandler Road over I91
Framing Plan, Girder and Bearing Device Details
SCALE As Noted
SURVEYED BY Singleton
DRAWN BY J.J.C. CHECKED BY L.F.S.
PROJECT NO. I91-2(4)
SHEET 110 OF 267

BR-304

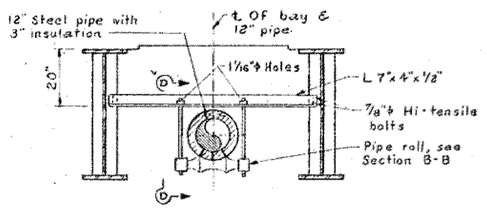
WESTMINSTER-NORWICH
IM BPNT (8)
SHEET 27 OF 58
BRIDGE 46

FOR REFERENCE ONLY



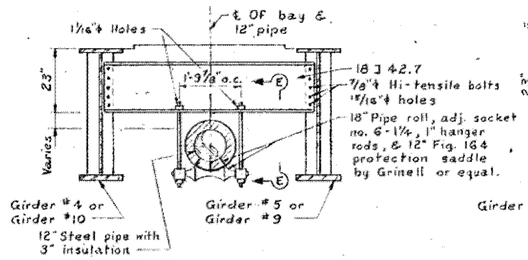

PLAN

Scale : 1" = 10'



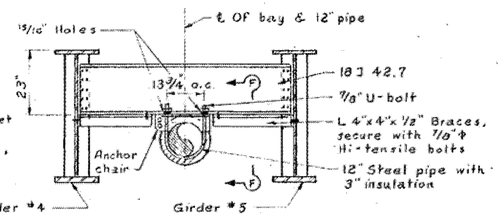

SECTION A-A

Scale : ½"=1'-0"



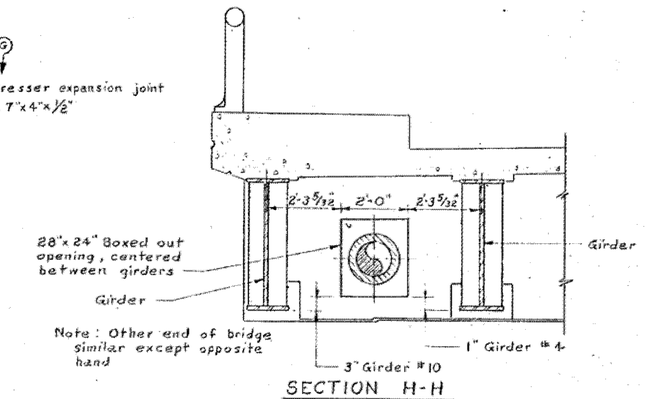

SECTION B-B

Scale : ½"=1'-0"



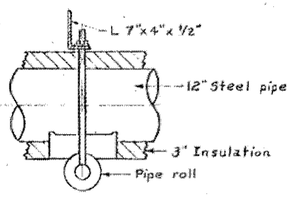

SECTION C-C

Scale : ½"=1'-0"



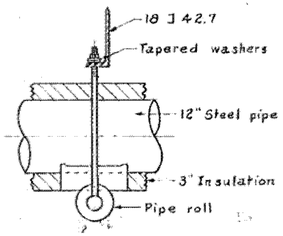

SECTION H-H

Scale : ½"=1'-0"



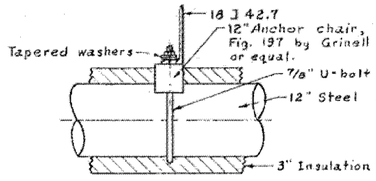

SECTION D-D

Scale : 1"=1'-0"



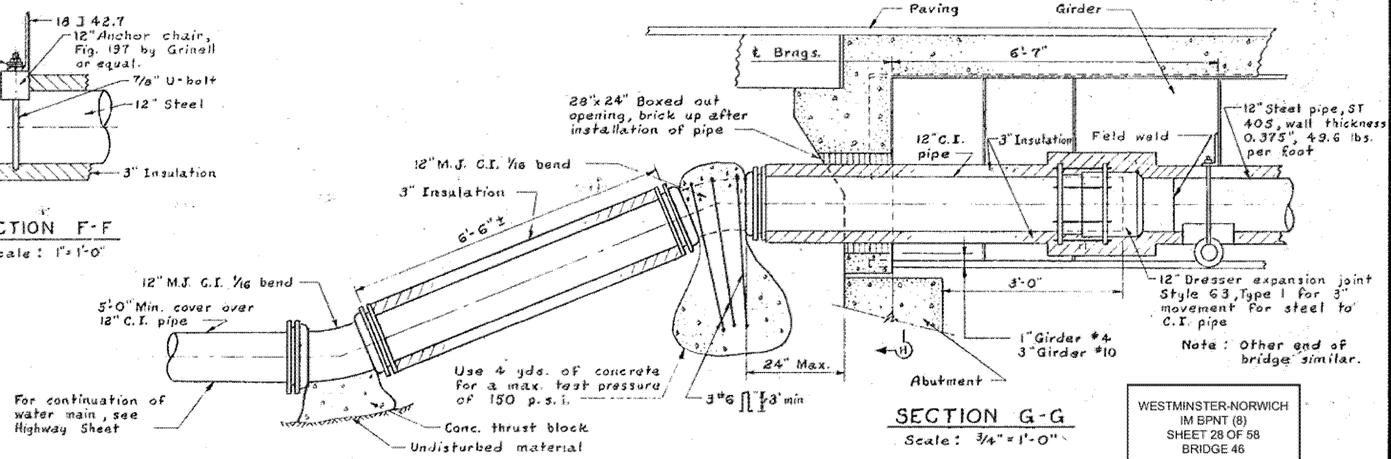

SECTION E-E

Scale : 1"=1'-0"




SECTION F-F

Scale : 1"=1'-0"




SECTION G-G

Scale : ¾"=1'-0"

Note : Fill outside abutment to be compacted with power tampers in 6" layers to provide support for pipe & concrete anchor.

Notes

1. Materials for the 12" water main including hangers shall be furnished and installed by the contractor. For further details refer to the Special Provisions covering utilities.
2. 18 E 42.7 diaphragms, L's 7x4x½, L's 4x4x½, ⅞"ϕ hi-tensile bolts, nuts and washers are included in the bridge quantities.
3. For details of diaphragms not shown, see Standard Drawing SCB-D7-65

WESTMINSTER-NORWICH
IM BPNT (8)
SHEET 28 OF 58
BRIDGE 46

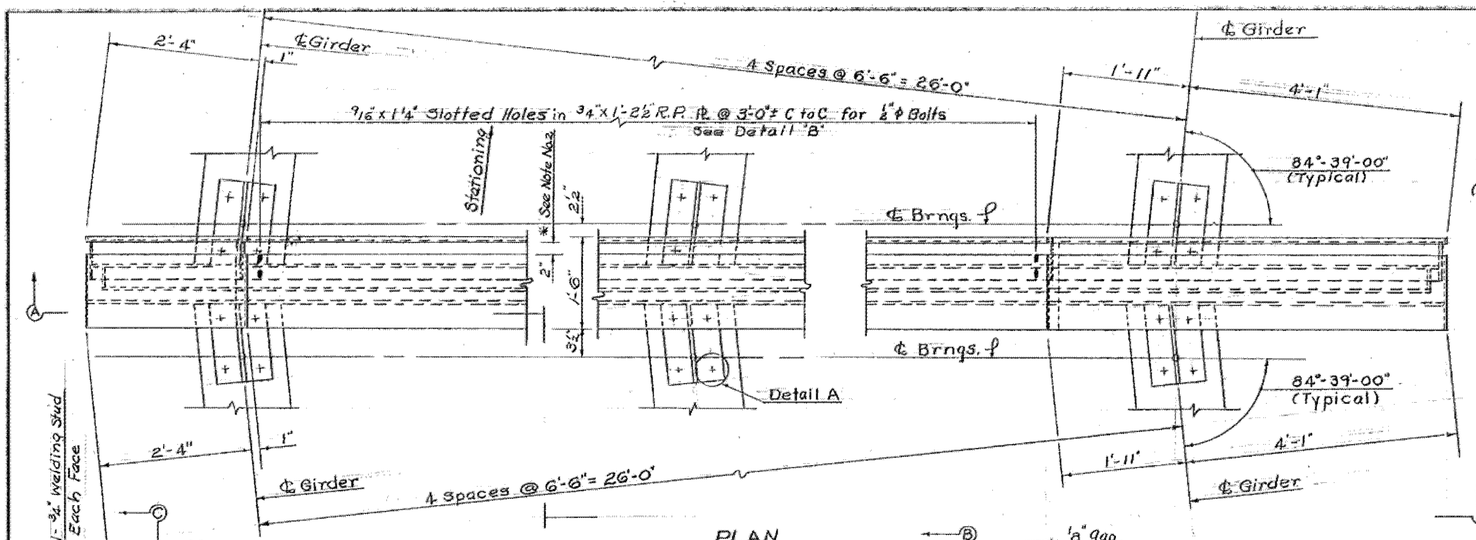
FOR REFERENCE ONLY

**STATE OF VERMONT**
DEPARTMENT OF HIGHWAYS

TOWN OF Hartford (Urban)
ROUTE NO. _____ LOG STA. _____
Chandler Road over I91
Water Main Details Across Bridge
SCALE As Noted
SURVEYED BY _____
DRAWN BY R.P.S. CHECKED BY F.W.B.
PROJECT NO. I91-2(4)
SHEET 140A OF 261

CAMP, DRESSER & McKEE
Consulting Engineers
Boston, Mass.
225-4645

BR-304A




NOTES

1. All parts of this expansion dam that are exposed to water after erection, shall be ASTM A242 steel.
2. * Indicates dimensions to be correct @ 45°F.
3. Adjust expansion dam to conform to grade by means of adjustment bolts.
4. For additional drainage structural tubing details see BR-309 and SCB-D3-65, Details A, C and E.
5. Remove 1/2" ϕ bolts in 3/4" x 1'-2 1/2" Raised Pattern Pl immediately after concrete has initial set, and fill holes with Joint Sealer-Hot Poured Item 372-A.
6. Suitable anchor Straps may be substituted for the 3/4" ϕ welding studs.
7. ** Pour temporary 3" wide section of concrete to top of plate. Pack concrete under plate. Chip out concrete after set as shown within 24 hours. Pave to edge of plate.

| ITEM NO. | ITEM | UNIT | NET | | TOTAL | FINAL |
|---|---|---|---|---|---|---|
| | CHAN. EXCAV. OF EARTH | C.Y. | | | | |
| | CHAN. EXCAV. OF ROCK | C.Y. | | | | |
| | UNCLASS. CHAN. EXCAV. | C.Y. | | | | |
| | STRUCT. EXCAV. | C.Y. | | | | |
| | CONC. CLASS AA (MOD.) | C.Y. | | | | |
| | CONC. CLASS B (MOD.) | C.Y. | | | | |
| | REINF. STEEL | LBS. | | | | |
| | ASPHALTIC-ASB. COATING | S.Y. | | | | |
| | TREATED TIMBER PILING | L.F. | | | | |
| | SPLICES FOR STEEL PILING | EA. | | | | |
| | STEEL PILING | L.F. | | | | |
| | UNTREATED TIMBER PILING | L.F. | | | | |

STATE OF VERMONT
DEPARTMENT OF HIGHWAYS

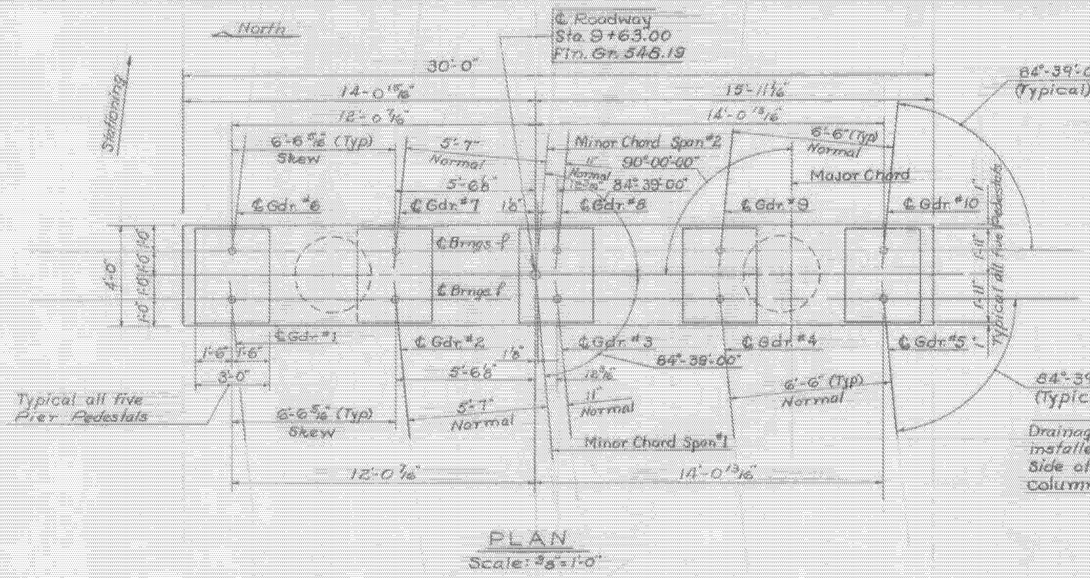
TOWN OF HARTFORD (Urban)
ROUTE No. _____ LOG STA. _____
Chandler Road over I91
Expansion Dam Details
SCALE As Noted
SURVEYED BY Singleton
DRAWN BY J.J.C. CHECKED BY L.F.S.
PROJECT No. I91-2(4)
SHEET (4) OF 26

WESTMINSTER-NORWICH
IM BPNT (8)
SHEET 29 OF 58
BRIDGE 46

FOR REFERENCE ONLY

STAGE I CONSTRUCTION

BR-305




| No. Piles | Size | Est. Length of Piles | Splices Allowed for Piles Not Exceeding Plan Length (To be paid for only if used) | Splices Estimated for Piles Exceeding Plan Length (To be paid for only if used) |
|---|---|---|---|---|
| 18 | 12BP53 | 25' | - | 4 |

NOTES:

1. For General Notes see Sheet BR-300
2. For details of drainage not shown see Standard Drawing SCB-D3-65, Type "B," Details A, C + E.
3. Pier footings are for a maximum pile bearing pressure of 45 Tons.
4. Concrete in the footings is to be Class B. Concrete above the top of the footings is to be Class A A.
5. Bridge Seat elevations given are for ℄ of bearings.
6. ↑ Indicates direction of batter for Piles.

WESTMINSTER-NORWICH
IM BPNT (8)
SHEET 30 OF 58
BRIDGE 46

FOR REFERENCE ONLY

Estimated Pier Quantities

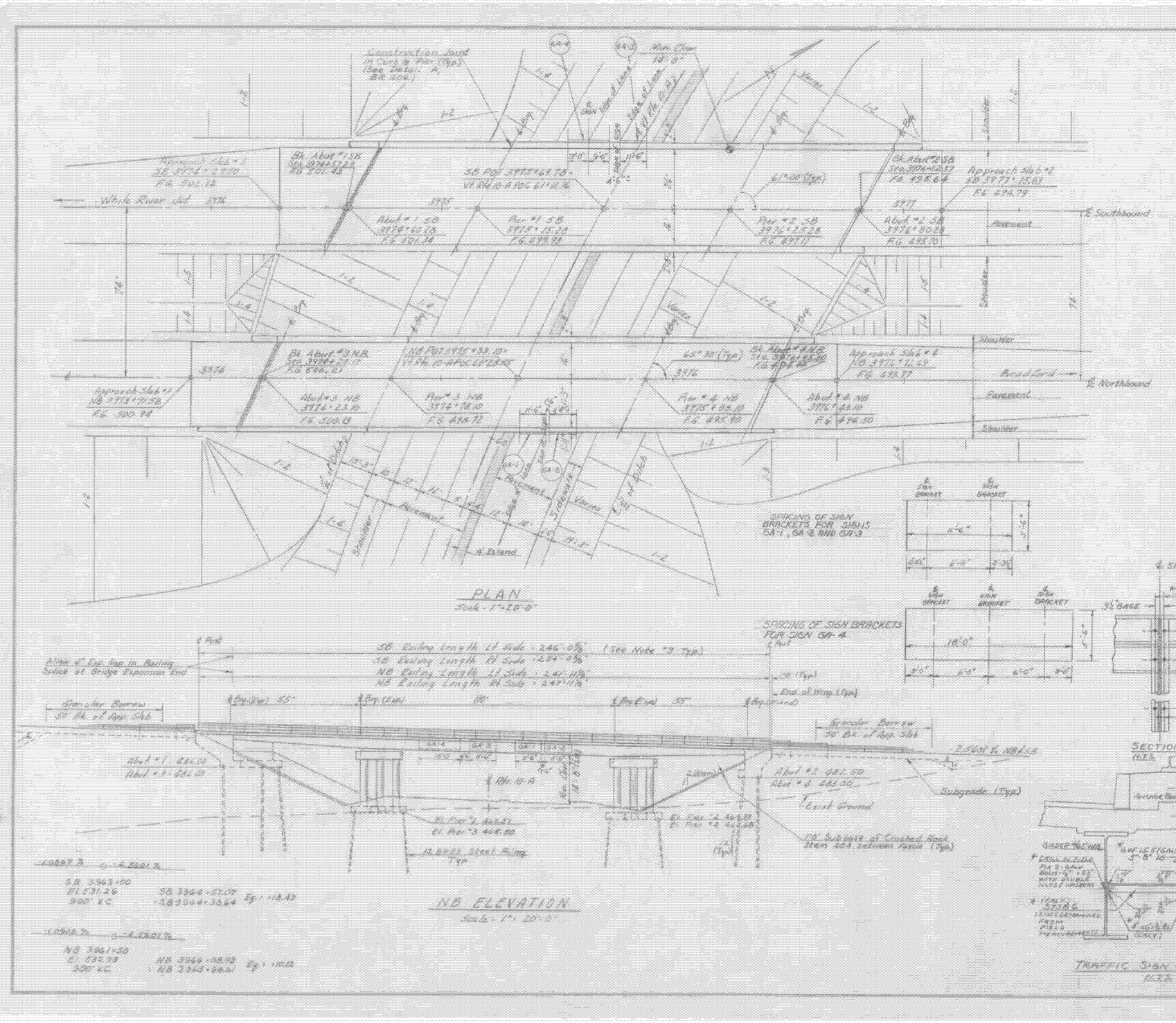
| ITEM NO. | ITEM | UNIT | NET | | TOTAL | ITEM |
|---|---|---|---|---|---|---|
| 109 | Structure Excavation | C.Y. | | | 50 | 58 |
| 401-AA | Concrete Class A A | C.Y. | | | 68 | 57 |
| 401-B | Concrete Class B | C.Y. | | | 24 | 21 |
| 602 | Reinforcing Steel | L.B. | | | 9990 | 8670 |
| 407 | Asphaltic-Asbestos Coating | S.Y. | | | 14 | 13 |
| 440 | Water Repellent | Gal. | | | 4 3/4 | 4 1/2 |
| 501 | Furnishing Equipment for Driving Piling | L.S. | (See Br. Quantity Sheet) | | | |
| 503C | Steel Piling (12BP53) | L.F. | | | 450 | 377 |
| 504 | Splices for Steel Piling | Ea. | | | 4 | 0 |
| 505 | Pile Loading Tests | Ea. | | | 1 | 0 |
| | | | | | | 23 |

STAGE I

STATE OF VERMONT
DEPARTMENT OF HIGHWAYS

TOWN OF HARTFORD (Urban)
ROUTE NO. ____ LOG STA. ____
Chandler Road over I91
Pier Layout Details
SCALE AS Noted
SURVEYED BY Singleton
DRAWN BY JJC CHECKED BY LES
PROJECT NO. 191-2(4)
SHEET 145 OF 261

BR-309




## General Notes

1. Elevation datum is sea level based on nearest U.S. Government vertical control.
2. For additional General Notes see Standard SCB-D1-65.
3. For Railing details see Standards SB-R1-64 sh. 1 & 2 of 2, and SB-R2-65. Space railing not to exceed maximum spacing shown on Standards, with ℄ Posts 1'-0" minimum from Curb joints at Piers and Abutments.
4. Where Bottom of Footing Elevations are above old ground, Fill is to be placed 0.5' above Bottom of Footing before Piles are driven. Excavation of this material to Bottom of Footing Elevation after Piles are driven shall be paid for as Structure Excavation, Item 109.
5. Approach Slabs shall be constructed as part of Stage I construction.
6. Shop drawings for Item 556-C, Granite Bridge Curb, shall be submitted in triplicate to the State of Vermont, Department of Highways for approval before fabrication.

## List of Bridge Sheets

| | | |
|---|---|---|
| Br. | 200 | Plan and Elevation, General Notes |
| | 201 | Quantity Sheet |
| | 202 | Preliminary Information Sheet |
| | 203, 204 | Borings |
| | 205 | Framing Plans |
| | 206 | S.B. Section and Girder Details |
| | 207 | N.B. Section and Girder Details |
| | 208 | Bearing Devices |
| | 209, 210 | Expansion Dam Details |
| | 211-214 | Approach Slabs |
| | 215-218 | Abutments |
| | 219, 220 | Piers |
| Br. | 221-223 | Reinforcing Steel |

WESTMINSTER-NORWICH
IM BPNT (8)
SHEET 31 OF 58
BRIDGE 48

FOR REFERENCE ONLY

## Standard Sheets

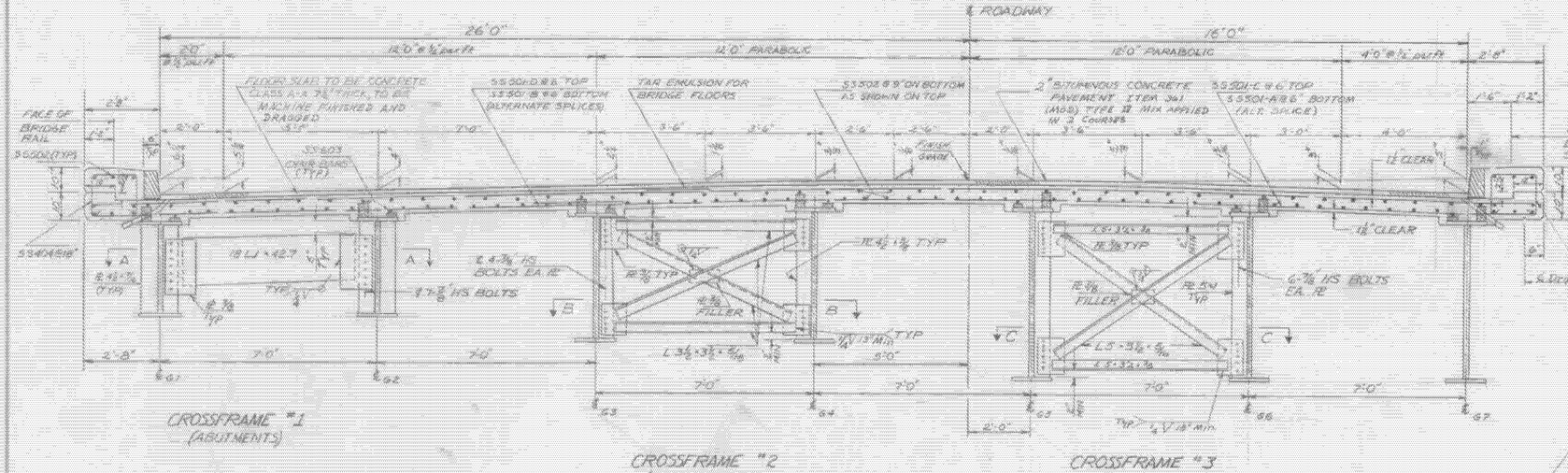
| | | |
|---|---|---|
| SCB-D1-65 | | 2-14-66 R |
| SCB-D4-65 | Curb Details | 2-14-65 R |
| SCB-D6-65 | Details A, B & F | 3-7-66 R |
| SB-R1-64 | Sh. 1 of 2 | 12-5-66 R |
| SB-R1-64 | Sh. 2 of 2 | 11-8-66 R |
| SB-R2-65 | | 11-8-66 R |

"Note: Traffic sign support material with the exception of bolts cast in bridge fascia is to be furnished and paid for under Item 901 Traffic Signs.

STATE OF VERMONT
DEPARTMENT OF HIGHWAYS

PROJECT BRF 0148(8) NORWICH
TOWN OF NORWICH BR 48
ROUTE NO. I 91 STA 3975+50±
I 91 over Vt. 10A
PLAN & ELEVATION, GENERAL NOTES
SCALE AS NOTED
IN CHARGE E. Oatley
DRAWN BY W.J.D. & J.C. CHECKED BY W. MacNamara
PROJECT NO. I 91-2(60)
SHEET 23 OF 323 BR 200

NOTE: CUT SS 501 BARS IN FIELD TO FIT SKEW END AND USE CUT OFF BARS ON OPPOSITE END.

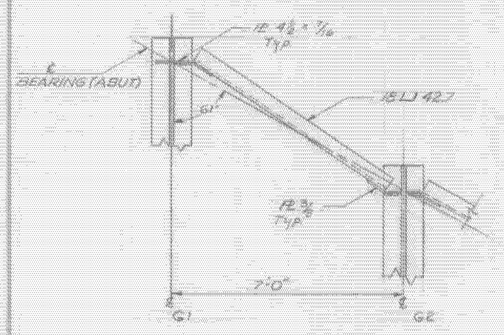



CROSSFRAME "1" (ABUTMENTS)

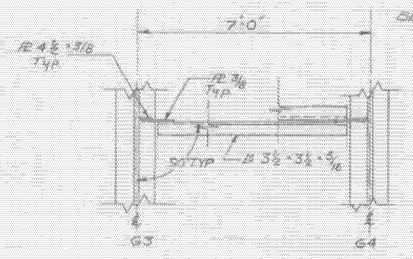
CROSSFRAME "2" (INTERMEDIATE)

CROSSFRAME "3" (PIER)

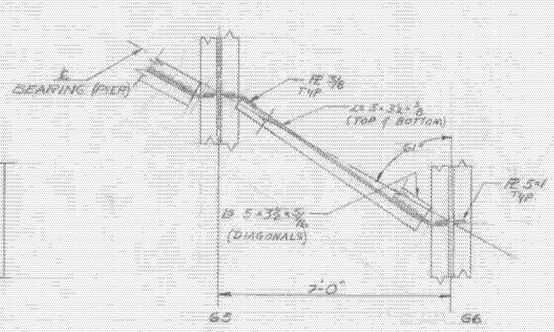
TYPICAL SECTION - SOUTHBOUND
SCALE 1½" = 1'-0"



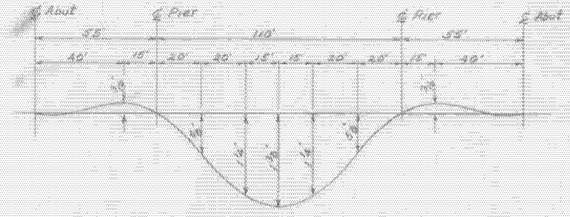

SECTION A-A
SCALE ½" = 1'-0"



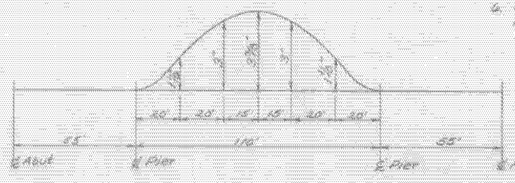

SECTION B-B
SCALE ½" = 1'-0"



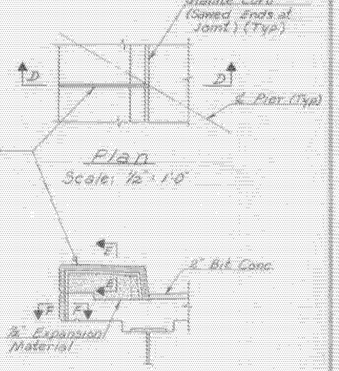

SECTION C-C
SCALE ½" = 1'-0"




Dead load Deflection Diagram
(Includes Wt. of Girder and Deck)
Not to Scale




Camber Diagram
Not to Scale




Plan
Scale: ½" = 1'-0"

Section E-E
Scale: 3" = 1'-0"

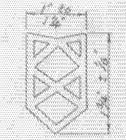
Section F-F
Scale: 3" = 1'-0"

Section D-D
Scale: ½" = 1'-0"

Detail A - Curb Joint at Piers

## Notes

1. For General Notes see Sh. 200.
2. All structural steel shall be ASTM A 36-62T unless otherwise noted on the plans.
3. All field connections shall be made with ⅞" ϕ High Strength bolts in 15/16" ϕ holes unless otherwise noted on the plans.
4. All girders shall be cambered as indicated in Camber Diagram below.
5. For limits of Water Repellent, Item 440, see Sh. 207.
6. Concrete Floor Slab is to be Finished as specified under Item 401.05, Subarticle I, of the Special Provisions.



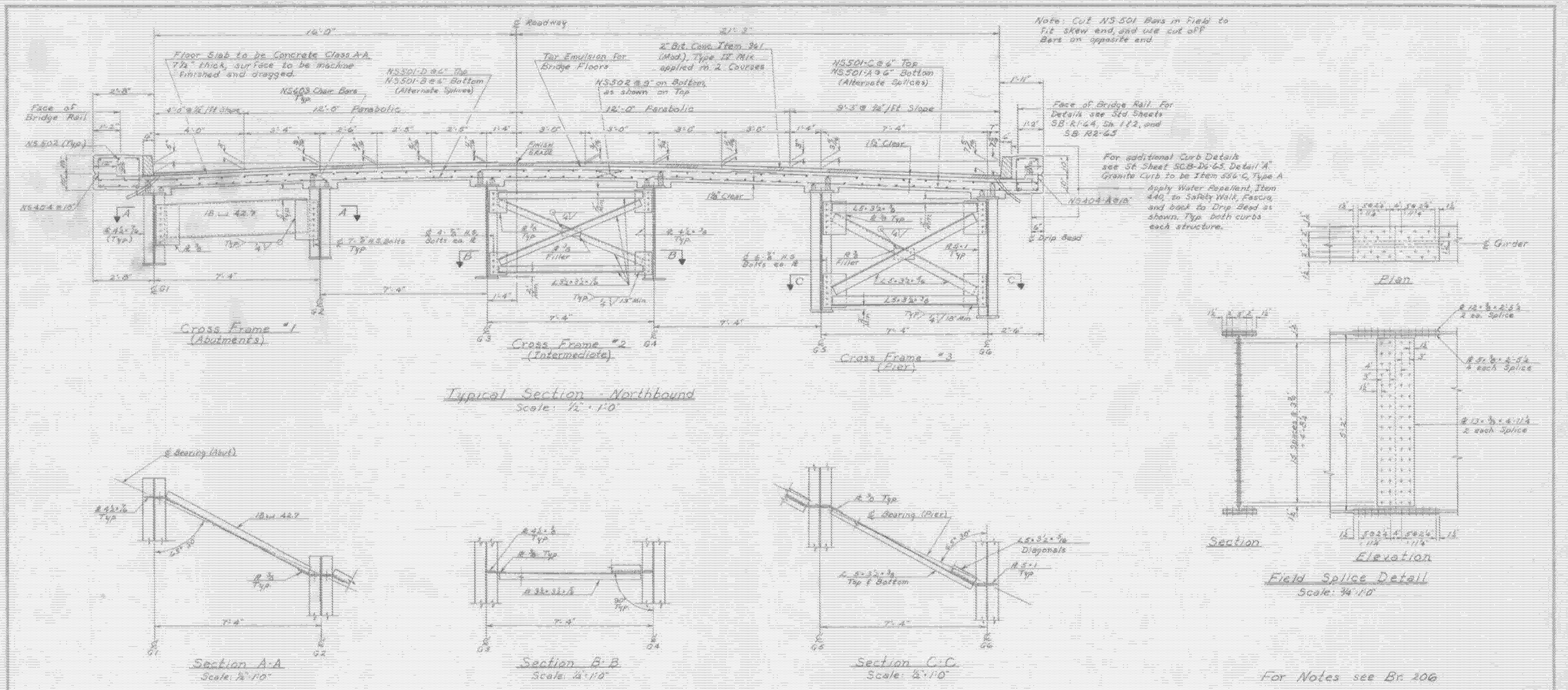

Detail of Item 372-C Joint Sealer - Preformed, Type B
Material to be Premolded Neoprene Rubber

WESTMINSTER-NORWICH
IM BPNT (8)
SHEET 32 OF 58
BRIDGE 48

FOR REFERENCE ONLY

STATE OF VERMONT
DEPARTMENT OF HIGHWAYS

PROJECT NORWICH
TOWN OF NORWICH SR 48
ROUTE NO. I-91 STA. 3975+50±
I-91 OVER VT 10-A
SB SECTION AND GIRDER DETAILS
SCALE AS NOTED
IN CHARGE R. Dailey
DESIGNED BY R. Taylor DRAWN BY R. Taylor CHECKED BY R. Sargent
PROJECT NO. I 91-2(46)
SHEET 33 OF 211 BR 206
74 388
91 129

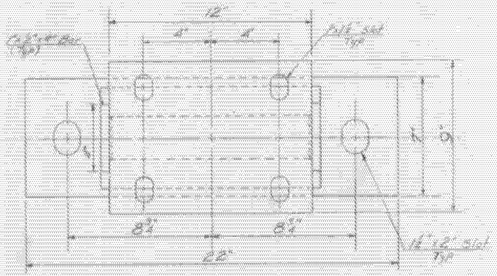



WESTMINSTER-NORWICH
IM BPNT (8)
SHEET 33 OF 58
BRIDGE 48

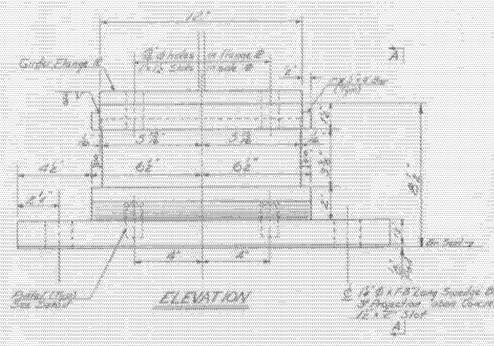
FOR REFERENCE ONLY

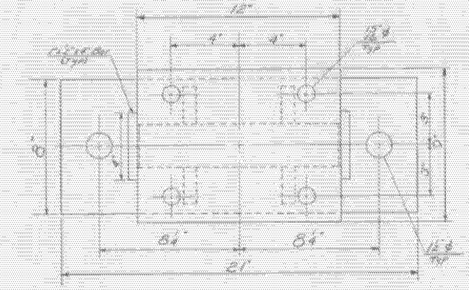
STATE OF VERMONT
DEPARTMENT OF HIGHWAYS

PROJECT NORWICH
TOWN OF NORWICH BR 48
ROUTE No. I 91 STA. 3978+50
I 91 OVER VT 10A
NB SECTION AND GIRDER DETAILS
SCALE AS NOTED
IN CHARGE E. Dailey
DRAWN BY M. Thier CHECKED BY A. Sargent
PROJECT No. I 91-2(46)
SHEET 42 OF 129 BR 207

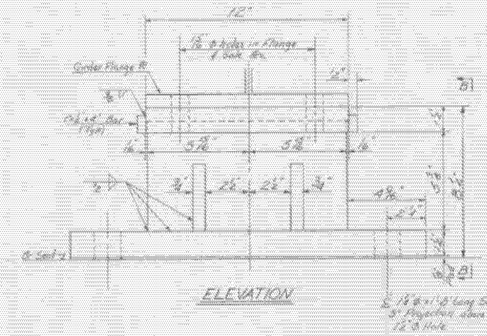


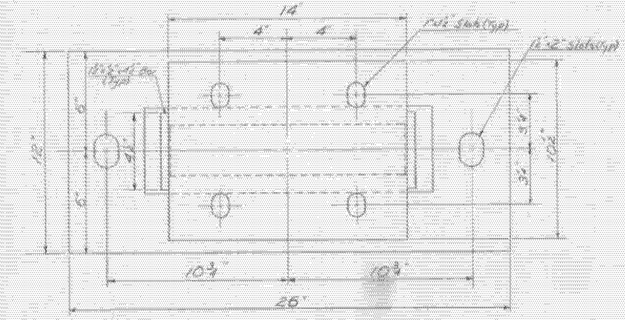

PLAN



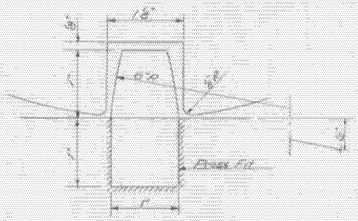



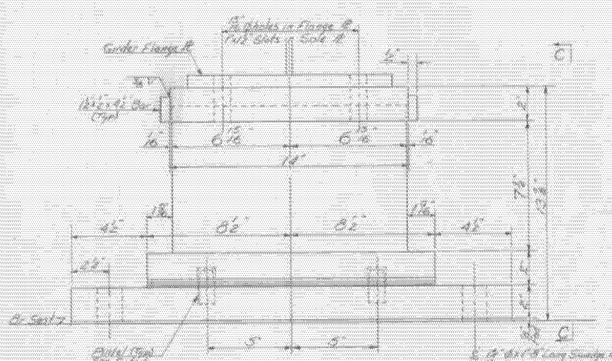

PLAN

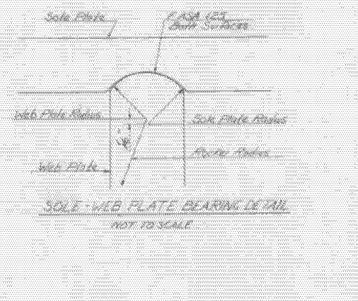


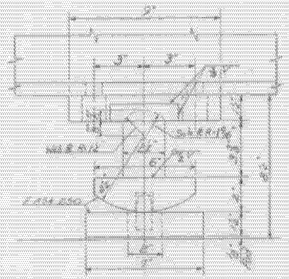




PLAN



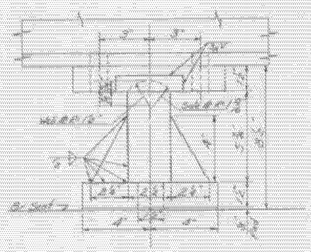




EXPANSION ABUTMENT BEARING DEVICE

SCALE 3"=1'-0"

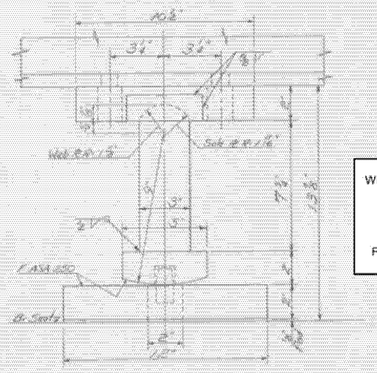
DL = 15.8 K
LL = 36.1 K
I = 11.9 K
Total R = 63.8 K




FIXED ABUTMENT BEARING DEVICE

SCALE 3"=1'-0"

DL = 15.8 K
LL = 36.1 K
I = 11.9 K
Total R = 63.8 K




PIER BEARING DEVICE

SCALE 3"=1'-0"

DL = 10.90 K
LL = 61.1 K
I = 14.7 K
Total R = 184.8 K

## NOTES

1. Align devices so that all rocker arm shafts are vertical at 45° F.
2. Bearing device pads shall be used under each bearing to conform to Vermont Specification 460.10.
3. The Anchors shall be structural steel conforming with AASHO designation M-183. The weldment shall be stress relieved by heat treatment in accordance with the Specification Section 442.
4. Contact surfaces of rockers and otherwise treated shall be given a shop coat of white lead and tallow. Pintle holes shall be filled with graphite and grease at time of placement. Remainder of bearing to be painted in accordance with Vermont Specification 404.03.

WESTMINSTER-NORWICH
IM BPNT (8)
SHEET 34 OF 58
BRIDGE 48

FOR REFERENCE ONLY

Stage 1 Construction

STATE OF VERMONT
DEPARTMENT OF HIGHWAYS

PROJECT I-91(6) NORWICH
TOWN OF NORWICH BR 48
ROUTE No I-91 LOG STA. 3215+50
I 91 OVER VT 10A
BEARING DEVICES
SCALE As Noted
IN CHARGE R. Oatley
DRAWN BY A.Bonner CHECKED BY W. Page Jr.
PROJECT NO I91-2(6)
SHEET NO 33 OF 58 BR 208
10-6-77 328

Approach Slab

Dead End Anchorage

Point of Shoulder

Fill 1 on 2

Fill 1 on 2

Hand Fill 1 on 1½ or 1 on 1

Bronze bridge marker to be set as directed by Engineer

VIEW B

PLAN AT HAUNCH

7×8½ PLATE (2)

2 7×8×½ PLATES

Riprap for Bank Protection as Stone Fill as Detailed on project plans

DETAIL OF PILE SPLICES (L)

ELEVATION of HAUNCH

VIEW A (A)

¾ Plate Tack weld to end of beam and paint front only

½ Expansion Material

¾ Plate

PLATE for Square Bridges

PLATE for Skewed Bridges (B)

for Square Spans

for Skewed Spans

Plate in ℄ of Bearing for Fixed End

Plate in ℄ of Bearing for Exp. End

When bridge is on a grade exceeding 5% plate A shall be beveled to fit, with a mean thickness of 1".

Approx. Wgt. 90 lbs.

See Detail B

BEARING DEVICES FOR FIXED ENDS OF ALL SPANS & EXP. ENDS UP TO & INCL. 60'-0"

for type and location of holes for pre-cast approach

Plate C: 9"×15" flange when the beam flange width. When the Bridge is on a grade exceeding 5%, plate C shall be beveled to fit the Grade, with a mean thickness of 1".

Plate D: 7" (outside edge thickness 1", center thickness (") × 13". To be Cast Bronze A.S.T.M. B22-40T class B unless otherwise specified. The plate shall have trepanned recesses which shall be filled with a lubricating compound. The lubricating area shall comprise not less than 25% of the total bearing area. The manufacturer shall furnish additional lubricant in liquid form with which the Contractor shall thoroughly coat the bearing surfaces that contact the lubricated portion of the bronze plate. The coefficient of friction shall not exceed 0.10.

PLATE E: 10"×19½" finish as indicated

Approximate wgt. = 153 lbs.

BEARING DEVICES FOR EXPAN. ENDS OF BRIDGES OVER 60'-0"

Attention is called to State of Vermont, Department of Highways, Standards Specifications for Highway and Bridge Construction, Item "206, paragraph 206.03(f) for bearing materials for Sheets or Pedestals. (C)

10" Tip

8" Tip

6" Tip

Plate A

¾" All Joints

R. 4×4×5/16 ±

If jetting is necessary, two water jets should be used with a water pressure of at least 150 lbs/in². Pump to be piston type with a 6" diameter intake pipe and a 4" diameter outlet pipe. The jet pipe shall be about 2" diameter nozzle to be circular in section and ½ to ¾" in diameter.

¾" dia. spike hole

45°

45°

Unit price bid for Timber Piling shall include furnishing and setting of metal shoes for Timber Piling and jetting if necessary.

DETAIL of STEEL PILE SHOE
Approx. Wgt. 6½ lbs.
Other Type of Shoes may be furnished with the approval of the Engineer. (D)

2'-0" Dia. 7'-0"

Chamfer edges ½" Apply expansion material as shown. Fill joint with Asphalt Joint Filler Polyethylene Bond material as shown. Apply one coat Asphalt Primer. Fill ¾" drip joint with Asphalt Joint Filler. 1 Coat of Bituminous expansion material. Bend Copper Support for expansion material. Material to be included in unit price bid for Concrete Class B.

3 #6 Rods 24" c/c

½ Diam. Holes 12" c/c

DETAIL of 20 oz. COPPER SUPPORT OVER PIERS (E)

A.S.T.M. 22.5°

31-13.5" @ 4 c/c at 30 Lbs.
At 427.5 = 4.36 Lbs.

½ Kirchen bolts through beam webs may be used for spans 20'-0" through 42'-0" Use One for Diaphragms
" " 44'-0" " 69'-0" " Two for "
" " 71'-0" " 94'-0" " Three " "
" " 96'-0" " 120'-0" " Four " "

DETAIL OF WELDED DIAPHRAGMS (F)

⅞" Dia. Holes

⅞" H.T. Tensile Bolts

American Standard Heavy Round, Hardened Washer to be used under all heads and nuts.

ALTERNATE DETAIL FOR FIELD BOLTED DIAPHRAGMS (G)

Construction joint may be placed at scare mark if consent. Care shall be taken to conceal joint in all exposed surfaces.

½ Width of wall at joint

Scare Mark

Horizontal scare mark to be placed at abutments, piers, curved wings, etc. as indicated on the plans or as directed by the Engineer. (H)

DETAIL OF HORIZONTAL CONSTRUCTION JOINT, RIDGE MARK

Scare Mark (See detail above)

½" Cork or premolded expansion material

Detail 1

DETAIL 2

Detail 1 or Detail 2 to be used as shown on Contract Plans

DETAIL OF VERTICAL EXPANSION JOINTS (K)

REVISIONS & CORRECTIONS

Del. (P) Channel Sizes shown 9/21/56
Del. (Q) Dims. for slotted holes @ Piers changed 11/23/56
Del. (R) Approach slab & rail details revised. Haunch at beam shown New (R) 2/26/57
Del. (S) Haunch at beam shown
Del. (T) Note regarding lubricating plates 6/3/57
Del. (C) Note on Materials in Shoes or Pedestals 9/4/57
Del. (D) Channel Sizes as Per Beam depth 6/27/58
Changed Exp. Joint Filler to Asphalt Joint Filler 1-4-59 MB
Del. (E) Changed Type of Expansion Bearing 12-5-58

Drawn By L.M.Bjorn 2-36
Traced By A.P.M.c Siegel 2-36
Checked By J.L.Hibbert 2-36

Correct June 11, 1936
A. D. Sweet
BRIDGE ENGINEER

Approved June 11, 1936
H.E. Laurent
CHIEF ENGINEER

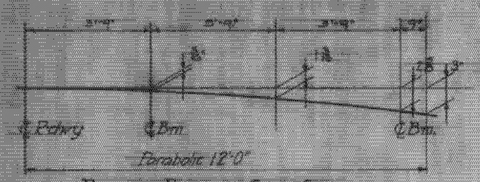
# CONSTRUCTION DETAILS FOR WF BEAM BRIDGES

Revisions & Corrections Cont.
Del. G Revised Diaph. Connection and added note re hardened washer 6/15/59 LMB
Del. L Added 6/15/59 LMB Revised 7-23-59

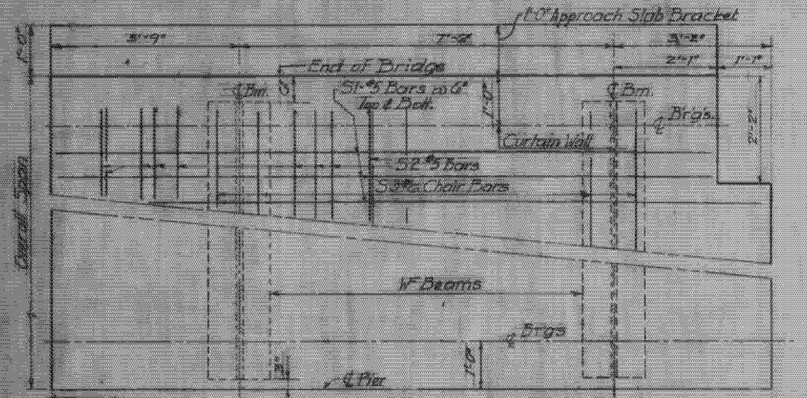
DEPARTMENT OF HIGHWAYS
STANDARD STRUCTURES

SB-20-56

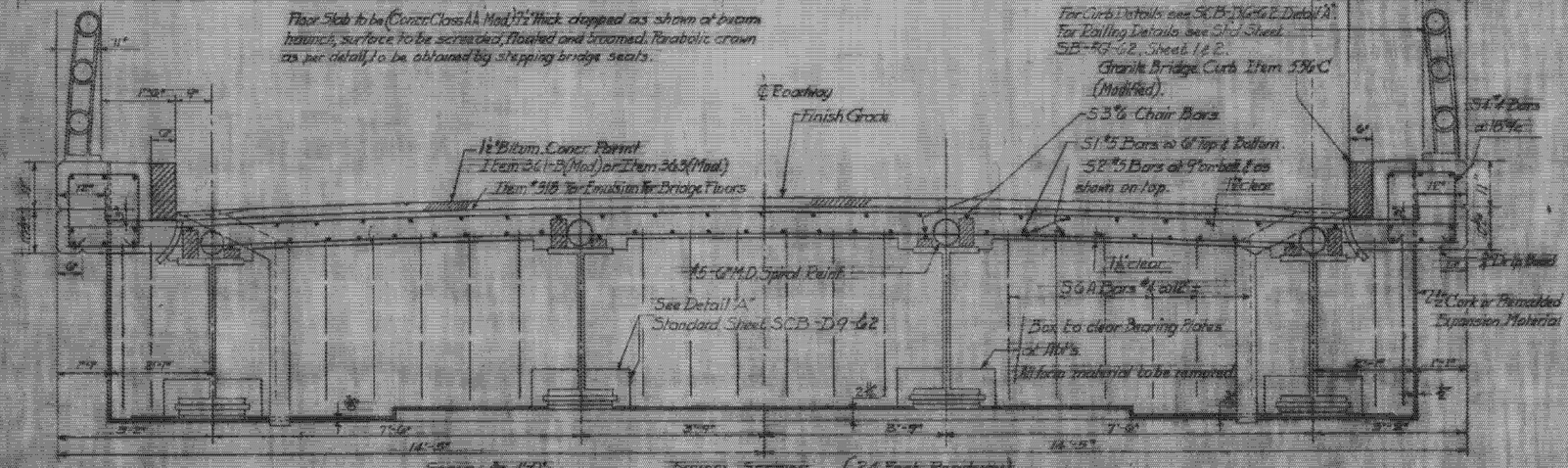
WESTMINSTER-NORWICH
IM BPNT (8)
SHEET 35 OF 58
FOR REFERENCE ONLY




DETAIL OF PARABOLIC CROWN SLAB




HALF PLAN




SCALE 1" = 1'-0"

TYPICAL SECTION (24 Foot Roadway)

TABLE OF QUANTITIES FOR SINGLE (SQUARE) SPAN

| Span, Out to Out | 99'-0 | 94'-0 | 89'-0 | 84'-0 | 79'-0 | 74'-0 | 69'-0 | 64'-0 | 59'-0 | 54'-0 | 49'-0 | 44'-0 | 39'-0 | 34'-0 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Span, ℄ to ℄ Brngs. | 97'-0 | 92'-0 | 87'-0 | 82'-0 | 77'-0 | 72'-0 | 67'-0 | 62'-0 | 57'-0 | 52'-0 | 47'-0 | 42'-0 | 37'-0 | 32'-0 |
| Length of Beams | 98'-0 | 93'-0 | 88'-0 | 83'-0 | 78'-0 | 73'-0 | 68'-0 | 63'-0 | 58'-0 | 53'-0 | 48'-0 | 43'-0 | 38'-0 | 33'-0 |
| Size W Beam | 36 W 280 | 36 W 265 | 36 W 250 | 36 W 230 | 36 W 194 | 36 W 170 | 36 W 150 | 36 W 135 | 36 W 135 | 36 W 135 | 36 W 135 | 36 W 135 | 33 W 118 | 30 W 108 |
| Cover Plates Sizes (Bolt Only) | 22"-1¾" 14"×1¼" | 22"-1¾" 14"×1¼" | 22"-1¾" 14"×1⅛" | 19"-1¾" 14"×1" | 18"-1¾" 12"×1" | 17"-1¾" 10"×1" | 15"-1¾" 10"×⅞" | 15"-1¾" 10"×⅞" | 13"-1¾" 10"×¾" | 12"-1¾" 8"×¾" | | | | |
| Dead Load Deflection | 3½" | 3⅜" | 2⅞" | 2½" | 1⅞" | 1⅝" | 1⅜" | 1⅛" | ⅞" | ¾" | ⅝" | ½" | ⅜" | ¼" |
| Dia. of Spiral Bars | — | " | " | " | " | " | " | ⅝" | " | " | " | — | Non Composite | |
| Mean Dia. of Spiral | — | " | " | " | " | " | " | 6" | " | " | " | — | " | " |
| Spiral Pitch 0'-10' from Brg. | Double at 5" | Double at 5" | Double at 5" | Double at 5" | Double at 5" | Double at 5" | Double at 5" | Double at 5" | Double at 5" | Double at 5" | Double at 5" | " | " | " |
| " " 10'-20' or ℄ Span | Double at 6" | Double at 6" | Double at 6" | Double at 7" | Double at 7" | Double at 7" | Double at 7" | Double at 7" | Double at 7" | Double at 7" | Double at 7" | " | " | " |
| " " 20'-30' or ℄ Span | 4" | 4" | 4½" | 4½" | 4½" | 4½" | 4½" | 5" | 5½" | 6" | 6" | " | " | " |
| " " 30'-40' or ℄ Span | 5" | 5" | 5" | 6" | 6" | 6" | 6" | 5" | " | " | " | " | " | " |
| " " 40'-℄ Span | 6½" | 6½" | 6" | 6" | | | | | | | | Non Composite | | |
| Tot. Struct. Steel (1 Span) (Lbs.) | 135,400 | 116,260 | 101,190 | 89,230 | 73,510 | 61,180 | 50,050 | 41,940 | 36,250 | 32,730 | 26,530 | 23,790 | 19,330 | 16,300 |
| Reinforcing Bars S1 | 396 | 376 | 356 | 336 | 316 | 296 | 276 | 256 | 236 | 216 | 196 | 176 | 156 | 136 |
| " " S2 | 177 | 177 | 177 | 177 | 177 | 177 | 177 | 118 | 118 | 118 | 118 | 118 | 118 | 59 |
| " " S3 | 24 | 24 | 24 | 24 | 24 | 24 | 24 | 16 | 16 | 16 | 16 | 16 | 16 | 8 |
| " " S4 | 132 | 126 | 120 | 112 | 106 | 100 | 92 | 86 | 80 | 72 | 66 | 60 | 52 | 46 |
| " " S5 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 |
| " " S6A | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 |
| " " S7 | 36 | 36 | 36 | 36 | 36 | 36 | 36 | 36 | 36 | 36 | 36 | 36 | 36 | 36 |
| Total Weight Paint Bars (Lbs.) | 20640 | 19450 | 18280 | 17220 | 16190 | 15230 | 14320 | 13555 | 12570 | 11580 | 10600 | 9620 | 8610 | 7690 |
| Approx. Wt. Spirol Reinf. (Lbs.) | 2100 | 2040 | 1920 | 1750 | 1730 | 1730 | 1590 | 1480 | 1360 | 1240 | 1150 | Non Composite | | |
| Tot. Cu. Yds. Concr. Class AA (Mod. 12" T.) | 104 | 102 | 96 | 91 | 86 | 80 | 75 | 70 | 66 | 61 | 56 | 52 | 46 | 42 |
| Tot. Wt. Bitum. Concr. Pavt. (Mod. Type) | 26 | 24 | 23 | 22 | 21 | 19 | 18 | 17 | 15 | 14 | 13 | 12 | 10 | 9 |
| Tar Emulsion for Bridge Floors (Gals.) | 106 | 100 | 95 | 90 | 84 | 79 | 74 | 69 | 63 | 58 | 52 | 47 | 42 | 36 |
| Approx. Quantity ¾" x 7" Studs | 2540 | 2500 | 2350 | 2180 | 2110 | 2000 | 1950 | 1820 | 1700 | 1520 | 1410 | Non Composite | | |
| Approx. Quantity ⅞" x 7" Studs | 1700 | 1640 | 1570 | 1430 | 1410 | 1330 | 1300 | 1220 | 1130 | 1010 | 940 | Non Composite | | |

* Excluding Scuppers & Brg. Devices.

REINFORCING STEEL SCHEDULE

| Span | S1 - 5 Str. Length | S2 - 5 S3 - 6 S5 - 6 Str. Length | S6A - 5 B & D | S6A - 5 Total Length | S4 - 5 TL = 5'-8" B = 1'-6" D = 1'-10" C = 1'-3" A = 5" G = 5" TL Varies 4-5" 1-2" |
|---|---|---|---|---|---|
| 34 | 33'-8" | 33'-8" | 2'-6" | 6'-8" | |
| 39 | 20'-3" | 20'-6" | 2'-9" | 7'-0" | |
| 44 | 22'-3" | 23'-0" | 3'-0" | 7'-6" | |
| 49 | 25'-3" | 25'-6" | 3'-3" | 7'-6" | |
| 54 | 27'-9" | 28'-0" | 3'-0" | 7'-6" | |
| 59 | 30'-3" | 30'-6" | 3'-0" | 7'-6" | |
| 64 | 32'-9" | 33'-0" | 3'-0" | 7'-6" | |
| 69 | 24'-3" | 24'-6" | 3'-2" | 7'-10" | |
| 74 | 26'-0" | 26'-3" | 3'-2" | 7'-10" | |
| 79 | 27'-6" | 28'-0" | 3'-3" | 8'-0" | |
| 84 | 29'-3" | 29'-6" | 3'-3" | 8'-0" | |
| 89 | 31'-0" | 31'-3" | 3'-3" | 8'-0" | |
| 94 | 32'-0" | 33'-0" | 3'-3" | 8'-0" | |
| 99 | 34'-3" | 34'-0" | 3'-4" | 8'-2" | |

Revisions & Corrections

Drawn By: D.P.B. Oct. 1962
Traced By: D.P.B. Oct. 1962
Checked By: A.R.K. Oct. 1962
Recommended for Approval: Bridge Engineer 12/7/62 Date
Recommended for Approval: Assistant Chief Engineer Date
Approved by: Chief Engineer 12/11/62 Date

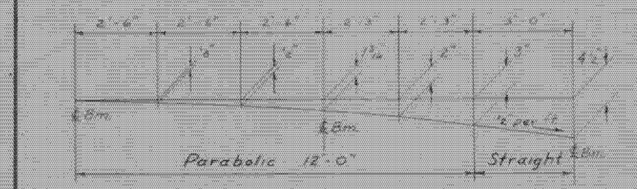
TYPICAL SECTION, PLAN VIEW & QUANTITIES
24 FOOT ROADWAY W BEAM BRIDGES
Design Loading = H20-S16-44 & T3M-A36-G27 Steel
34" ALL NON COMPOSITE 49'-84" COMPOSITE
FOR ADDITIONAL DETAILS SEE STANDARD SCB-D1-62

VERMONT
DEPARTMENT OF HIGHWAYS
STRUCTURE STANDARDS

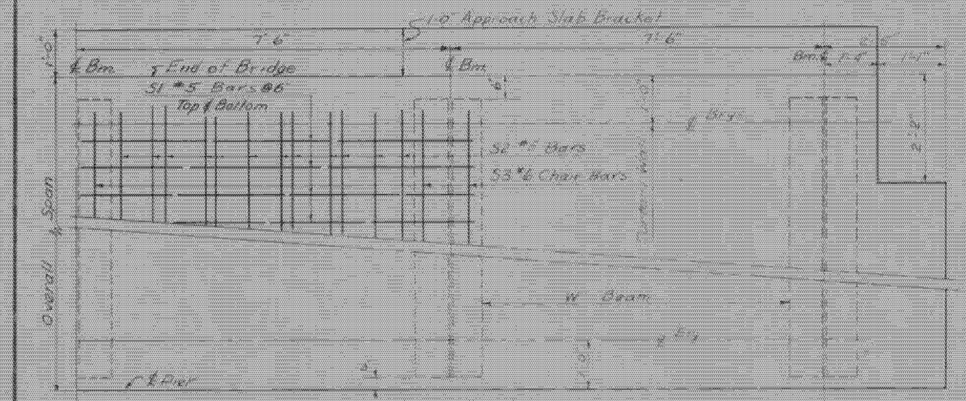
SCB-24-62

WESTMINSTER-NORWICH
IM BPNT (8)
SHEET 36 OF 58

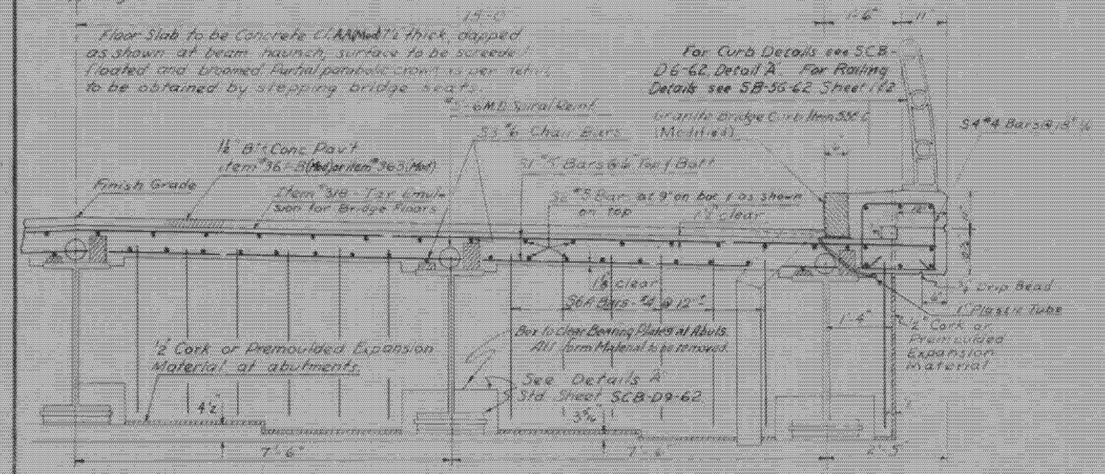
FOR REFERENCE ONLY




DETAIL OF PARTIAL PARABOLIC CROWN OF SLAB




HALF PLAN




TYPICAL HALF SECTION

*Excluding Scuppers & Bearing Devices

## TABLE OF QUANTITIES FOR SINGLE (SQUARE) SPAN

| Span, Out to Out | 99'-0 | 94'-0 | 89'-0 | 84'-0 | 79'-0 | 74'-0 | 69'-0 | 64'-0 | 59'-0 | 54'-0 | 49'-0 | 44'-0 | 39'-0 | 34'-0 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Span ℄ to ℄ Brngs. | 97'-0 | 92'-0 | 87'-0 | 82'-0 | 77'-0 | 72'-0 | 67'-0 | 62'-0 | 57'-0 | 52'-0 | 47'-0 | 42'-0 | 37'-0 | 32'-0 |
| Length of Bms. | 98'-0 | 93'-0 | 88'-0 | 83'-0 | 78'-0 | 73'-0 | 68'-0 | 63'-0 | 58'-0 | 53'-0 | 48'-0 | 43'-0 | 38'-0 | 33'-0 |
| Size WF Beam | 36WF280 | 36WF245 | 36WF230 | 36WF230 | 36WF194 | 36WF170 | 36WF150 | 36WF135 | 36WF135 | 36WF135 | 36WF135 | 36WF135 | 33WF118 | 30WF108 |
| Lgth & Size Cover Pl (Bott. only) | 42"-1 1/2" x 1 1/16" - 65'-7 1/2" x 1 1/16" | | 59'-5 1/2" x 1 1/4" | 45'-7 1/2" x 1 1/4" | 45'-4 1/2" x 1 3/16" | 42'-11 1/2" x 1 1/8" | 45'-9 1/2" x 1 1/8" | 42'-8 1/2" x 1 1/8" | 31'-7 1/2" x 1" | 21'-11 1/2" x 1" | | | | |
| Dead Load Deflection | 3½" | 3⅛" | 2⅝" | 2¼" | 1⅞" | 1⅝" | 1⅜" | 1⅛" | ⅞" | ⅝" | ½" | ⅜" | ¼" | ¼" |
| Dia. of Spiral Bars | — | | | | | | ⅝" | | | | ← | Non Composite | | |
| Mean Dia. of Spiral | → | | | | | | 6' | | | | ← | " | " | " |
| Spiral Pitch 0'-10' from Brng. | Double @ 5½ | Double @ 5½ | Double @ 5½ | Double @ 5½ | Double @ 5 | Double @ 5 | Double @ 5 | Double @ 5 | Double @ 5 | Double @ 5 | Double @ 5½ | " | " | " |
| " " 10'-20' or ℄ Span | Double @ 6½ | Double @ 6½ | Double @ 6½ | Double @ 7 | Double @ 7 | Double @ 7½ | Double @ 7 | Double @ 7 | Double @ 7 | Double @ 7 | Double @ 7½ | " | " | " |
| " " 20'-30' or ℄ Span | 4" | 4" | 4½ | 4½" | 4½ | 4½ | 4½" | 5" | 5½" | 6" | 6" | " | " | " |
| " " 30'-40' or ℄ Span | 5" | 5" | 5" | 6" | 6" | 6" | 6" | 5" | — | — | — | " | " | " |
| " " 40'-℄ Span | 6½" | 6½" | 6" | 6" | — | — | — | — | — | — | — | " | " | " |
| *Tot. Struct. Steel (1 span) (lbs.) | 169,590 | 145,670 | 126,840 | 112,050 | 92,150 | 76,670 | 62,740 | 52,610 | 45,490 | 41,150 | 35,830 | 32,390 | 24,240 | 19,280 |
| Reinforcing Bars - S1 | 378 | 378 | 360 | 336 | 318 | 296 | 278 | 238 | 234 | 216 | 196 | 176 | 156 | 136 |
| " " - S2 | 225 | 225 | 225 | 225 | 225 | 225 | 225 | 150 | 150 | 150 | 150 | 150 | 150 | 75 |
| " " - S3 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 20 | 20 | 20 | 20 | 20 | 20 | 10 |
| " " - S4 | 132 | 124 | 120 | 112 | 106 | 100 | 92 | 86 | 80 | 72 | 66 | 60 | 52 | 46 |
| " " - S5 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 |
| " " - S6A | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 |
| " " - S7 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 |
| Tot Weight - Reinf. Bars (lbs.) | 25,300 | 24,100 | 22,900 | 21,700 | 20,400 | 19,300 | 18,000 | 16,400 | 15,400 | 14,200 | 13,000 | 11,800 | 10,600 | 9,200 |
| Approx. Wt Spiral Reinf. (lbs.) | 2,580 | 2,550 | 2,380 | 2,190 | 2,160 | 2,040 | 1,990 | 1,860 | 1,700 | 1,560 | 1,440 | Non Composite | | |
| Tot C.Y.Qs. Conc. Class AA* (Type) | 116 | 111 | 106 | 101 | 96 | 90 | 85 | 79 | 73 | 68 | 63 | 58 | 51 | 45 |
| Tot Wt Bitum. Conc. Pavt (Mod.) (Tons) | 32 | 30 | 29 | 27 | 26 | 24 | 22 | 21 | 19 | 18 | 16 | 15 | 13 | 12 |
| Tar Emulsion for Bridge Floors (Gals.) | 132 | 125 | 119 | 112 | 105 | 99 | 92 | 85 | 79 | 72 | 65 | 59 | 52 | 45 |
| Approx. Quantity ¾" x 7" Studs | 3,180 | 3,120 | 2,940 | 2,680 | 2,640 | 2,500 | 2,440 | 2,280 | 2,120 | 1,900 | 1,760 | Non Composite | | |
| Approx. Quantity 6" x 7" Studs | 2,112 | 2,080 | 1,960 | 1,790 | 1,760 | 1,670 | 1,630 | 1,520 | 1,410 | 1,270 | 1,170 | Non Composite | | |

## REINFORCING STEEL SCHEDULE

S1 - #5 34'-4" Straight | S5 - #5 32'-2" Straight

| Span | S2 - #5 Str. Length | S3 - #6 Str. Length | S6A - #4 B & D | S6A - #4 Total Length | S4 - #4 T.L. = 5'-3" B = 1'-6" D = 1'-6" C = 1'-5" H = 3" A = 5" G = 5" | S6A - #4 T.L. Varies A 5" G 5" A G B D C = 8" |
|---|---|---|---|---|---|---|
| 34 | 33'-6" | 33'-6" | 2'-6" | 6'-6" | | |
| 39 | 20'-3" | 20'-6" | 2'-9" | 7'-0" | | |
| 44 | 22'-9" | 23'-0" | 3'-0" | 7'-6" | | |
| 49 | 25'-3" | 25'-6" | 3'-0" | 7'-6" | | |
| 54 | 27'-9" | 28'-0" | 3'-0" | 7'-6" | | |
| 59 | 30'-3" | 30'-6" | 3'-0" | 7'-6" | | |
| 64 | 32'-9" | 33'-0" | 3'-0" | 7'-6" | | |
| 69 | 24'-3" | 24'-6" | 3'-2" | 7'-10" | | |
| 74 | 26'-0" | 26'-3" | 3'-2" | 7'-10" | | |
| 79 | 27'-6" | 28'-0" | 3'-3" | 8'-0" | S7 - #6 T.L. = 3'-0" B = 1'-8" J = 6" A = 8" G = 8" | S6P - #5 T.L. = 4'-2" B = 2'-6" C = 8" D = 1'-0" |
| 84 | 29'-3" | 29'-6" | 3'-3" | 8'-0" | | |
| 89 | 31'-0" | 31'-3" | 3'-3" | 8'-0" | | |
| 94 | 32'-6" | 33'-0" | 3'-4" | 8'-2" | | |
| 99 | 34'-3" | 34'-6" | 3'-4" | 8'-2" | | |

Revisions & Corrections

Drawn By: R.S.H. June 1960
Traced By: R.S.H. June 1960
Checked By: R.T.B. & R.S.H. July 1960

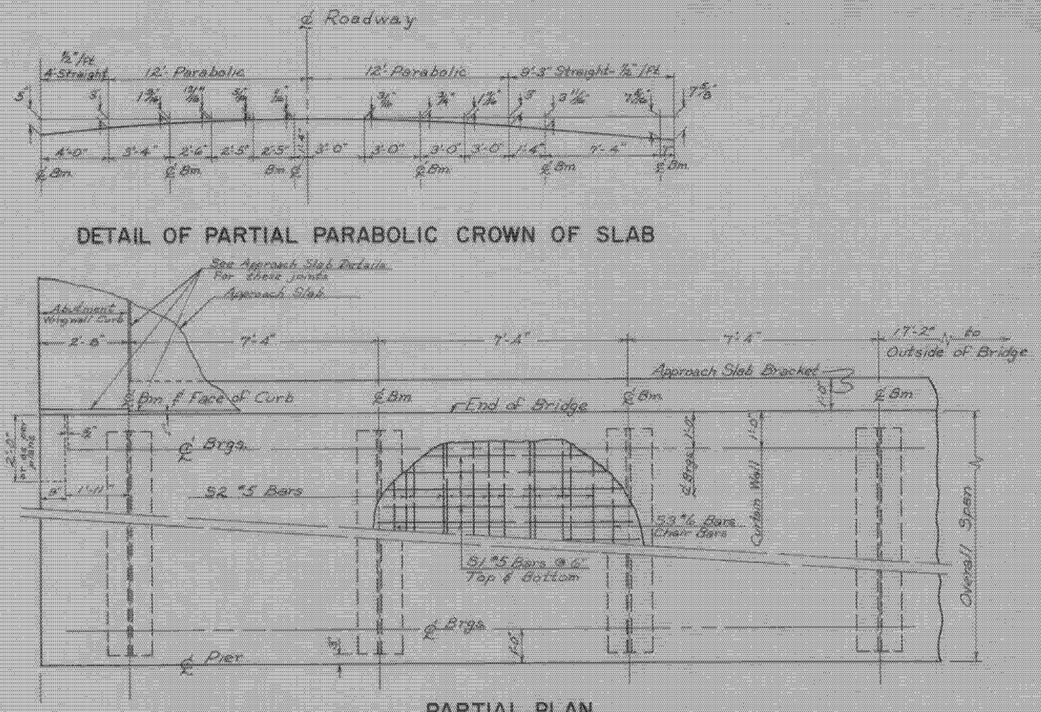
Recommended For Approval: _____ Bridge Engineer Date
Recommended For Approval: _____ Asst. Chief Engineer Date
Approved By: _____ Chief Engineer 7/14/63 Date

# TYPICAL SECTION, PLAN VIEW, & QUANTITIES
## 30 FOOT ROADWAY WF BEAM BRIDGES
DESIGN LOADING - H-20-S16-44 (A.S.T.M. - A36-62T STEEL)
34-44 NON COMPOSITE, 49-99 COMPOSITE
FOR ADDITIONAL DETAILS SEE STANDARD SCB-D-62

DEPARTMENT OF HIGHWAYS
STANDARD STRUCTURES

# SCB-30-62

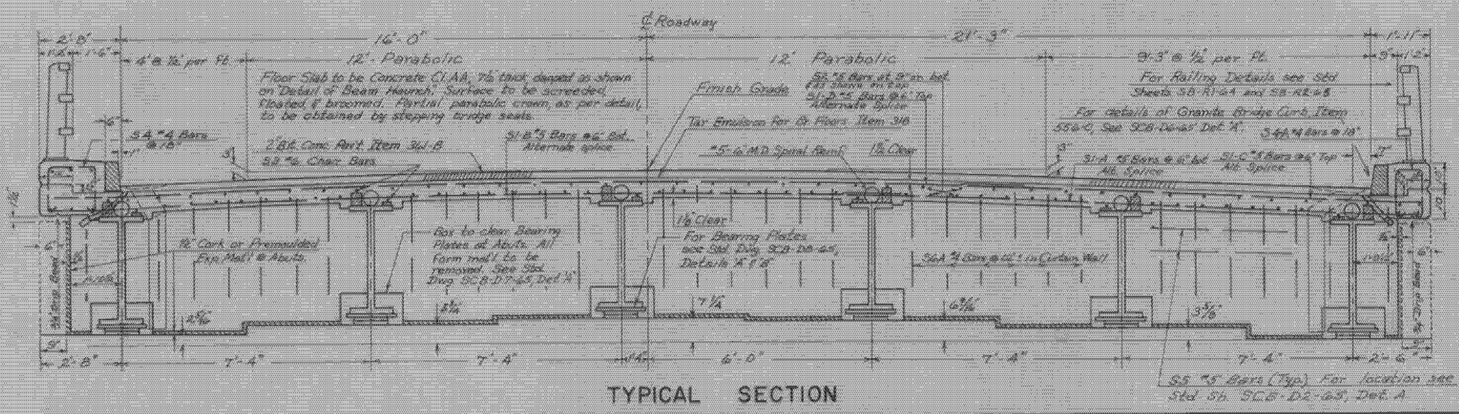
WESTMINSTER-NORWICH
IM BPNT (8)
SHEET 37 OF 58
FOR REFERENCE ONLY




## DETAIL OF PARTIAL PARABOLIC CROWN OF SLAB




## PARTIAL PLAN




## TYPICAL SECTION

## TABLE OF QUANTITIES FOR SINGLE (SQUARE) SPAN (INCLUDES TWO CURTAIN WALLS)

| Span Out to Out | 99'-0" | 94'-0" | 89'-0" | 84'-0" | 79'-0" | 74'-0" | 69'-0" | 64'-0" | 59'-0" | 54'-0" | 49'-0" | 44'-0" | 39'-0" | 34'-0" |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Span- ℄ to ℄ Bearings | 97'-0" | 92'-0" | 87'-0" | 82'-0" | 77'-0" | 72'-0" | 67'-0" | 62'-0" | 57'-0" | 52'-0" | 47'-0" | 42'-0" | 37'-0" | 32'-0" |
| Length of Beams | 98'-0" | 93'-0" | 88'-0" | 83'-0" | 78'-0" | 73'-0" | 68'-0" | 63'-0" | 58'-0" | 53'-0" | 48'-0" | 43'-0" | 38'-0" | 33'-0" |
| Size WF Beams | 36WF280 | 36WF245 | 36WF230 | 36WF230 | 36WF194 | 36WF170 | 36WF150 | 36WF135 | 36WF135 | 36WF135 | 36WF135 | 36WF135 | 33WF118 | 30WF108 |
| Lgth. & Size Cover Pl. (Bot. only) | 44'-1" lg 14" x 1½" | 45'-7" lg 14" x 1½" | 53'-5" lg 14" x 1¾" | 49'-5" lg 14" x 1⅞" | 49'-10" lg 10" x 1¾" | 47'-1" lg 10" x 1⅛" | 45'-3" lg 10" x 1" | 42'-5" lg 10" x 7/8" | 31'-11" lg 10" x ½" | 27'-1" lg 8" x ½" | ——— | ——— | ——— | ——— |
| Dead Load Deflection | 3½" | 3⅛" | 2⅞" | 2¾" | 1 7/8" | 1⅝" | 1⅜" | 1⅛" | ⅞" | 5/8" | ½" | ⅜" | ¼" | ¼" |
| Diameter of Spiral Bars | ——— | ——— | ——— | ——— | ——— | ——— | ⅝" | ——— | ——— | ——— | ——— | ——— | Non Composite | |
| Mean Diameter of Spiral | ——— | ——— | ——— | ——— | ——— | ——— | 6" | ——— | ——— | ——— | ——— | ——— | " " | " |
| Spiral Pitch 0'-10" From Strg. | Double @ 5½" | Double @ 5½" | Double @ 5½" | Double @ 5½" | Double @ 5" | Double @ 5" | Double @ 5" | Double @ 5" | Double @ 5" | Double @ 5" | Double @ 5½" | Double @ 5½" | Non Composite | |
| " " 10'-20' or ℄ Span | Double @ 6½" | Double @ 6" | Double @ 6½" | Double @ 7" | Double @ 7" | Double @ 7½" | Double @ 7" | Double @ 7" | Double @ 7" | Double @ 7" | Double @ 7" | Double @ 7½" | " " | " |
| " " 20'-30' " " | 4" | 4" | 4½" | 4½" | 4½" | 4½" | 4½" | 5" | 5½" | 6" | 6" | " | " | " |
| " " 30'-40' " " | 5" | 5" | 5" | 6" | 6" | 6" | 6" | 6" | ——— | ——— | ——— | " | " | " |
| " " 40' ℄ Span | 6½" | 6½" | 6" | 6" | ——— | ——— | ——— | ——— | ——— | ——— | ——— | " | " | " |
| *Total Struct. Steel (1 Span) (lbs.) | 203,790 | 175,080 | 152,480 | 134,670 | 110,790 | 92,210 | 75,430 | 63,270 | 54,730 | 49,520 | 43,140 | 38,010 | 29,160 | 23,200 |
| Reinforcing Bars S1-A | 198 | 188 | 178 | 168 | 158 | 148 | 138 | 128 | 118 | 108 | 98 | 88 | 78 | 68 |
| " " S1-B | 198 | 188 | 178 | 168 | 158 | 148 | 138 | 128 | 118 | 108 | 98 | 88 | 78 | 68 |
| " " S1-C | 198 | 188 | 178 | 168 | 158 | 148 | 138 | 128 | 118 | 108 | 98 | 88 | 78 | 68 |
| " " S1-D | 198 | 188 | 178 | 168 | 158 | 148 | 138 | 128 | 118 | 108 | 98 | 88 | 78 | 68 |
| " " S2 | 261 | 261 | 261 | 261 | 261 | 261 | 261 | 174 | 174 | 174 | 174 | 174 | 174 | 87 |
| " " S3 | 36 | 36 | 36 | 36 | 36 | 36 | 36 | 24 | 24 | 24 | 24 | 24 | 24 | 12 |
| " " S4 | 67 | 64 | 60 | 57 | 54 | 50 | 47 | 44 | 40 | 37 | 34 | 30 | 27 | 24 |
| " " S4-A | 67 | 64 | 60 | 57 | 54 | 50 | 47 | 44 | 40 | 37 | 34 | 30 | 27 | 24 |
| " " S5 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 |
| " " S6-A | 64 | 64 | 64 | 64 | 64 | 64 | 64 | 64 | 64 | 64 | 64 | 64 | 64 | 64 |
| " " S7 | 54 | 54 | 54 | 54 | 54 | 54 | 54 | 54 | 54 | 54 | 54 | 54 | 54 | 54 |
| Total Weight Reinf. Bars (lbs.) | 30,900 | 29,410 | 27,970 | 26,470 | 24,990 | 23,540 | 22,040 | 20,310 | 18,830 | 17,360 | 15,890 | 14,410 | 12,920 | 11,200 |
| Approx. Weight Spiral Reinf. (lbs.) | 3,150 | 3,050 | 2,850 | 2,620 | 2,590 | 2,450 | 2,390 | 2,230 | 2,040 | 1,860 | 1,790 | Non Composite | | |
| Total Concrete Class "AA" (Cu. yds.) | 130 | 124 | 118 | 112 | 106 | 100 | 94 | 88 | 82 | 76 | 70 | 64 | 58 | 51 |
| Total Weight Bit. Conc. Pvmt. (Tons) | 51 | 48 | 45 | 43 | 40 | 37 | 36 | 33 | 31 | 28 | 26 | 23 | 20 | 17 |
| Tar Emulsion for Bridge Floors (Gals.) | 164 | 156 | 148 | 139 | 131 | 123 | 114 | 106 | 98 | 90 | 81 | 73 | 65 | 57 |
| Approx. Quantity ¾"ø Studs | 3820 | 3740 | 3,530 | 3220 | 3,170 | 3,000 | 2,930 | 2,740 | 2,540 | 2,280 | 2,110 | Non Composite | | |
| Approx. Quantity ⅞"ø Studs | 2540 | 2,500 | 2350 | 2,140 | 2,110 | 2,000 | 1,950 | 1,820 | 1,700 | 1,520 | 1,410 | Non Composite | | |
| Item 440-Water Repellent (Gals.) | 2⅛ | 2⅛ | 2¼ | 2¼ | 2 | 2 | 1⅞ | 1⅞ | 1½ | 1½ | 1¼ | 1¼ | 1 | 1 |
| Camber | 4⅜" | 4⅛" | 3⅞" | 3⅝" | 3⅜" | 2¾ | 2⅝" | 2" | 1⅞" | 1⅝" | 1⅜" | 1" | 1" | ¾" |

* Excluding Scuppers and Bearing Devices.

## REINFORCING STEEL SCHEDULE

| | | | |
|---|---|---|---|
| S1-A #5 | 17'-6" | Straight | S1-B #5 26'-0" Straight |
| S1-C #5 | 13'-10" | Straight | S1-D #5 29'-8" Straight |
| S5 #5 | 21'-0" | Straight | |

| Span | S2 - #5 Str. Length | S3 - #6 Str. Length | S6A - #4 B & D | S6A - #4 Total Length | S4 - #4 | S4-A #4 | S6A #4 |
|---|---|---|---|---|---|---|---|
| | | | | | T.L. 5'-5" | A' 8" | T.L. Varies |
| | | | | | B = 1'-5" | 1'-5" | A=5" G=5" |
| | | | | | D = 1'-5" | 1'-5" | A G |
| | | | | | C = 1'-9" | 1'-0" | B D |
| 34 | 33'-6" | 33'-6" | 2'-6" | 6'-6" | | | |
| 39 | 20'-3" | 20'-6" | 2'-9" | 7'-0" | | | |
| 44 | 22'-9" | 23'-0" | 3'-0" | 7'-6" | | | |
| 49 | 25'-3" | 25'-6" | 3'-0" | 7'-6" | | | |
| 54 | 27'-9" | 28'-0" | 3'-0" | 7'-6" | | | |
| 59 | 30'-3" | 30'-6" | 3'-0" | 7'-6" | | | |
| 64 | 32'-9" | 33'-0" | 3'-0" | 7'-6" | | | |
| 69 | 24'-3" | 24'-6" | 3'-2" | 7'-10" | | | |
| 74 | 26'-0" | 26'-3" | 3'-2" | 7'-10" | | | |
| 79 | 27'-6" | 28'-0" | 3'-3" | 8'-0" | | | |
| 84 | 29'-3" | 29'-6" | 3'-3" | 8'-0" | | | |
| 89 | 31'-0" | 31'-3" | 3'-3" | 8'-0" | | | |
| 94 | 32'-6" | 33'-0" | 3'-4" | 8'-2" | | | |
| 99 | 34'-3" | 34'-6" | 3'-4" | 8'-2" | | | |

S7 - #6: T.L. = 3'-0"; B = 1'-8"; A = 8"; G = 8"

S6P - #5: T.L. = 4'-2"; B = 2'-6"; C = 8"; D = 1'-0"

### Revisions & Corrections

B. Changed Bit. Conc. thickness from 1½" to 2" & revised Bit. Wt. of Bit. Conc. Pvmt. — K 1-21-66
D. Changed SB-R2-64 to SB-R2-65 — K 1-21-66
A. Revised Item 440 — K 2-24-66

Drawn By: W.B.T. Aug. 1964 Revised Jan. '65
Traced By: W.B.T. Aug. 1964 Revised Jan. '65
Checked By: T.K.-W.M.S. Oct. 1964 Rev. Jan. '65

Recommended For Approval: Bridge Engineer — 2/4/65 Date
Recommended For Approval: Asst. Chief Engineer — 2/4/65 Date
Approved By: Chief Engineer — 2/4/65 Date

# TYPICAL SECTION, PLAN VIEW, & QUANTITIES
## 37.25 FOOT ROADWAY WF BEAM BRIDGES
DESIGN LOADING - HS20-44 (A.S.T.M.-A36-62T STEEL)
34-44 NON COMPOSITE, 49-99 COMPOSITE
FOR ADDITIONAL DETAILS SEE STANDARDS SCB-D1 THRU D9-65

STATE OF VERMONT
DEPARTMENT OF HIGHWAYS
STANDARD STRUCTURES

# SCB-37.25-65

WESTMINSTER-NORWICH
IM BPNT (8)
SHEET 38 OF 58
FOR REFERENCE ONLY

# DETAILS OF 42 FT. ROADWAY-COMPOSITE BEAM BRIDGES

DEPARTMENT OF HIGHWAYS
STANDARD STRUCTURES

SCB-42-56

WESTMINSTER-NORWICH
IM BPNT (8)
SHEET 39 OF 58

FOR REFERENCE ONLY

## TABLE OF QUANTITIES FOR A SINGLE SPAN (SQUARE)

| Span, Out to Out | 22'-0 | 24'-0 | 26'-0 | 28'-0 | 30'-0 | 32'-0 | 34'-0 | 36'-0 | 38'-0 | 40'-0 | 42'-0 | 44'-0 | 46'-0 | 48'-0 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Skew, Out to Out Abutments | 21'-0 | 23'-0 | 25'-0 | 27'-0 | 29'-0 | 31'-0 | 33'-0 | 35'-0 | 37'-0 | 39'-0 | 41'-0 | 43'-0 | 45'-0 | 47'-0 |
| Roadway on Bridge | 20'-0 | 24'-0 | 28'-0 | 32'-0 | 36'-0 | 40'-0 | 44'-0 | 48'-0 | 52'-0 | 56'-0 | 60'-0 | 64'-0 | 68'-0 | 72'-0 |
| Skew, as Shown | Normal | Normal | Normal | Normal | Normal | Normal | Normal | Normal | Normal | Normal | Normal | Normal | Normal | Normal |
| Beams, C Shape, Steel, Grade B | W12x14 | W12x14 | W12x16 | W12x19 | W12x22 | W12x26 | W12x26 | W12x30 | W12x30 | W12x35 | W12x40 | W12x40 | W12x45 | W12x50 |
| Beams, C Shape, Steel, Grade B | W12x14 | — | — | — | — | — | W14x22 | W14x26 | W14x26 | W14x30 | W14x34 | W14x34 | W14x38 | W14x43 |
| Beam Spacing, Clear Between | 1'-6" | 2'-0" | 2'-6" | 3'-0" | 3'-6" | 4'-0" | 4'-6" | 1'-6" | 2'-0" | 2'-6" | 3'-0" | 3'-6" | 4'-0" | 4'-6" |
| Dist. to Shear, Steel | — | — | — | — | — | — | 2'-0" | — | — | — | — | — | — | — |
| Slope, Out to Slope | — | — | — | — | — | — | 2:1 | — | — | — | — | — | — | — |
| Beams, Min. D.F. Required | 4 | 5 | 6 | 7 | 8 | 9 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 |
| " " Dist. to Beam | 2'-0" | 2'-0" | 2'-0" | 2'-0" | 2'-0" | 2'-0" | 2'-0" | 2'-0" | 2'-0" | 2'-0" | 2'-0" | 2'-0" | 2'-0" | 2'-0" |
| " " Dist. to | 1'-0" | 1'-0" | 1'-0" | 1'-0" | 1'-0" | 1'-0" | 1'-0" | 1'-0" | 1'-0" | 1'-0" | 1'-0" | 1'-0" | | |
| " " Dist. to | 1'-0" | 1'-0" | 1'-0" | 1'-0" | 1'-0" | 1'-0" | 1'-0" | 1'-0" | 1'-0" | 1'-0" | 1'-0" | | | |
| " " Dist. to | 1'-0" | 1'-0" | 1'-0" | 1'-0" | | | | | | | | | | |
| Location of D.F. Shown | — | See Note | Concrete | Encasement | Beam | Only | Required | | | | | | | |
| Dia. Anchor Bolts (1 Each) | 5/8"ø | 5/8"ø | 5/8"ø | 5/8"ø | 5/8"ø | 5/8"ø | 5/8"ø | 5/8"ø | 5/8"ø | 5/8"ø | 5/8"ø | 5/8"ø | 5/8"ø | 5/8"ø |
| Embedment in Piers | 1'-0" | 1'-0" | 1'-0" | 1'-0" | 1'-0" | 1'-0" | 1'-0" | 1'-0" | 1'-0" | 1'-0" | 1'-0" | 1'-0" | 1'-0" | 1'-0" |
| " " " Abut. | 1'-0" | 1'-0" | 1'-0" | 1'-0" | 1'-0" | 1'-0" | 1'-0" | 1'-0" | 1'-0" | 1'-0" | 1'-0" | 1'-0" | 1'-0" | 1'-0" |
| Bridge Seat, Width | 1'-6" | 1'-6" | 1'-6" | 1'-6" | 1'-6" | 1'-6" | 1'-6" | 1'-6" | 1'-6" | 1'-6" | 1'-6" | 1'-6" | 1'-6" | 1'-6" |
| " " Length | 1'-6" | 1'-6" | 1'-6" | 1'-6" | 1'-6" | 1'-6" | 1'-6" | 1'-6" | 1'-6" | 1'-6" | 1'-6" | 1'-6" | 1'-6" | 1'-6" |
| " " Depth | 1'-0" | 1'-0" | 1'-0" | 1'-0" | 1'-0" | 1'-0" | 1'-0" | 1'-0" | 1'-0" | 1'-0" | 1'-0" | 1'-0" | 1'-0" | 1'-0" |
| Concrete, Class A, Cu. Yds. | 15.0 | 16.0 | 17.0 | 18.0 | 19.0 | 20.0 | 21.0 | 22.0 | 23.0 | 24.0 | 25.0 | 26.0 | 27.0 | 28.0 |
| Reinforcing Steel, Lbs. | 1500 | 1600 | 1700 | 1800 | 1900 | 2000 | 2100 | 2200 | 2300 | 2400 | 2500 | 2600 | 2700 | 2800 |
| Piles, C.I. Cast, Ea. | 10.0 | 12.0 | 13.0 | 14.0 | 15.0 | 16.0 | 17.0 | 18.0 | 19.0 | 20.0 | 21.0 | 22.0 | 23.0 | 24.0 |
| Dia. of Bar Steel, Each Pile | 8" | 8" | 8" | 8" | 8" | 8" | 8" | 8" | 8" | 8" | 8" | 8" | 8" | 8" |

## REINFORCING STEEL SCHEDULE

| Mark | No. | Length | Shape |
|---|---|---|---|
| S1-0 | 3 | 17'-3" | Straight |
| S2-0 | 4 | 6'-3" | Straight |
| S3-0 | 21 | 8'-9" | Straight |
| S4-0 | 21 | 10'-9" | Straight |
| S5-0 | 4 | 23'-3" | Straight |
| S6-0 | 4 | 23'-3" | Straight |

Stirrups

| Mark | Length | Shape | A | B | C |
|---|---|---|---|---|---|
| S7-0 | 5'-3" | | 1'-6" | 1'-6" | 1'-6" |
| S8-0 | 5'-9" | | 1'-6" | 1'-6" | 2'-0" |
| S9-0 | 6'-3" | | 1'-6" | 1'-6" | 2'-6" |
| S10-0 | 6'-9" | | 1'-6" | 1'-6" | 3'-0" |
| S11-0 | 7'-3" | | 1'-6" | 1'-6" | 3'-6" |
| S12-0 | 7'-9" | | 1'-6" | 1'-6" | 4'-0" |
| S13-0 | 8'-3" | | 1'-6" | 1'-6" | 4'-6" |
| S14-0 | 8'-9" | | 1'-6" | 1'-6" | 5'-0" |
| S15-0 | 9'-3" | | 1'-6" | 1'-6" | 5'-6" |
| S16-0 | 9'-9" | | 1'-6" | 1'-6" | 6'-0" |
| S17-0 | 10'-3" | | 1'-6" | 1'-6" | 6'-6" |
| S18-0 | 10'-9" | | 1'-6" | 1'-6" | 7'-0" |

Dowels — No. 20 Bars

S19-0 — 2'-0" Bars

S20-0 — 2'-0" Bars

Designed & Computed by _____ Checked _____

Detailed _____ Date _____

Approved _____ Date _____

Engineer of Bridges

Chief Engineer

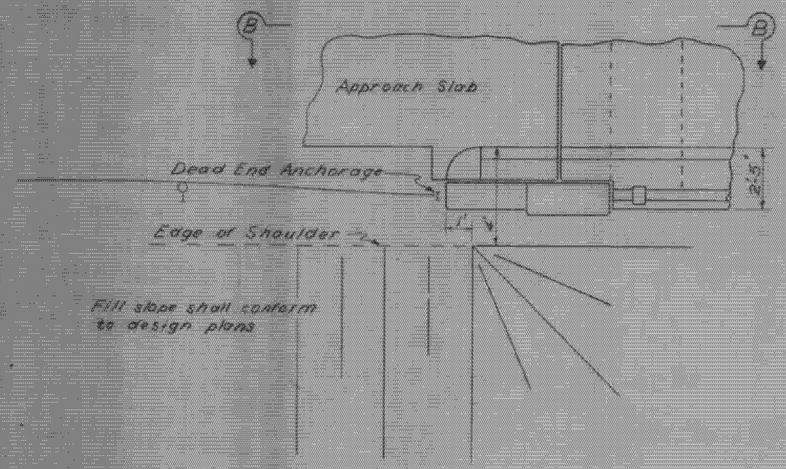
## TABLES TO BE USED IN CONNECTION WITH SCB-42-56

DEPARTMENT OF HIGHWAYS
STANDARD STRUCTURES

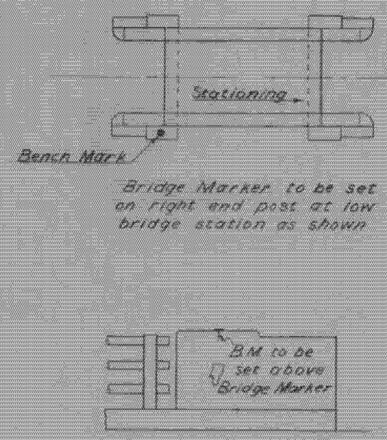
SCB-42-56

WESTMINSTER-NORWICH
IM BPNT (8)
SHEET 40 OF 58

FOR REFERENCE ONLY

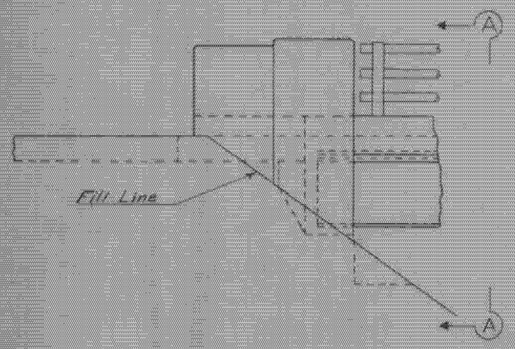



PLAN OF END POST

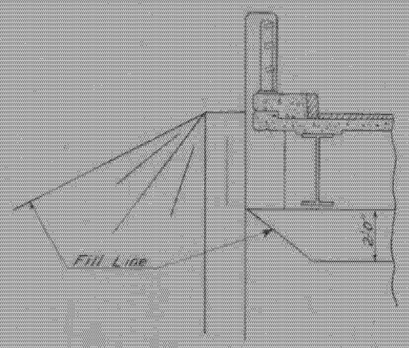



Bridge Marker to be set on right end post at low bridge station as shown

SECTION - B-B




ELEVATION OF END POST




SECTION - A-A

## GENERAL NOTES

SPECIFICATIONS: ALL MATERIALS AND CONSTRUCTION SHALL CONFORM TO THE STATE OF VERMONT, DEPARTMENT OF HIGHWAYS, STANDARD SPECIFICATIONS FOR HIGHWAY AND BRIDGE CONSTRUCTION DATED JANUARY 1956, AND THE A.A.S.H.O. STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES DATED 1961.
DESIGN IS FOR H20-S16-44 LOADING MODIFIED FOR THE NATIONAL SYSTEM OF INTERSTATE HIGHWAYS, APPLIED IN ACCORDANCE WITH THE PROVISIONS OF THE A.A.S.H.O. STANDARD SPECIFICATIONS, ARTICLE 1.2.6.

STRUCTURAL STEEL: UNLESS OTHERWISE NOTED ON THE PLANS ALL STRUCTURAL STEEL SHALL CONFORM WITH A.S.T.M. DESIGNATION A-36-62 T.
UNLESS OTHERWISE DETAILED ALL FIELD CONNECTIONS SHALL BE MADE WITH 7/8" Ø HIGH STRENGTH BOLTS, USING 15/16"Ø HOLES. WHERE CONNECTIONS ARE NOT DETAILED ON THE PLANS, THEY SHALL BE DETAILED BY THE FABRICATOR AND SUBMITTED TO THE STATE FOR APPROVAL.
DETAILS OF SHEAR CONNECTORS SHALL BE SUBMITTED TO THE STATE FOR APPROVAL. EITHER CHANNEL OR STUD CONNECTORS MAY BE SUBSTITUTED IN LIEU OF THE SPIRAL. STUDS SHALL BE SUBSTITUTED ON THE BASIS OF TWO (2) 3/4" STUD FOR EACH PITCH OF A 5/8" Ø SPIRAL, OR ON THE BASIS OF TWO (2) 7/8" STUDS TO 1 1/2 TIMES THE PITCH OF A 5/8" Ø SPIRAL.
NO SCUPPERS SHALL BE USED ON GRADE SEPARATIONS UNLESS INDICATED ON THE PLANS.
ON SUPERELEVATED BRIDGES, PLACE SCUPPERS ON THE LOW SIDE ONLY. EXCEPT FOR THE ABOVE RESTRICTIONS, SCUPPERS ARE NORMALLY PLACED MIDWAY BETWEEN INTERMEDIATE DIAPHRAGMS. PAYMENT FOR SCUPPERS SHALL BE INCLUDED IN THE UNIT PRICE FOR STRUCTURAL STEEL, ITEM 904.
UNLESS OTHERWISE CALLED FOR, BEAMS SHALL BE CAMBERED TO THE MINIMUM CAMBER LIKELY TO REMAIN PERMANENT AS INDICATED IN THE A.I.S.C. HANDBOOK. THE CAMBER SHALL APPROXIMATE A SIMPLE CIRCULAR CURVE FROM END TO END OF BEAM. TOLERANCES IN CAMBER SHALL BE AS INDICATED IN THE A.I.S.C. HANDBOOK.
AFTER THE SUPERSTRUCTURE STEEL HAS BEEN ERECTED, ELEVATIONS OF THE TOP OF THE ERECTED BEAMS SHALL BE TAKEN UNDER THE DIRECTION OF THE ENGINEER TO DETERMINE THE FINAL GRADE.

PAINT: THE FINAL COAT OF FIELD PAINT SHALL BE GREEN, UNLESS OTHERWISE DIRECTED BY THE ENGINEER.

CONCRETE: ALL CONCRETE IN THE SUPERSTRUCTURE SHALL BE CLASS AA, AND ALL EXPOSED EDGES OF CONCRETE SHALL BE CHAMFERED 1" X 1" UNLESS OTHERWISE INDICATED ON THE PLANS.
CONSTRUCTION JOINTS SHALL BE AS INDICATED ON THE STANDARDS UNLESS OTHERWISE INDICATED ON THE PLANS.

REINFORCING STEEL: FOR SKEWED BRIDGES: TRANSVERSE BARS, "S 1", SHALL BE FURNISHED AS FOR A SQUARE SPAN; THE "S1" BARS SHALL BE CUT IN THE FIELD TO FIT THE SKEWED END, THE CUT-OFF BARS SHALL BE USED AT THE OPPOSITE END OF THE SPAN; THE S 5 BARS SHALL BE LENGTHENED AND THE NUMBER OF S6A AND S7 BARS SHALL BE INCREASED; THE S6B BARS SHALL BE ADDED AT PIERS AS INDICATED. MINIMUM COVER FOR REINFORCING STEEL, MEASURED FROM THE SURFACE OF THE CONCRETE TO THE FACE OF THE REINFORCEMENT, SHALL BE 3" UNLESS OTHERWISE SPECIFIED.

QUANTITIES: THE QUANTITIES GIVEN IN THE SCD-24 TO 44-62 STANDARDS ARE NET QUANTITIES FOR A SINGLE SQUARE SPAN.

GENERAL: NORMALLY THE FIXED END BEARING DEVICE IS ON THE DOWN-GRADE END OF THE SPAN. UNLESS OTHERWISE DESIGNATED ALL EXPANSION MATERIAL SHALL NOT CONTAIN ASPHALT OR BITUMINOUS MATERIAL AND IT SHALL CONFORM WITH A.A.S.H.O. DESIGNATION: M153 TYPE II.
ALL DIMENSIONS GIVEN ARE MEASURED HORIZONTALLY OR VERTICALLY UNLESS OTHERWISE NOTED.
BORINGS INDICATED ON THE DRAWINGS HAVE BEEN MADE FOR DESIGN PURPOSES ONLY AND ARE NOT WARRANTED TO SHOW ACTUAL SUB-SURFACE CONDITIONS.
TOP SURFACES OF ALL PIERS AND ABUTMENTS SHALL BE SLOPED 1/4" PER FOOT EXCEPT AT BEARING PADS, WHERE THE SURFACES SHALL BE LEVEL. ABUTMENTS SHALL BE SLOPED FROM THE FRONT EDGE OF THE CURTAIN WALL OR FACE OF BACKWALL, AND PIERS SHALL BE SLOPED FROM THE CENTERLINE OF PIER.
THE ENTIRE EXPOSED TOP SURFACE OF THE ABUTMENTS AND PIERS SHALL BE COATED WITH ASPHALTIC ASBESTOS COATING 1/2" THICK AS PER ITEM 407. THIS ITEM SHALL BE APPLIED AFTER ALL PAINTING AND INCIDENTAL ITEMS ARE COMPLETED.
ALL DIMENSIONS ARE GIVEN AT 68° F UNLESS OTHERWISE NOTED.
WHERE BITUMINOUS CONCRETE PAVEMENT IS CALLED FOR AS A WEARING SURFACE ON BRIDGE DECKS AND APPROACH SLABS IT SHALL BE A DENSE GRADED TOP COURSE MATERIAL, APPLIED IN ONE COURSE, ONE AND ONE HALF (1 1/2) INCHES THICK. THE ITEM TO BE USED SHALL BE DESIGNATED ON THE PLANS, EITHER AS ITEM 301-8 OR ITEM 343.

PILES: STEEL PILES SHALL BE DRIVEN TO REFUSAL UNLESS OTHERWISE DIRECTED BY THE ENGINEER. WHERE PILES ARE DRIVEN IN FILL, THE MATERIAL SHOULD BE SUCH AS TO HAVE NO STONES LARGE ENOUGH TO INTERFERE WITH THE DRIVING OF PILES.

REVISIONS & CORRECTIONS

Drawn By: M Date: Dec. 1962
Traced By: M Date: Dec. 1962
Checked By: E.F.B. & W.S.H. Date: Dec. 1962

Recommended [signature] 12/1/62
For Approval Bridge Engineer Date
Recommended [signature] 4/4/63
For Approval Assist. Chief Engineer Date
Approved By [signature] 4/4/63
Chief Engineer Date

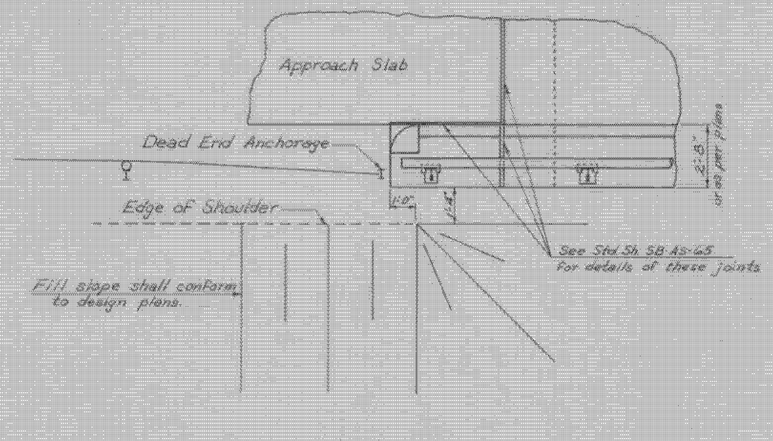
# DETAILS OF WF BEAM BRIDGES
## GENERAL INFORMATION & GENERAL NOTES

VERMONT
DEPARTMENT OF HIGHWAYS
STRUCTURE STANDARDS

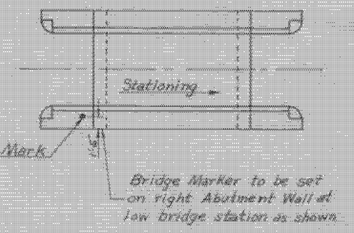
# SCB-DI-62

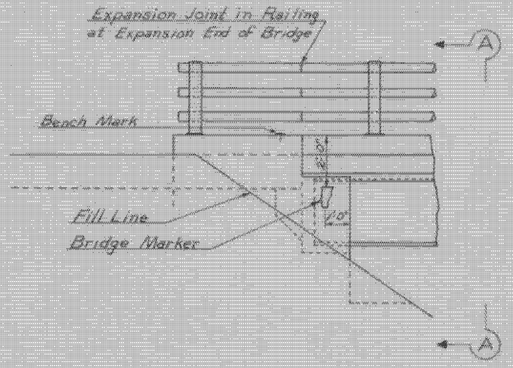
WESTMINSTER-NORWICH
IM BPNT (8)
SHEET 41 OF 58
FOR REFERENCE ONLY

241

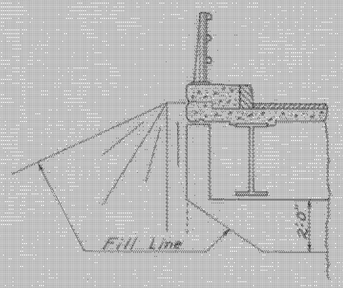



PLAN AT ABUTMENT




ELEVATION AT ABUTMENT




SECTION A-A

## GENERAL NOTES

SPECIFICATIONS: ALL MATERIALS AND CONSTRUCTION SHALL CONFORM TO THE STATE OF VERMONT, DEPARTMENT OF HIGHWAYS, STANDARD SPECIFICATIONS FOR HIGHWAY AND BRIDGE CONSTRUCTION DATED APRIL 1964, AND THE A.A.S.H.O. STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES DATED 1961. DESIGN IS FOR H20-44 LOADING MODIFIED FOR THE NATIONAL SYSTEM OF INTERSTATE HIGHWAYS, APPLIED IN ACCORDANCE WITH THE PROVISIONS OF THE A.A.S.H.O. STANDARD SPECIFICATIONS, ARTICLE 1.2.6.

STRUCTURAL STEEL: UNLESS OTHERWISE NOTED ON THE PLANS ALL STRUCTURAL STEEL SHALL CONFORM WITH A.S.T.M. DESIGNATION A-36-62T. UNLESS OTHERWISE DETAILED ALL FIELD CONNECTIONS SHALL BE MADE WITH 7/8" Ø HIGH STRENGTH BOLTS, USING 15/16" Ø HOLES. WHERE CONNECTIONS ARE NOT DETAILED ON THE PLANS, THEY SHALL BE DETAILED BY THE FABRICATOR AND SUBMITTED TO THE STATE FOR APPROVAL.

UNLESS OTHERWISE CALLED FOR, BEAMS SHALL BE CAMBERED TO THE MINIMUM CAMBER LIKELY TO REMAIN PERMANENT AS INDICATED IN THE A.I.S.C. HANDBOOK. THE CAMBER SHALL APPROXIMATE A SIMPLE CIRCULAR CURVE FROM END TO END OF BEAM. TOLERANCES IN CAMBER SHALL BE AS INDICATED IN THE A.I.S.C. HANDBOOK.

AFTER THE SUPERSTRUCTURAL STEEL HAS BEEN ERECTED, ELEVATIONS OF THE TOP OF THE ERECTED BEAMS SHALL BE TAKEN UNDER THE DIRECTION OF THE ENGINEER TO DETERMINE THE FINAL GRADE.

NO SCUPPERS SHALL BE USED ON GRADE SEPARATION STRUCTURES UNLESS INDICATED ON THE PLANS.

ON SUPERELEVATED BRIDGES, PLACE SCUPPERS ON THE LOW SIDE ONLY. EXCEPT FOR THE ABOVE RESTRICTIONS, SCUPPERS ARE NORMALLY PLACED HALFWAY BETWEEN INTERMEDIATE DIAPHRAGMS. PAYMENT FOR SCUPPERS SHALL BE MADE AT THE UNIT PRICE FOR STRUCTURAL STEEL, ITEM 906.

SHEAR CONNECTORS: DETAILS OF SHEAR CONNECTORS SHALL BE SUBMITTED TO THE STATE FOR APPROVAL. EITHER CHANNEL OR STUD CONNECTORS MAY BE SUBSTITUTED IN LIEU OF THE SPIRAL. STUDS SHALL BE SUBSTITUTED ON THE BASIS OF TWO (2) 3/4" STUD FOR EACH PITCH OF A 3'0" Ø SPIRAL, OR ON THE BASIS OF TWO (2) 7/8" STUDS TO 1 1/2 TIMES THE PITCH OF A 3'0" Ø SPIRAL.

PAINT: THE FINAL COAT OF FIELD PAINT SHALL BE GREEN, UNLESS OTHERWISE DIRECTED BY THE ENGINEER.

CONCRETE: ALL CONCRETE IN THE SUPERSTRUCTURE SHALL BE CLASS AA. ALL EXPOSED EDGES OF CONCRETE SHALL BE CHAMFERED 1" X 1" UNLESS OTHERWISE INDICATED ON THE PLANS.

CONSTRUCTION JOINTS SHALL BE AS INDICATED ON THE STANDARDS UNLESS OTHERWISE INDICATED ON THE PLANS.

REINFORCING STEEL: FOR SKEWED BRIDGES: TRANSVERSE SLAB REINFORCING "S1" BARS SHALL BE FURNISHED AS FOR A SQUARE SPAN. THE "S1" BARS SHALL BE CUT IN THE FIELD TO FIT THE SKEWED ENDS. THE CUT-OFF BARS SHALL BE USED AT THE OPPOSITE END OF THE SPAN; THE S 5 BARS SHALL BE LENGTHENED AND THE NUMBER OF S6A AND S7 BARS SHALL BE INCREASED. EXTRA BARS SHALL BE ADDED AT PIERS AS INDICATED. MINIMUM COVER FOR REINFORCING STEEL, MEASURED FROM THE SURFACE OF THE CONCRETE TO THE FACE OF THE REINFORCEMENT, SHALL BE 2" UNLESS OTHERWISE SPECIFIED.

GENERAL:

1. ALL DIMENSIONS GIVEN ARE MEASURED HORIZONTALLY OR VERTICALLY UNLESS OTHERWISE NOTED.
2. ALL DIMENSIONS ARE GIVEN AT 68° F. UNLESS OTHERWISE NOTED.
3. WHERE BITUMINOUS CONCRETE PAVEMENT IS CALLED FOR AS A WEARING SURFACE ON BRIDGE DECKS AND APPROACH SLABS IT SHALL BE A DENSE GRADED TOP COURSE MATERIAL.
4. BRIDGE RAILING POSTS ARE TO BE SET NORMAL TO GRADE UNLESS OTHERWISE NOTED.
5. ALL EXPOSED EDGE OF CONCRETE IN SUBSTRUCTURE SHALL BE CHAMFERED 1" X 1" UNLESS OTHERWISE INDICATED ON PLANS.
6. BRIDGE SEAT ELEVATIONS SHOWN ON PLANS ARE FOR THE CENTERLINE OF BEARINGS.
7. TOP SURFACES OF ALL PIERS AND ABUTMENTS SHALL BE SLOPED 1/4" PER FOOT EXCEPT AT BEARING PADS, WHERE THE SURFACES SHALL BE LEVEL. ABUTMENTS SHALL BE SLOPED FROM THE FRONT EDGE OF THE CURTAIN WALL OR FACE OF BACKWALL, AND PIERS SHALL BE SLOPED FROM THE CENTERLINE OF PIER.
8. THE ENTIRE EXPOSED TOP SURFACE OF THE ABUTMENTS AND PIERS SHALL BE COATED WITH ASPHALTIC ASBESTOS COATING 1/32" THICK AS PER ITEM 407. THIS ITEM SHALL BE APPLIED AFTER ALL PAINTING AND INCIDENTAL ITEMS ARE COMPLETED.
9. UNLESS OTHERWISE DESIGNATED ALL EXPANSION MATERIAL SHALL NOT CONTAIN ASPHALT OR BITUMINOUS MATERIAL AND IT SHALL CONFORM WITH A.A.S.H.O. DESIGNATION: M153 TYPE II.
10. BORINGS INDICATED ON THE DRAWINGS HAVE BEEN MADE FOR DESIGN PURPOSES ONLY AND ARE NOT WARRANTED TO SHOW ACTUAL SUB-SURFACE CONDITIONS.
11. ALL PILING SHALL BE DRIVEN IN ACCORDANCE WITH SECTION 503.03 (C.6) STATE OF VERMONT, DEPARTMENT OF HIGHWAYS, STANDARD SPECIFICATIONS FOR HIGHWAY AND BRIDGE CONSTRUCTION APPROVED APRIL 1964, EXCEPT AS MODIFIED BY NOTES ON PROJECT PLANS.
12. ALLOWABLE DESIGN STRESSES:

    CONCRETE F'C= 3,000 P.S.I. FC= 1,200 P.S.I.
    STRUCTURAL STEEL FS= 20,000 P.S.I. (A36), OTHER STEELS AS PER A.A.S.H.O. SPECS.
    REINFORCING STEEL FS= 20,000 P.S.I. TENSION
    FS= 16,000 P.S.I. COMPRESSION

13. THE DIMENSIONS OF WELDED STRUCTURAL MEMBERS SHALL BE WITHIN THE LIMITS SET UP IN PAR. 407 DIMENSIONAL TOLERANCES A.W.S. D2.0-63 "SPECIFICATIONS FOR WELDED HIGHWAY AND RAILWAY BRIDGES."

REVISIONS AND CORRECTIONS
1- Note 13 Added WMS 3-29-65
2- Deleted Bituminous thickness and Item No. from General Note 5 RLD 6-14-65

DRAWN BY: WBT Jan 26 1965
TRACED BY: WBT Jan 26 1965
CHECKED BY: WMS Feb. 3 1965

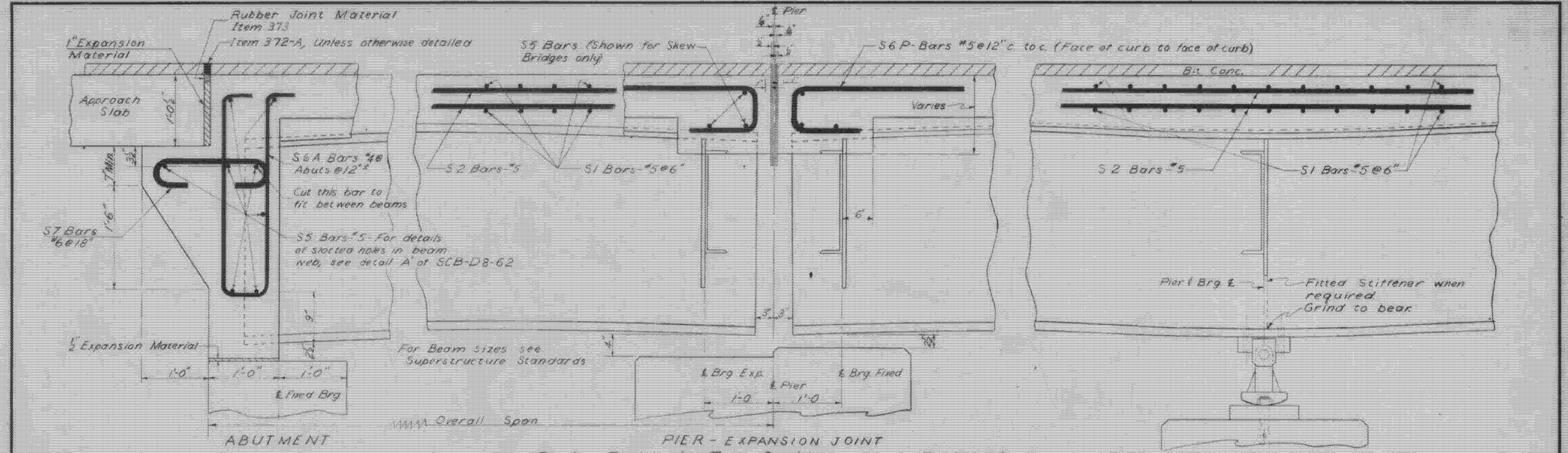
RECOMMENDED FOR APPROVAL: Ernest B. Howe, BRIDGE ENGINEER, 2/4/65 DATE
RECOMMENDED FOR APPROVAL: R. H. Arnold, ASSISTANT CHIEF ENGINEER, 2/4/65 DATE
APPROVED BY: A. D. Babcock, CHIEF ENGINEER, 2/4/65 DATE

# DETAILS OF WF BEAM BRIDGES
## GENERAL INFORMATION & GENERAL NOTES

VERMONT
DEPARTMENT OF HIGHWAYS
STRUCTURE STANDARDS

# SCB-DI-65

WESTMINSTER-NORWICH
IM BPNT (8)
SHEET 42 OF 58
FOR REFERENCE ONLY




REVISIONS & CORRECTIONS

Revised Joint Sealer Items 372 and 373. Changed S5 Bars in Portions Wall to S6A Bars. 4-21-63 JK

Drawn By: JK Date: Dec. 1, 1962
Traced By: JK Date: Dec. 1, 1962
Checked By: CEB VMS RSH Date: Dec. 1, 1962

Recommended _____ 12/7/62
For Approval Bridge Engineer Date

Recommended _____
For Approval Asst. Chief Engineer Date

Approved By _____
Chief Engineer Date

# DETAILS OF WF BEAM BRIDGES

(A) ELEVATION VIEWS
(B) SHEAR CONNECTOR DETAILS
(C) BEAM HAUNCH DETAIL

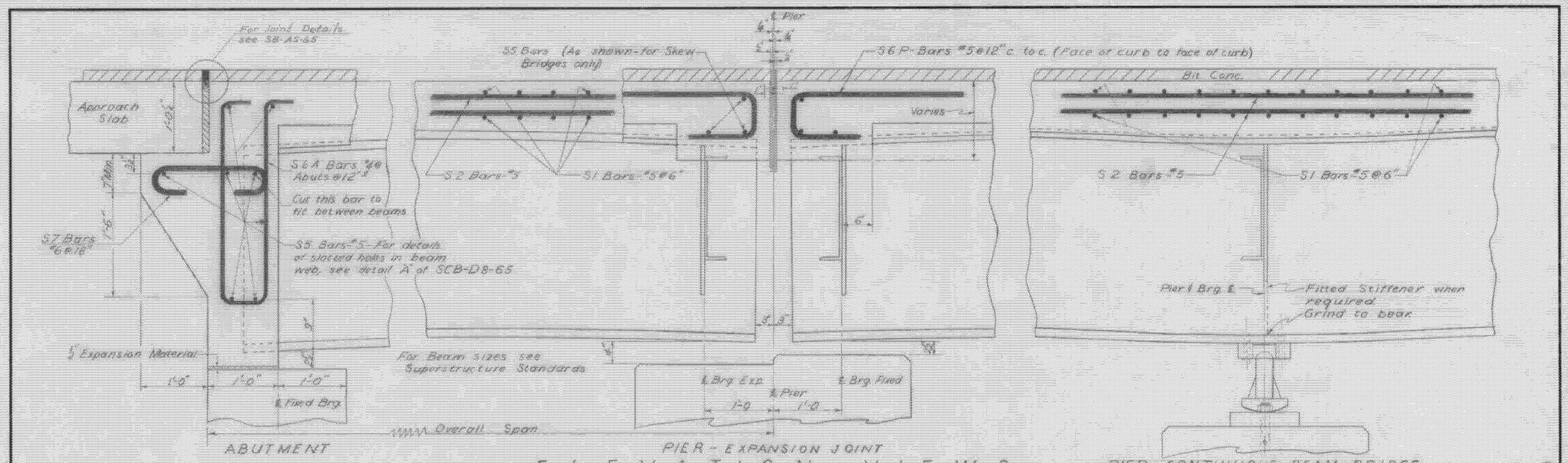
VERMONT
DEPARTMENT OF HIGHWAYS
STRUCTURE STANDARDS

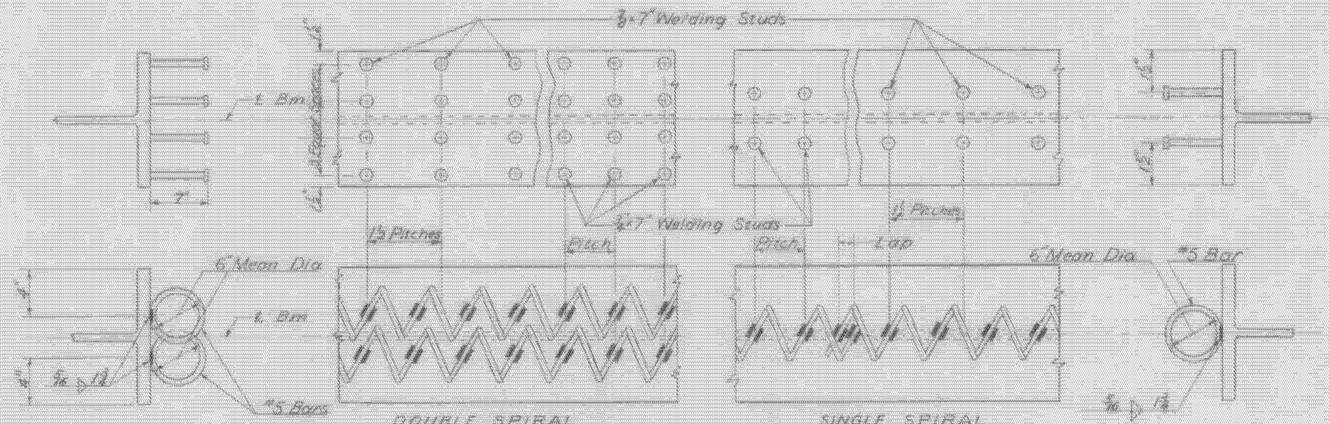
# SCB-D2-62

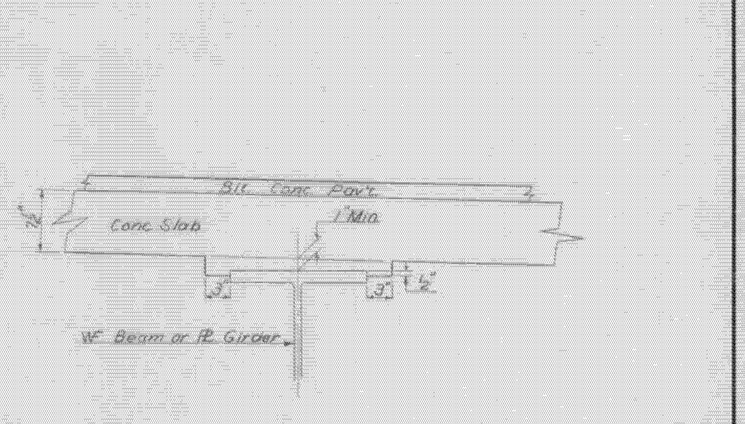
2½

WESTMINSTER-NORWICH
IM BPNT (8)
SHEET 43 OF 58

FOR REFERENCE ONLY




REVISIONS & CORRECTIONS

Drawn By: [illegible] Revised 10/1/65
Traced By: [illegible] Revised 10/1/65
Checked By: [illegible]

Recommended _____ Bridge Engineer _____ Date
Recommended _____ Asst. Chief Engineer _____ Date
Approved By _____ Chief Engineer _____ Date

# DETAILS OF WF BEAM BRIDGES

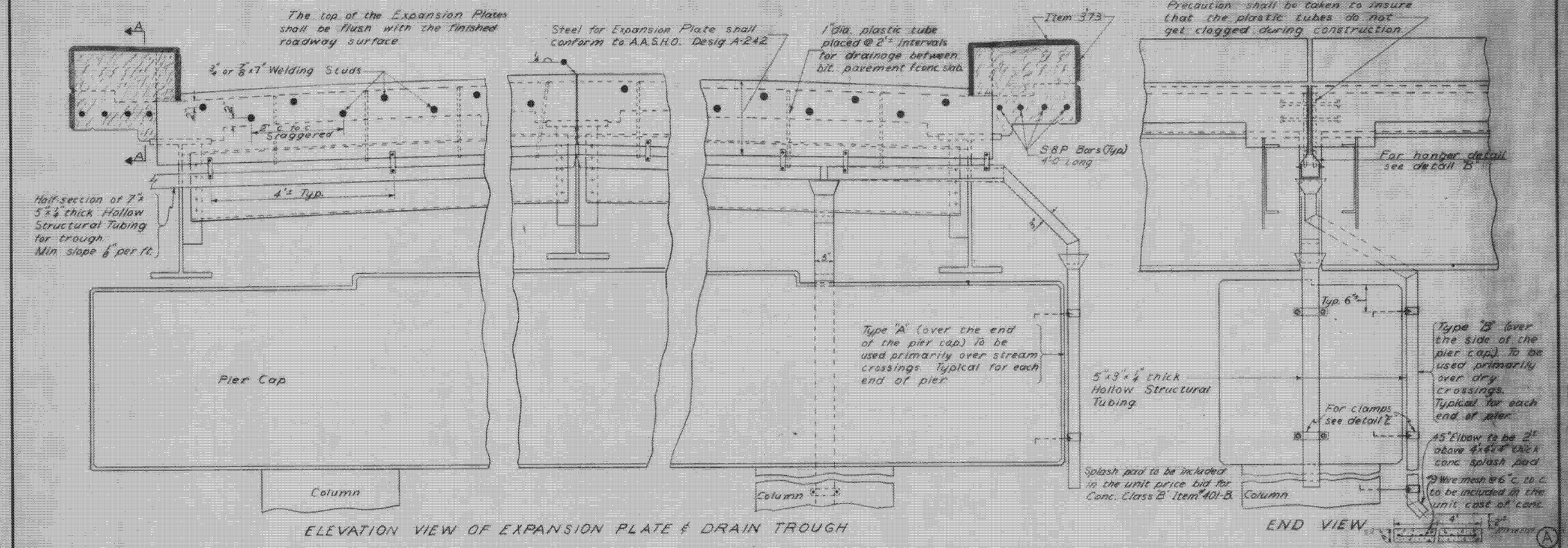
(A) ELEVATION VIEWS
(B) SHEAR CONNECTOR DETAILS
(C) BEAM HAUNCH DETAIL

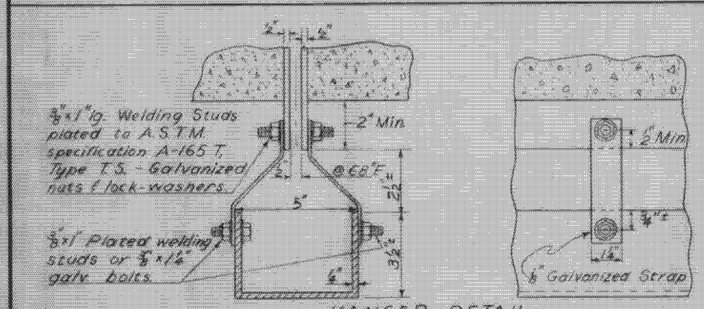
VERMONT
DEPARTMENT OF HIGHWAYS
STRUCTURE STANDARDS

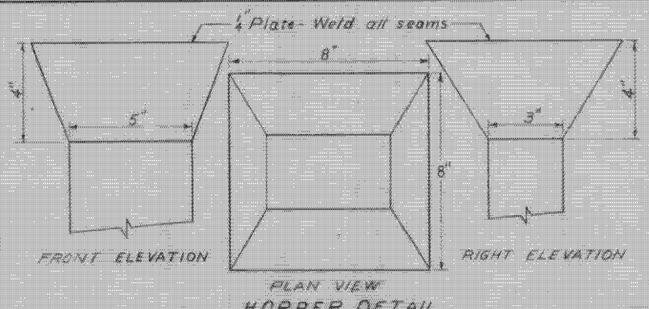
WESTMINSTER-NORWICH
IM BPNT (8)
SHEET 44 OF 58
FOR REFERENCE ONLY

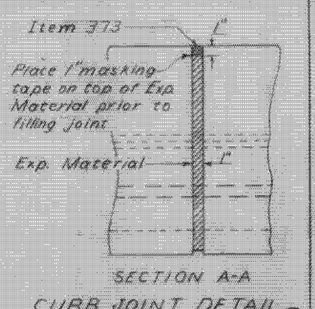
# SCB-D2-65

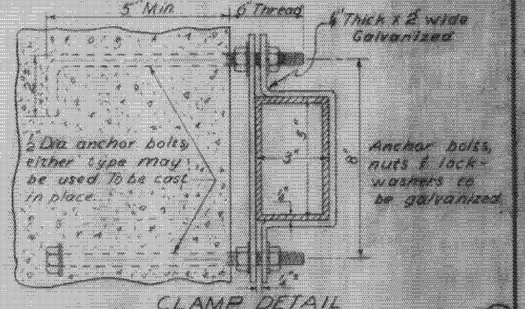
244




REVISIONS & CORRECTIONS

Revised Exp. & Material & Item 373. 6/21/63
Added dimension to S.B.P. Bars 10/16/63
Added 6" Thread See Clamp Detail 11/15/63

Drawn By: XX Date: Dec. / 1962
Traced By: XX Date: Dec. / 1962
Checked By: C.E.E. W.M.S. I.G.H. Date: Dec. / 1962

Recommended _____ 12/7/62
For Approval Bridge Engineer Date

Recommended _____ 11/16/63
For Approval Assist. Chief Engineer Date

Approved By _____ 11/19/63
Chief Engineer Date

# DETAIL OF WF BEAM BRIDGES
## PIER EXPANSION PLATES & DRAIN TROUGH DETAILS

VERMONT
DEPARTMENT OF HIGHWAYS
STRUCTURE STANDARDS

# SCB-D3-62

WESTMINSTER-NORWICH
IM BPNT (8)
SHEET 45 OF 58

FOR REFERENCE ONLY

The top of the Expansion Plates shall be flush with the finished roadway surface

Steel for Expansion Plate shall conform to A.S.T.M. Desig. A-242

1" dia. plastic tube placed @ 2'-0" intervals for drainage between bit. pavement & conc. slab

Item 312-C

Precaution shall be taken to insure that the plastic tubes do not get clogged during construction

3/4" or 7/8" x 7" Welding Studs

2" to 2½" Staggered

4'-0" Typ.

Half section of 7"x 5"x 1/4" thick Hollow Structural Tubing for trough Min. slope 1/8" per ft.

4 - 1" ϕ Rods (Typ.) 4'-0" long. Coat one end with suitable lubricant to prevent bond

For hanger detail see detail B

Pier Cap

Column

Type "A" (over the end of the pier cap) To be used primarily over stream crossings. Typical for each end of pier

5"x3"x 1/4" thick Hollow Structural Tubing

Payment for Splash Pad to be at the unit price bid for Conc. Class B Item 401-B

Typ. 6"

For clamps see detail E

Type "B" (over the side of the pier cap) To be used primarily over dry crossings. Typical for each end of pier

45° Elbow to be 2" above 4'-2"x4'-4" thick conc. splash pad

#9 Wire mesh @ 6" c. to c. to be included in the unit cost of conc.

ELEVATION VIEW OF EXPANSION PLATE & DRAIN TROUGH

END VIEW

A

3/8"x1" lg. Welding Studs plated to A.S.T.M. specification A-165 T. Type T.S. - Galvanized nuts & lock-washers.

2" Min.

@ 6½"

5"

3/8"x1" Plated welding studs or 3/8"x1¼" galv. bolts

½" Min.

½" Galvanized Strap

HANGER DETAIL

B

¼" Plate - Weld all seams

8"

5"

8"

FRONT ELEVATION

RIGHT ELEVATION

PLAN VIEW

HOPPER DETAIL

C

All joint materials and dimensions are to be as shown in Curb Joint Detail, Sh. SB-AS-65 or as detailed on plans.

SECTION A-A

CURB JOINT DETAIL

D

5" Min.

6 Threads

¼" Thick x 2" wide Galvanized

½" Dia. anchor bolts to be either cast in place as shown or expansion bolts approved by the Engineer

3"

Anchor bolts, nuts & lock-washers to be galvanized

CLAMP DETAIL

Clamps are to be spaced not greater than 8'-0" c.c.

E

REVISIONS & CORRECTIONS

Drawn By: [illegible] 12/1965 Assistant Highway Engineer

Traced By: [illegible] 12/1965 Assistant Highway Engineer

Checked By: [illegible] 12/1965 Bridge Standards Engineer

Recommended _____ Bridge Engineer _____ Date 2/4/65

For Approval _____ Assist. Chief Engineer _____ Date 2/10/65

Approved By _____ Chief Engineer _____ Date 2/10/65

# DETAIL OF WF BEAM BRIDGES
## PIER EXPANSION PLATES & DRAIN TROUGH DETAILS

VERMONT
DEPARTMENT OF HIGHWAYS
STRUCTURE STANDARDS

# SCB-D3-65

WESTMINSTER-NORWICH
IM BPNT (8)
SHEET 46 OF 58
FOR REFERENCE ONLY

DETAILS OF SCUPPER & CURB DETAILS (A)

DETAIL OF STEEL SHOE FOR TIMBER PILES (B)

DETAILS OF VERTICAL EXPANSION JOINTS (C)

DETAIL OF COPPER SUPPORT FOR EXPANSION MATERIAL (D)

DETAIL OF PILE SPLICE (E)

REVISIONS / CORRECTIONS

Designed By: W. Hendrickson
Drawn By: W. Hall
Checked By: C.D. Richardson
Recommended: Bridge Engineer
For Approval: Bridge Engineer
Approved: Director of Highways
For Approval: Chief, Civil Engineering
Approved By: [illegible]

# DETAILS OF W BEAM BRIDGES

(A) SCUPPER & CURB DETAILS
(B) RECONSTRUCTION DETAILS
(C) PILE DETAILS

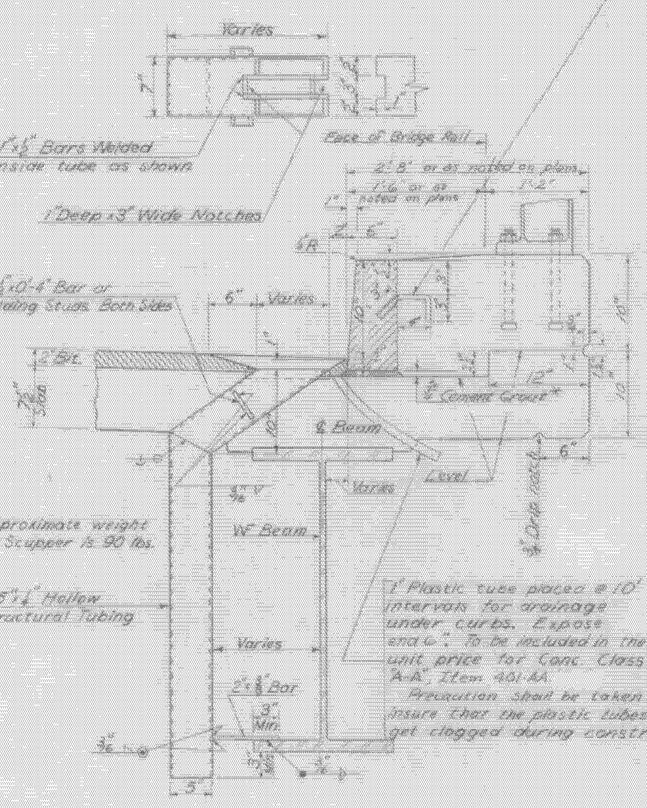
VERMONT
DEPARTMENT OF HIGHWAYS
STRUCTURE STANDARDS

SCB-D6-62

WESTMINSTER-NORWICH
IM BPNT (8)
SHEET 47 OF 58
FOR REFERENCE ONLY

*After aligning the curbs, both horizontally & vertically on steel wedges, cement grout shall be forced under the curbs completely filling all voids.

"d Bar - 2" from either end. (Two required for each curb section) Drilling & leading of bars to be paid for under the Unit Price bid for Item 556-C.

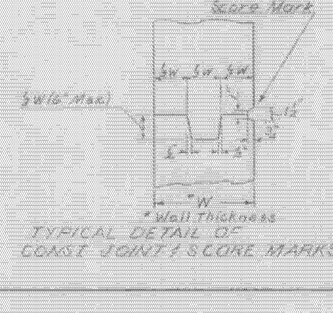



End scupper to be placed midway between ℄ of Brg & first diaphragm assembly. Intermediate scuppers to be placed midway between diaphragm assemblies.

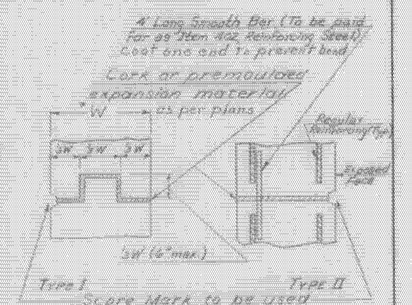
SCUPPER & CURB DETAILS (A)

Construction joints shall be placed as indicated on the plans.

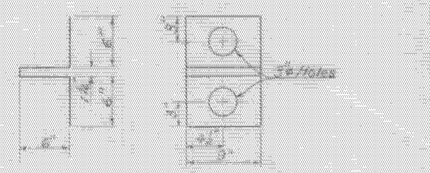
Horizontal score marks shall be placed as indicated on the plans or as directed by the Engineer.



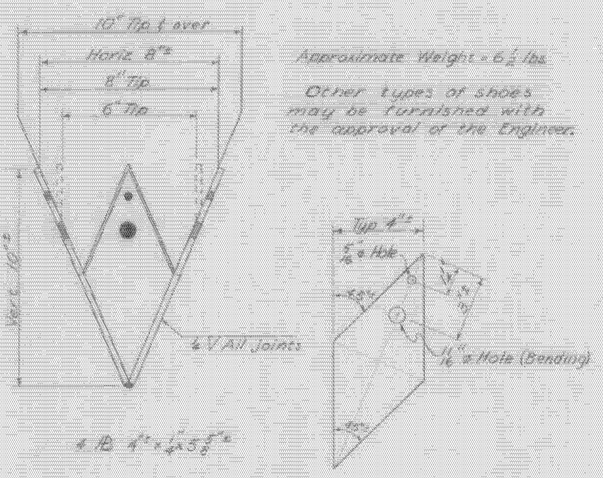

TYPICAL DETAIL OF CONST. JOINT & SCORE MARKS (B)



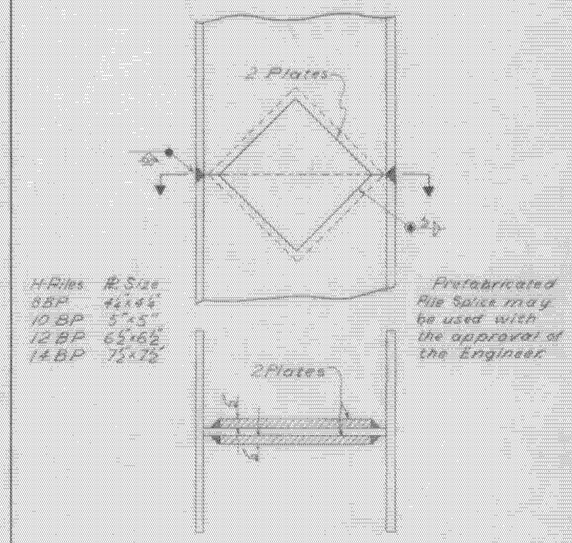

DETAILS OF VERTICAL EXPANSION JOINTS (C)




DETAIL OF COPPER SUPPORT FOR EXPANSION MATERIAL (D)




DETAIL OF STEEL SHOE FOR TIMBER PILES (E)




DETAIL OF PILE SPLICE (F)

REVISIONS & CORRECTIONS

Revised Curb Details 8-7-64

Drawn By: [illegible] 12/1/62 Revised 8/7/64
Traced By: [illegible] 12/1/62 Revised 8/7/64
Checked By: [illegible] 12/1/62 Revised 8/7/64
Recommended [signature] 2/4/65
For Approval Bridge Engineer Date
Recommended [signature]
For Approval Asst. Chief Engineer Date
Approved By [signature] 2/4/65
Chief Engineer Date

# DETAILS OF W BEAM BRIDGES

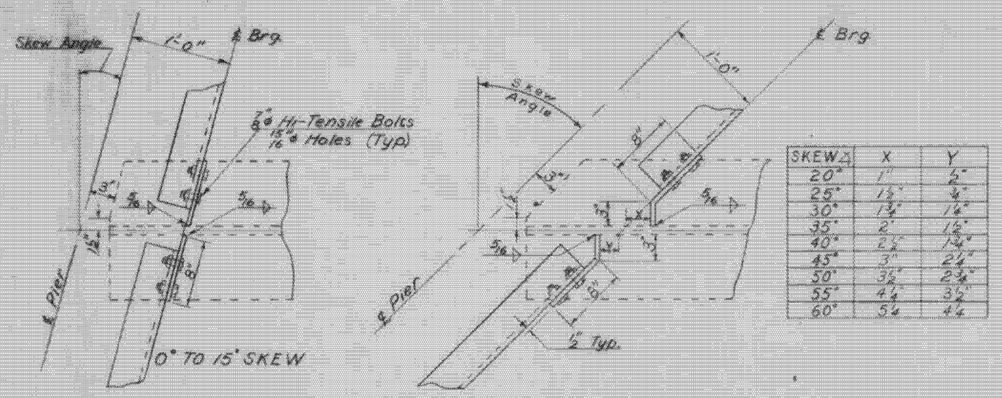
(A) SCUPPER & CURB DETAILS
(B)(C)(D) CONSTRUCTION DETAILS
(E)(F) PILE DETAILS

VERMONT
DEPARTMENT OF HIGHWAYS
STRUCTURE STANDARDS

WESTMINSTER-NORWICH
IM BPNT (8)
SHEET 48 OF 58
FOR REFERENCE ONLY

# SCB-D6-65

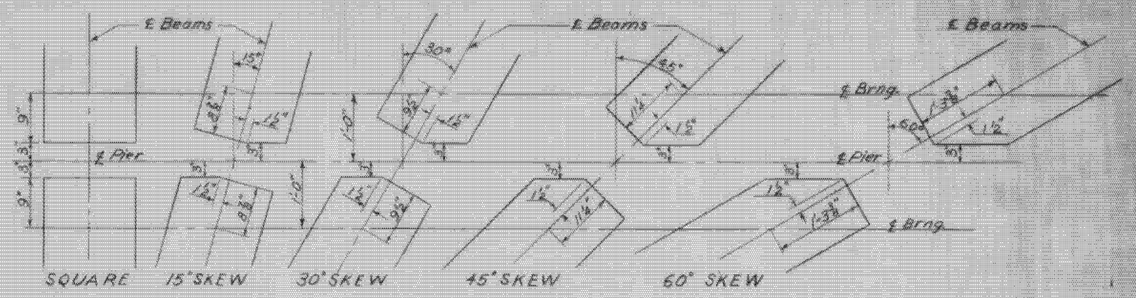
232




| SKEW ∠ | X | Y |
|---|---|---|
| 20° | 1" | ½" |
| 25° | 1½" | ¾" |
| 30° | 1¾" | 1" |
| 35° | 2" | 1¼" |
| 40° | 2¼" | 1¾" |
| 45° | 3" | 2¼" |
| 50° | 3½" | 2¾" |
| 55° | 4¼" | 3½" |
| 60° | 5¼ | 4¼ |

DETAILS OF PIER DIAPHRAGM CONNECTIONS

A

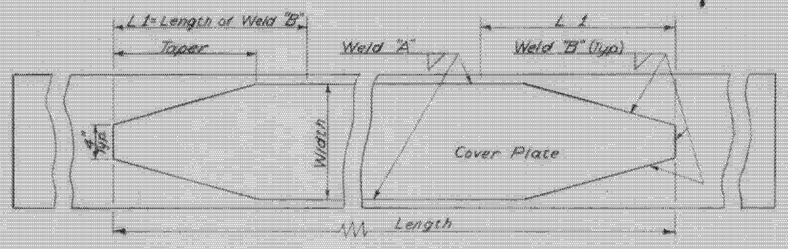



INTERIOR WF BEAM CUT-OFFS AT PIER

B

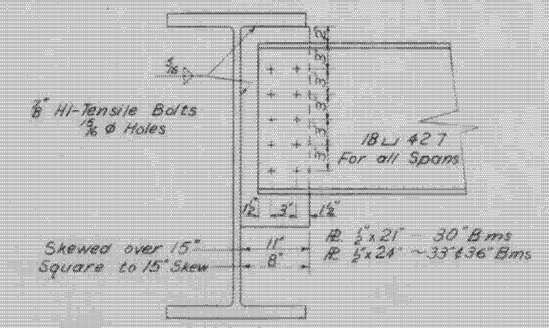
| Max. Design 7-6 Bm Spacing - SCB-24, 30, 38, 44-62 | | | | | | | |
|---|---|---|---|---|---|---|---|
| SPAN | COVER PL LENGTH | WIDTH | THICKNESS | TAPER | WELD "A" | WELD "B" | L 1 |
| 99'-0 | 66'-1 | 14" | 1½" | 1'-6 | ⅞" | ½" | 3'-5½ |
| 94'-0 | 65'-7 | 14" | 1½" | 1'-6 | ⅞ | ½ | 3'-5½ |
| 89'-0 | 59'-5 | 14" | 1½ | 1'-6 | ⅞ | ½ | 2'-10 |
| 84'-0 | 49'-5 | 14" | ⅞" | 1'-6 | 5/16 | ½ | 1'-11 |
| 79'-0 | 49'-10 | 10" | 1⅛" | 1'-0 | 5/16 | ½ | 2'-0 |
| 74'-0 | 47'-1 | 10" | 1⅛" | 1'-0 | 5/16 | ½ | 1'-9½ |
| 69'-0 | 45'-9 | 10" | 1" | 1'-0 | 5/16 | 5/16 | — |
| 64'-0 | 42'-5 | 10" | ⅞" | 1'-0 | 5/16 | 5/16 | — |
| 59'-0 | 31'-11 | 10" | ½" | 1'-0 | 5/16 | 5/16 | — |
| 54'-0 | 27'-1 | 8" | ½" | 1'-0 | 5/16 | 5/16 | — |

| Max. Design 7-0 Bm Spacing SCB - 42-62 | | | | | | | |
|---|---|---|---|---|---|---|---|
| COVER PL LENGTH | WIDTH | THICKNESS | TAPER | WELD "A" | WELD "B" | L 1 | |
| 67'-5 | 14" | 1½" | 1'-6 | ⅞ | ½ | 3'-5 | |
| 64'-7 | 14" | 1⅜" | 1'-6 | ⅞ | ½ | 3'-5½ | |
| 54'-9 | 14" | 1" | 1'-6 | 5/16 | ½ | 2'-3 | |
| 45'-1 | 14" | ⅝" | 1'-6 | 5/16 | 5/16 | — | |
| 46'-11 | 10" | 1⅛" | 1'-0 | 5/16 | ½ | 1'-9½ | |
| 48'-1 | 10" | 1" | 1'-0 | 5/16 | 5/16 | — | |
| 41'-3 | 10" | ¾" | 1'-0 | 5/16 | 5/16 | — | |
| 37'-8 | 10" | ⅝" | 1'-0 | 5/16 | 5/16 | — | |
| 29'-1 | 8" | ½" | 1'-0 | 5/16 | 5/16 | — | |
| 27'-1 | 8" | ½" | 1'-0 | 5/16 | 5/16 | — | |

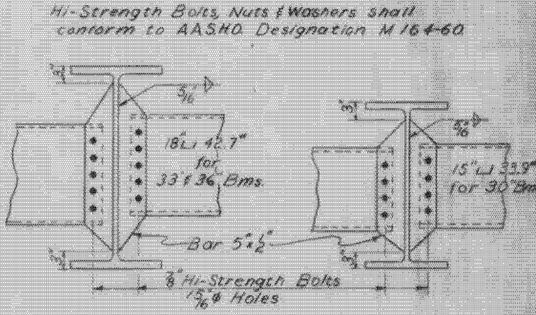



COVER PLATE DETAILS

C

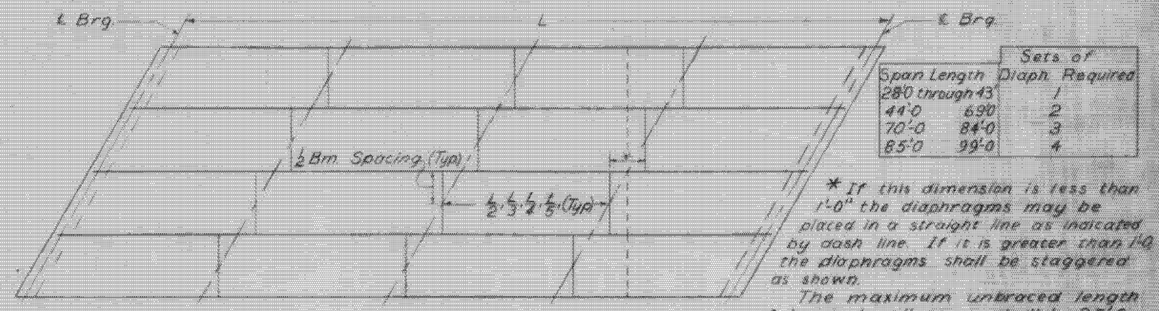



PIER DIAPHRAGMS




INTERMEDIATE DIAPHRAGMS

D




| Span Length | | Sets of Diaph. Required |
|---|---|---|
| 28'-0 through 43' | | 1 |
| 44'-0 | 69'-0 | 2 |
| 70'-0 | 84'-0 | 3 |
| 85'-0 | 99'-0 | 4 |

* If this dimension is less than 1'-0" the diaphragms may be placed in a straight line as indicated by dash line. If it is greater than 1'-0 the diaphragms shall be staggered as shown.

The maximum unbraced length of beam in all cases shall be 25'-0

DIAPHRAGM LOCATION PLAN

E

REVISIONS & CORRECTIONS
Added size of Diaphragms on Detail D 6/21/63 JK

Drawn By: JK Date: Dec. 1962
Traced By: JK Date: Dec. 1962
Checked By: EEB, WMS, RSH Date: Dec. 1962

Recommended _____ 12/1/62
For Approval Bridge Engineer Date

Recommended _____ 1/4/63
For Approval Assist. Chief Engineer Date

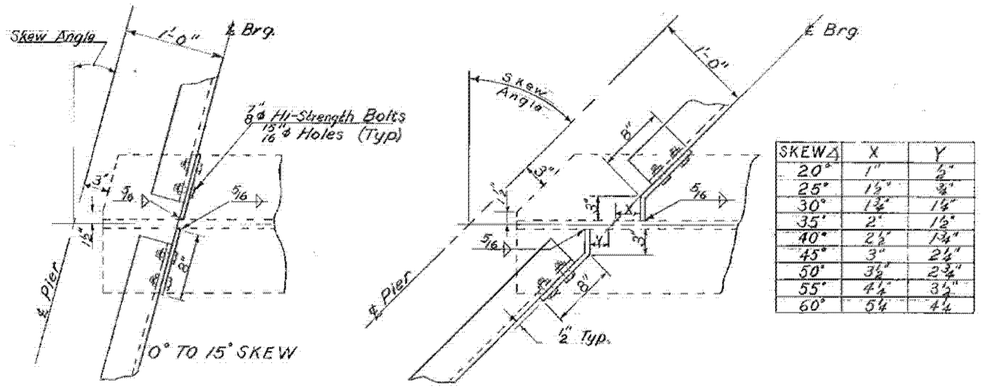
Approved By _____ 1/4/63
Chief Engineer Date

# DETAILS OF WF BEAM BRIDGES
## STRUCTURAL STEEL DETAILS
Ⓐ Ⓓ Ⓔ DIAPRAGM DETAILS
Ⓑ WF BEAM CUT-OFFS
Ⓒ COVER PLATE DETAILS

VERMONT
DEPARTMENT OF HIGHWAYS
STRUCTURE STANDARDS

# SCB-D 7-62

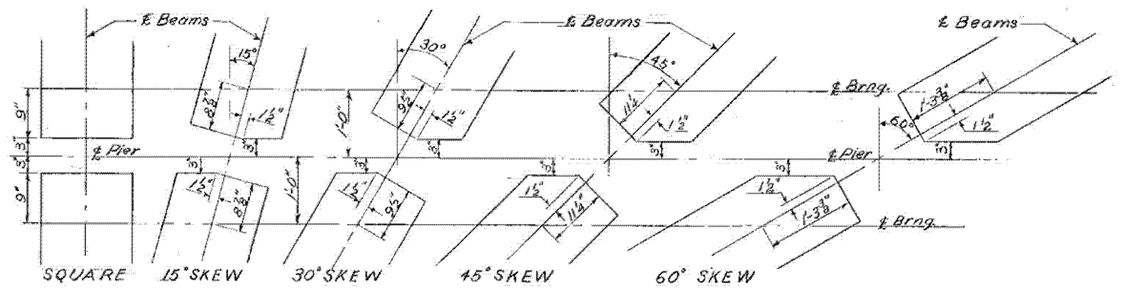
WESTMINSTER-NORWICH
IM BPNT (8)
SHEET 49 OF 58
FOR REFERENCE ONLY




| SKEW ∆ | X | Y |
|---|---|---|
| 20° | 1" | ½" |
| 25° | 1½" | ¾" |
| 30° | 1¾" | 1¼" |
| 35° | 2" | 1½" |
| 40° | 2½" | 1¾" |
| 45° | 3" | 2¼" |
| 50° | 3½" | 2¾" |
| 55° | 4¼" | 3½" |
| 60° | 5¼ | 4¼ |

DETAILS OF PIER DIAPHRAGM CONNECTIONS

(A)




INTERIOR WF BEAM CUT-OFFS AT PIER

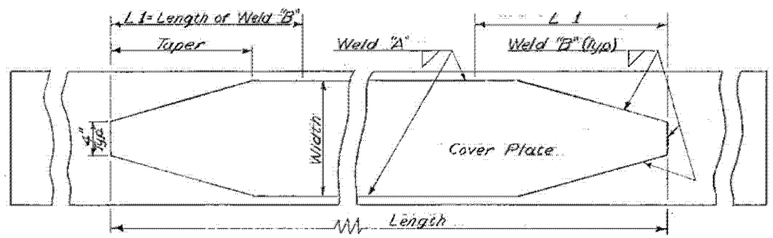
(B)

Max. Design 7'-6 Bm Spacing - S.C.B-24, 30, 3T25, 33, 44-65

| SPAN | Cover Pl. Length | Width | Thickness | Taper | Weld "A" | Weld "B" | L 1 |
|---|---|---|---|---|---|---|---|
| 99'-0 | 66'-1 | 14" | 1½" | 1'-6 | ⅜" | ½" | 3'-5½ |
| 94'-0 | 65'-7 | 14" | 1⅝" | 1'-6 | ⅜ | ½ | 3'-5½ |
| 89'-0 | 59'-5 | 14" | 1¼ | 1'-6 | 5/16 | ½ | 2'-10 |
| 84'-0 | 49'-5 | 14" | ⅞" | 1'-6 | 5/16 | ½ | 1'-11 |
| 79'-0 | 49'-10 | 10" | 1¼" | 1'-0 | 5/16 | ½ | 2'-0 |
| 74'-0 | 47'-1 | 10" | 1⅛" | 1'-0 | 5/16 | ½ | 1'-9½ |
| 69'-0 | 45'-9 | 10" | 1" | 1'-0 | 5/16 | 5/16 | — |
| 64'-0 | 42'-5 | 10" | ⅞" | 1'-0 | 5/16 | 5/16 | — |
| 59'-0 | 31'-11 | 10" | ½" | 1'-0 | 5/16 | 5/16 | — |
| 54'-0 | 27'-1 | 8" | ½" | 1'-0 | 5/16 | 5/16 | — |

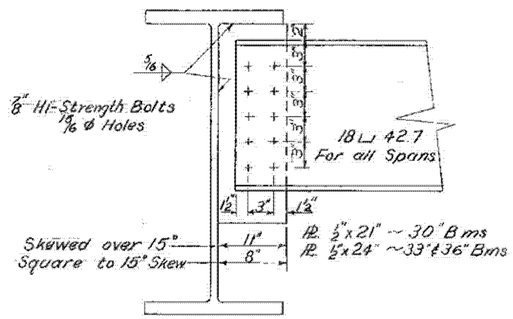
Max Design 7'-0 Bm Spacing S.C.B - 42-65

| Cover Pl. Length | Width | Thickness | Taper | Weld "A" | Weld "B" | L 1 |
|---|---|---|---|---|---|---|
| 67'-5 | 14" | 1½" | 1'-6 | ⅜ | ½ | 3'-5 |
| 64'-7 | 14" | 1⅜ | 1'-6 | ⅜ | ½ | 3'-5½ |
| 54'-9 | 14" | 1" | 1'-6 | 5/16 | ½ | 2'-3 |
| 45'-1 | 14" | ⅝" | 1'-6 | 5/16 | 5/16 | — |
| 48'-11 | 10" | 1⅜" | 1'-0 | 5/16 | ½ | 1'-9½ |
| 48'-1 | 10" | 1" | 1'-0 | 5/16 | 5/16 | — |
| 41'-3 | 10" | ⅞" | 1'-0 | 5/16 | 5/16 | — |
| 37'-8 | 10" | ⅝" | 1'-0 | 5/16 | 5/16 | — |
| 29'-1 | 8" | ½" | 1'-0 | 5/16 | 5/16 | — |
| 27'-1 | 8" | ½" | 1'-0 | 5/16 | 5/16 | — |



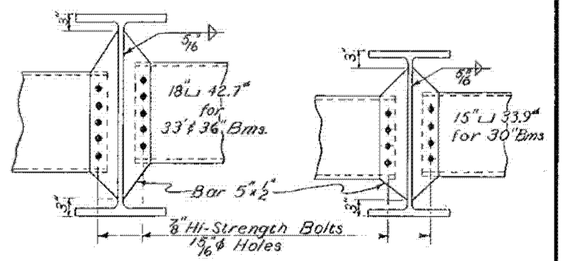

COVER PLATE DETAILS

(C)



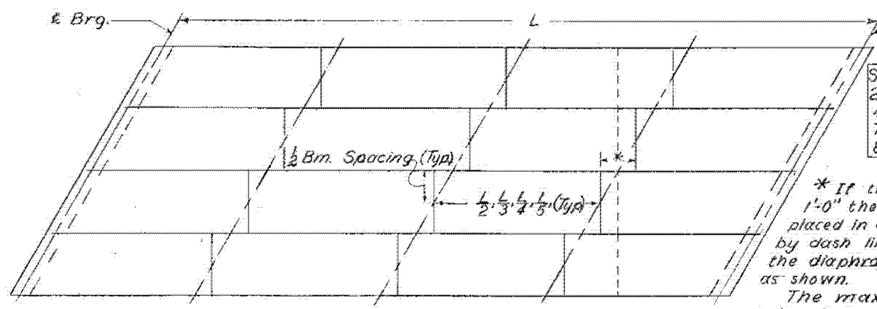

PIER DIAPHRAGMS

Hi-Strength Bolts, Nuts & Washers shall conform to A.A.S.H.O. Designation M 164-60




INTERMEDIATE DIAPHRAGMS

(D)




| Span Length | | Sets of Diaph. Required |
|---|---|---|
| 28'0 through 43' | | 1 |
| 44'0 | 69'0 | 2 |
| 70'-0 | 84'0 | 3 |
| 85'-0 | 99'0 | 4 |

* If this dimension is less than 1'-0" the diaphragms may be placed in a straight line as indicated by dash line. If it is greater than 1'0 the diaphragms shall be staggered as shown.

The maximum unbraced length of beam in all cases shall be 25'0

DIAPHRAGM LOCATION PLAN

(E)

REVISIONS & CORRECTIONS

Drawn By: W-12/1/62 Revised-WT-1/25/65
Traced By: W-12/1/62 Revised-WT-1/25/65
Checked By: EEB NMS, RSH-12/1/62 Rev NMS 1/25/65

Recommended: [signature] Bridge Engineer — 2/4/65 Date
For Approval
Recommended: [signature] Assist. Chief Engineer — 2/4/65 Date
For Approval
Approved By: [signature] Chief Engineer — 2/11/65 Date

# DETAILS OF WF BEAM BRIDGES

STRUCTURAL STEEL DETAILS

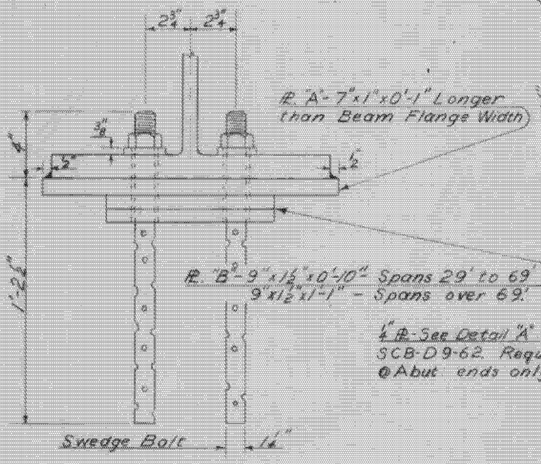
(A)(D)(E) DIAPHRAGM DETAILS
(B) WF BEAM CUT-OFFS
(C) COVER PLATE DETAILS

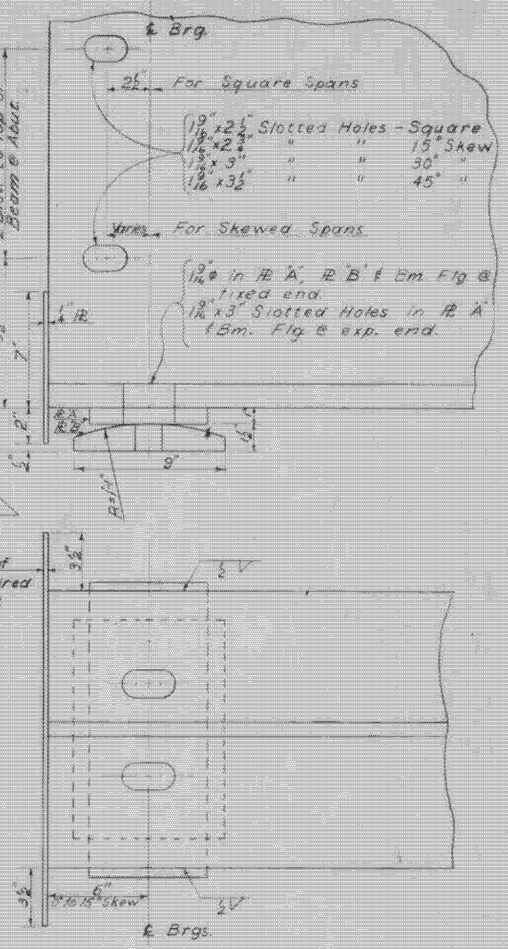
VERMONT
DEPARTMENT OF HIGHWAYS
STRUCTURE STANDARDS

WESTMINSTER-NORWICH
IM BPNT (8)
SHEET 50 OF 58
FOR REFERENCE ONLY

# SCB-D7-65

When bridge is on a grade exceeding 5%, plate "A" shall be beveled to fit, with a mean thickness of 1".




DETAIL FOR 0° TO 15° SKEW

Approx. Wgt. = 90 lbs.

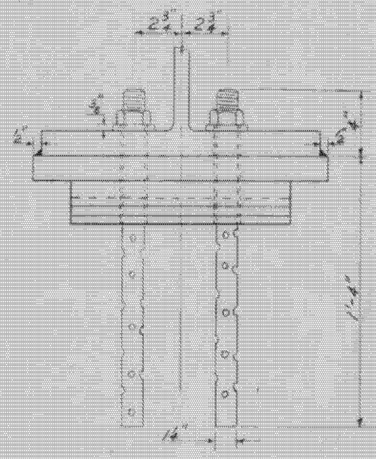
FIXED END BEARING DEVICE
USE FOR EXPANSION END ON SPANS UP TO AND INCLUDING 69'

(A)

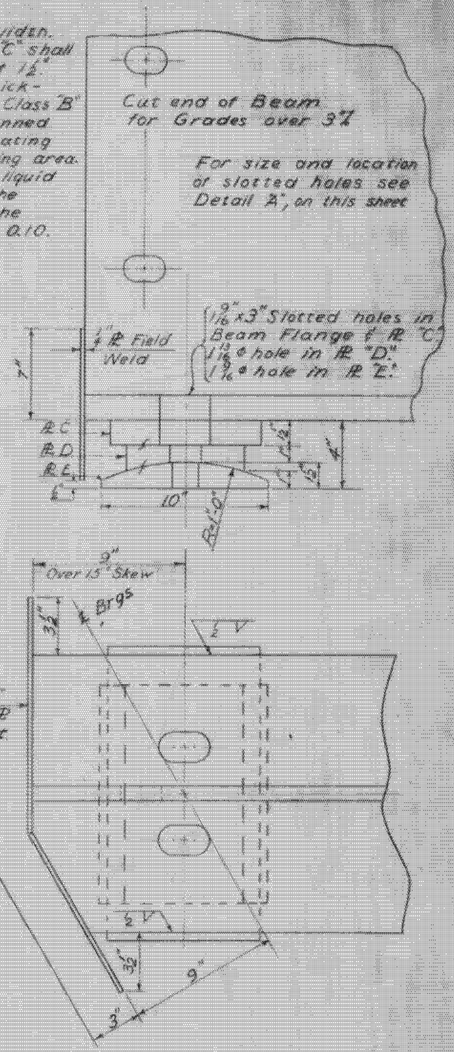
Plate "C"- 9"x1½"x1' longer than the beam flange width. When the bridge is on a grade exceeding 5%, plate "C" shall be beveled to fit the grade with a mean thickness of 1½".

Plate "D"- 7"x (outer edge thickness 1½", center thickness 1")x1'-1" To be Cast Bronze - A.S.T.M.-B 22-40T. Class "B" unless otherwise specified. This plate shall have trepanned recesses filled with a lubricating compound. The lubricating area shall comprise not less than 25% of the total bearing area. The manufacturer shall supply additional lubricant in liquid form with which the Contractor shall thoroughly coat the bearing surfaces that contact the lubricated portion of the bronze plate. The coefficient of friction shall not exceed 0.10.

Plate "E"- 10"x1½"x1'-1" Finish as indicated




Approx. Wgt. = 150 lbs.




EXPANSION END BEARING DEVICE
FOR SPANS OVER 69'

(B)

Attention is called to State of Vermont Department of Highways Standard Specifications for Highway and Bridge Construction, Item #404, paragraph 404.02(T) for bearing materials for Shoes and Pedestals.

REVISIONS & CORRECTIONS
Revised weight of Exp. Brg. Device to 150 Lbs. 6/21/63 JM

Drawn By: JM Date: Dec. 1962
Traced By: JM Date: Dec. 1962
Checked By: E.E.D. W.M.S. R.S.H. Date: Dec. 1962

Recommended For Approval — Bridge Engineer — Date 12/1962
Recommended For Approval — Asst. Chief Engineer — Date 1/31/63
Approved By — Chief Engineer — Date 1/4/63

# DETAILS OF WF BEAM BRIDGES
## BEARING DEVICES

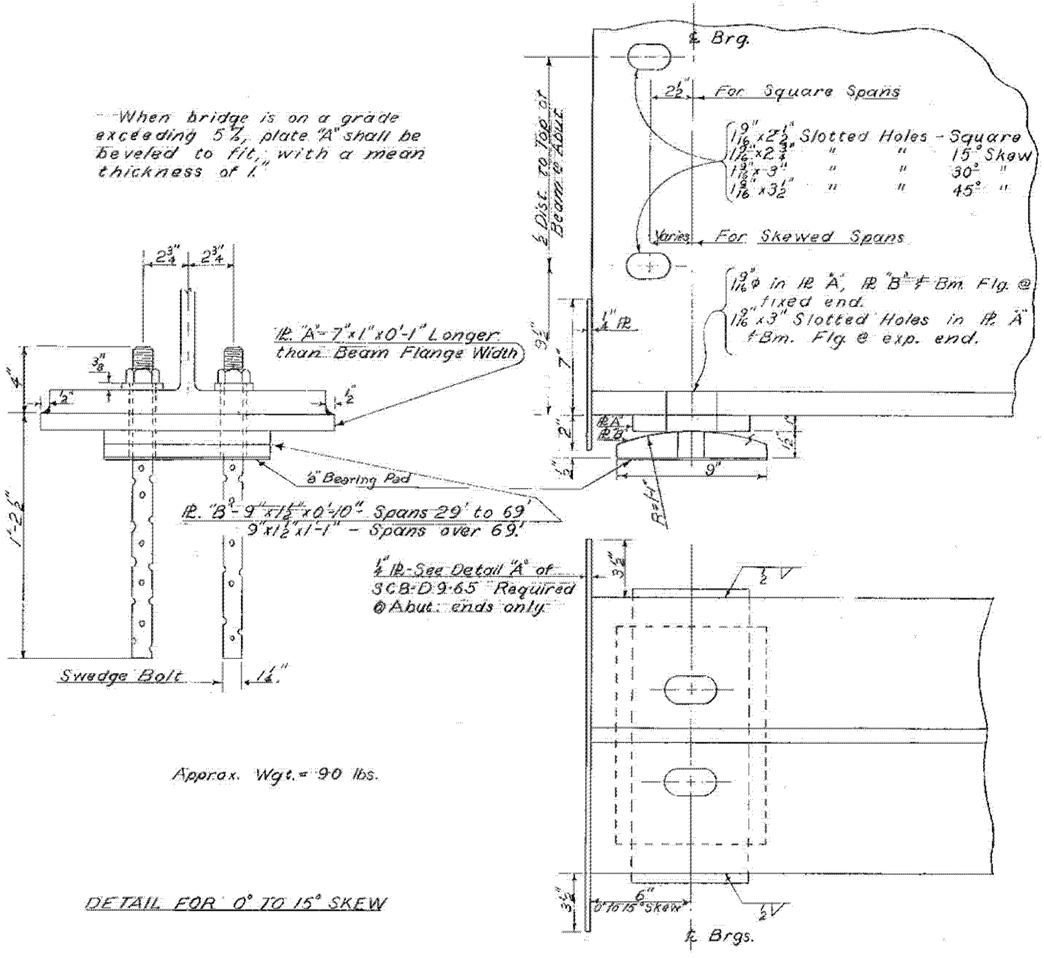
VERMONT
DEPARTMENT OF HIGHWAYS
STRUCTURE STANDARDS

# SCB-D8-62

WESTMINSTER-NORWICH
IM BPNT (8)
SHEET 51 OF 58

FOR REFERENCE ONLY

When bridge is on a grade exceeding 5%, plate "A" shall be beveled to fit, with a mean thickness of 1".




Approx. Wgt. = 90 lbs.

DETAIL FOR 0° TO 15° SKEW

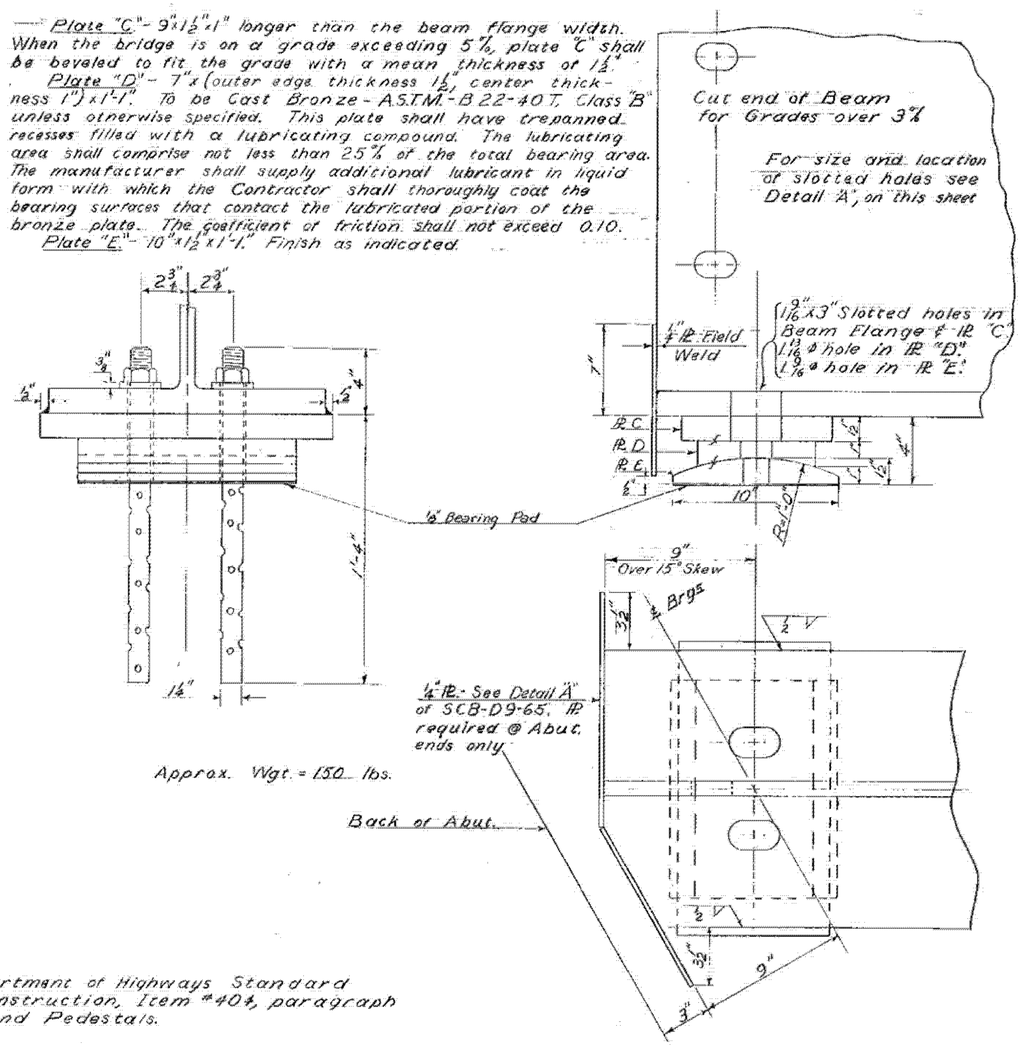
FIXED END BEARING DEVICE
USE FOR EXPANSION END ON SPANS UP TO AND INCLUDING 69'

Ⓐ

Plate "C" - 9"x1½"x1" longer than the beam flange width. When the bridge is on a grade exceeding 5%, plate "C" shall be beveled to fit the grade with a mean thickness of 1½".

Plate "D" - 7"x(outer edge thickness 1½", center thickness 1")x1'-1". To be Cast Bronze - A.S.T.M.-B 22-40 T. Class "B" unless otherwise specified. This plate shall have trepanned recesses filled with a lubricating compound. The lubricating area shall comprise not less than 25% of the total bearing area. The manufacturer shall supply additional lubricant in liquid form with which the Contractor shall thoroughly coat the bearing surfaces that contact the lubricated portion of the bronze plate. The coefficient of friction shall not exceed 0.10.

Plate "E" - 10"x1½"x1'-1". Finish as indicated.




Approx. Wgt. = 150 lbs.

EXPANSION END BEARING DEVICE
FOR SPANS OVER 69'

Ⓑ

Attention is called to State of Vermont Department of Highways Standard Specifications for Highway and Bridge Construction, Item #404, paragraph 404.02(23) for bearing materials for Shoes and Pedestals.

REVISIONS & CORRECTIONS

Drawn By: JK-12/14/62 Revised-WT-11/25/63
Traced By: JK-12/14/62 Revised-WT-11/25/63
Checked By: EFB-WMS, RSK-12/14/62 Rev-WMS-11/25/63
Recommended _____ 2/4/65
For Approval Bridge Engineer Date
Recommended _____ 2/4/65
For Approval Asst. Chief Engineer Date
Approved By _____ 2/4/65
Chief Engineer Date

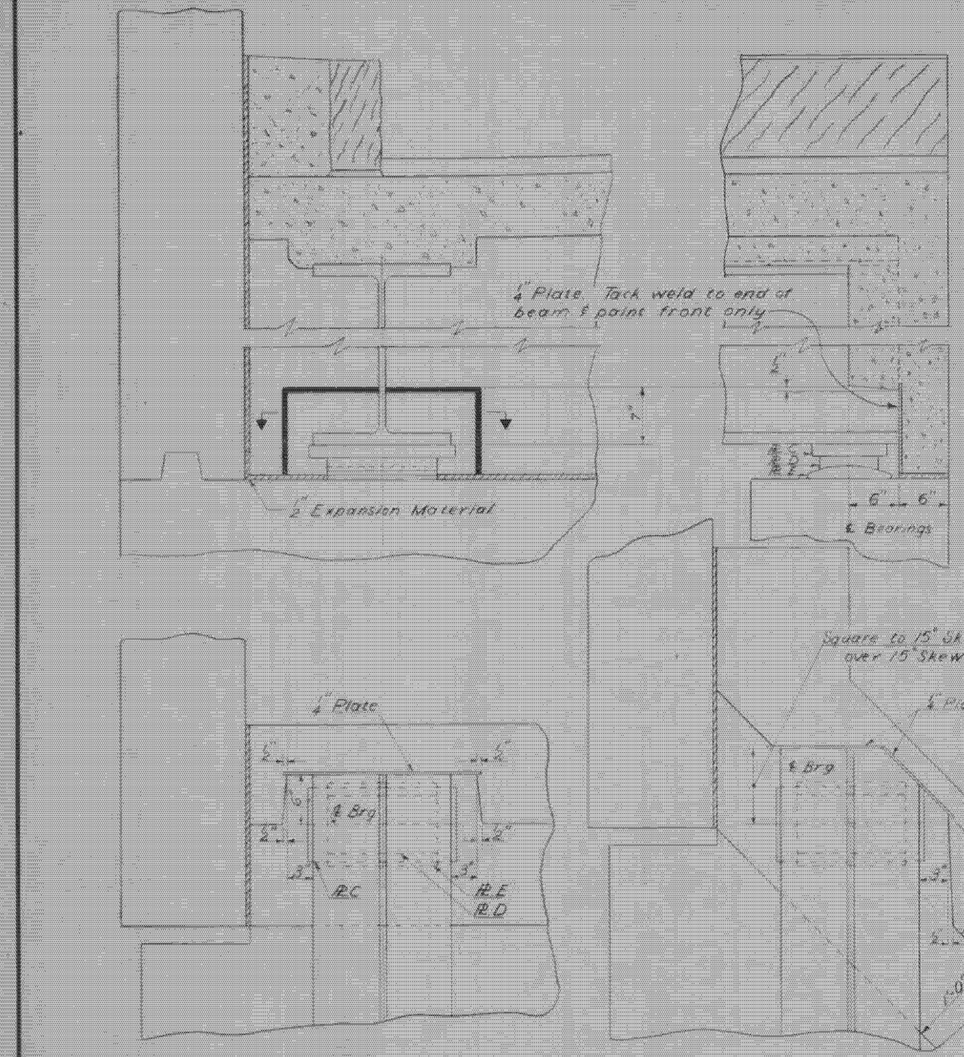
# DETAILS OF WF BEAM BRIDGES
## BEARING DEVICES

VERMONT
DEPARTMENT OF HIGHWAYS
STRUCTURE STANDARDS

WESTMINSTER-NORWICH
IM BPNT (8)
SHEET 52 OF 58
FOR REFERENCE ONLY

# SCB-D8-65

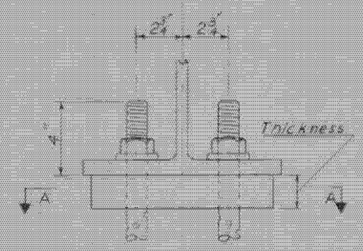
256




PLAN FOR SQUARE BRIDGES

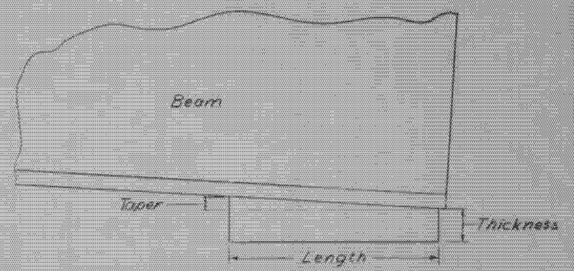
PLAN FOR SKEWED BRIDGES

(A)

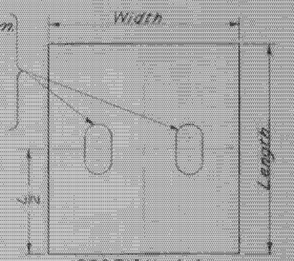



| SPAN | LENGTH | WIDTH | THICK-NESS | MAX. TAPER | Min. Brg AREA |
|---|---|---|---|---|---|
| 79' | 12" | 12" | 2" | 3/8" | 140 sq in |
| 74' | 11.5" | 12" | 2" | 3/16" | 134.5 sq in |
| 69' | 11.5" | 11.5" | 1 3/4" | 3/16" | 128.5 sq in |
| 64' | 11" | 11 1/2" | 1 3/4" | 1/4" | 123.5 sq in |
| 59' | 11" | 11" | 1 5/8" | 1/4" | 118.5 sq in |
| 54' | 10.5" | 11" | 1 5/8" | 1/4" | 114 sq in |
| 49' | 10.5" | 10.5" | 1 1/4" | 1/4" | 108.5 sq in |
| 44' | 10" | 10.5" | 1 1/8" | 1/4" | 105 sq in |
| 39' | 10" | 10" | 1" | 1/4" | 97 sq in |
| 34' | 9" | 10" | 1" | 1/4" | 89 |

All Elastomeric Bearing Pads shall conform to A.A.S.H.O. Specification 1.6.47 Expansion Bearings, or its latest revision.




13/16 x 3" Slotted holes in Bm. Flange & Brg. Pads at Expansion end.
13/16 ⌀ Holes in Bm Flange and Brg. Pads at fixed end.




SECTION - A-A

These details apply only to S.C.B. (24, 30, 38, 42, 44)-62
For additional details see SCB-D8-62

ELASTOMERIC BEARING PADS

(B)

REVISIONS & CORRECTIONS

Drawn By: K Date Dec. 1 1962
Traced By: K Date Dec. 1 1962
Checked By: L.E.P.H.M.S.R.S.H. Date Dec. 1 1962

Recommended _____ 12/21/62
For Approval Bridge Engineer Date

Recommended _____ 1/4/63
For Approval Assist. Chief Engineer Date

Approved By _____ 1/4/63
Chief Engineer Date

# DETAILS OF WF BEAM BRIDGES

(A) CURTAIN WALL AT BEARING DEVICES
(B) ELASTOMERIC BEARING PADS

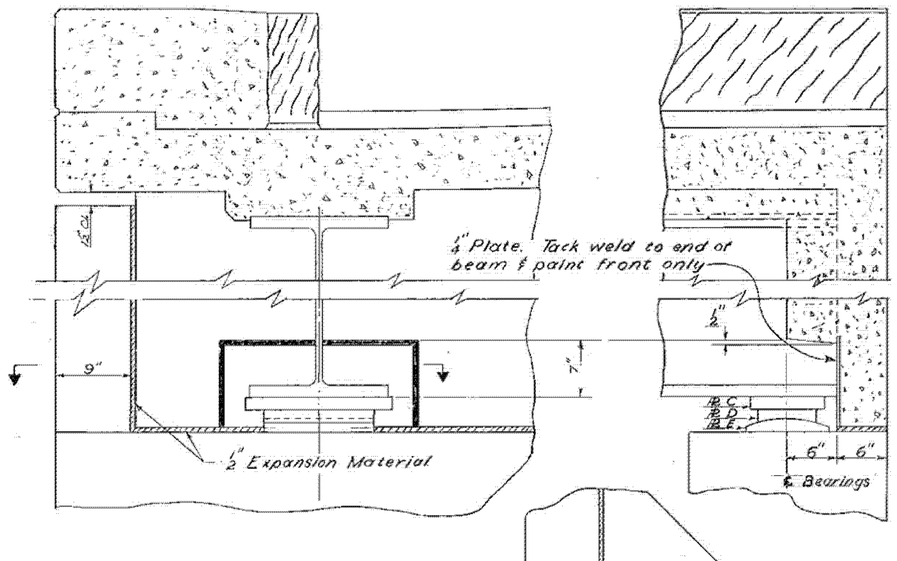
VERMONT
DEPARTMENT OF HIGHWAYS
STRUCTURE STANDARDS

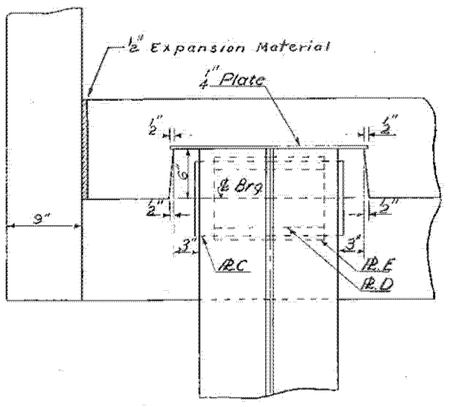
SCB-D9-62

257

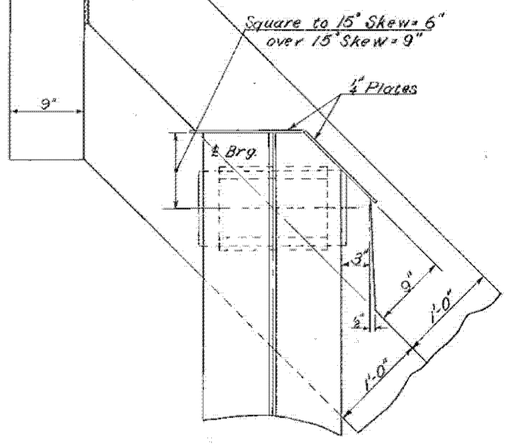
WESTMINSTER-NORWICH
IM BPNT (8)
SHEET 53 OF 58

FOR REFERENCE ONLY



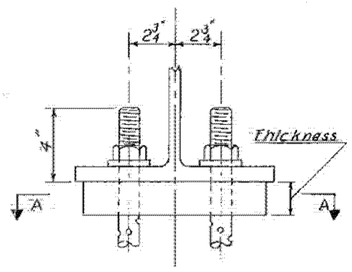




PLAN FOR SQUARE BRIDGES



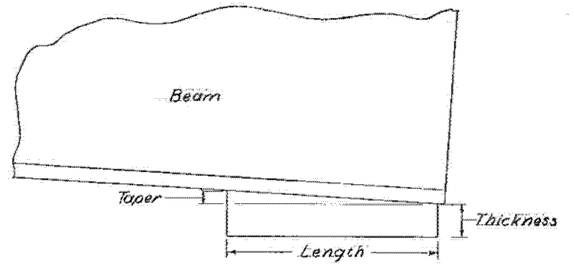

PLAN FOR SKEWED BRIDGES

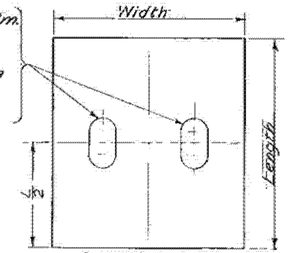
Ⓐ




| SPAN | LENGTH | WIDTH | THICK-NESS | MAX. TAPER | Min. Brg. AREA |
|---|---|---|---|---|---|
| 79' | 12" | 12" | 2" | 5/8" | 140 sq in |
| 74' | 11 1/2" | 12" | 2" | 3/8" | 134.5 sq in |
| 69' | 11 1/2" | 11 1/2" | 1 3/4" | 9/16" | 128.5 sq in |
| 64' | 11" | 11 1/2" | 1 3/4" | 1/2" | 123.5 sq in |
| 59' | 11" | 11" | 1 1/2" | 1/2" | 118.5 sq in |
| 54' | 10.5" | 11" | 1 1/2" | 1/2" | 114 sq in |
| 49' | 10.5" | 10.5" | 1 1/4" | 1/2" | 108.5 sq in |
| 44' | 10" | 10.5" | 1 1/8" | 1/2" | 105 sq in |
| 39' | 10" | 10" | 1" | 1/2" | 97 sq in |
| 34' | 9" | 10" | 1" | 1/2" | 89 |

All Elastomeric Bearing Pads shall conform to A.A.S.H.O. Specification 1.6.47, Expansion Bearings, or its latest revision.




1 9/16" x 3" Slotted holes in Bm. Flange & Brg. Pads at Expansion end.
1 9/16 ø Holes in Bm Flange and Brg. Pads at fixed end.

These details apply only to S.C.B. (24, 30, 37.25, 38, 42, 44)-65
For additional details see SCB-D 8-65

ELASTOMERIC BEARING PADS

Ⓑ

REVISIONS & CORRECTIONS

Drawn By: XX-12/1/62 Revised-WT-1/25/65
Traced By: XX-12/1/62 Revised-WT-1/25/65
Checked By: EFP WMS, RSH, 12/1/62 Rev. WMS 1/24/65
Recommended: [signature] 2/2/65
For Approval: Bridge Engineer Date
Recommended: [signature] 2/4/65
For Approval: Assist. Chief Engineer Date
Approved By: [signature] 2/4/65
Chief Engineer Date

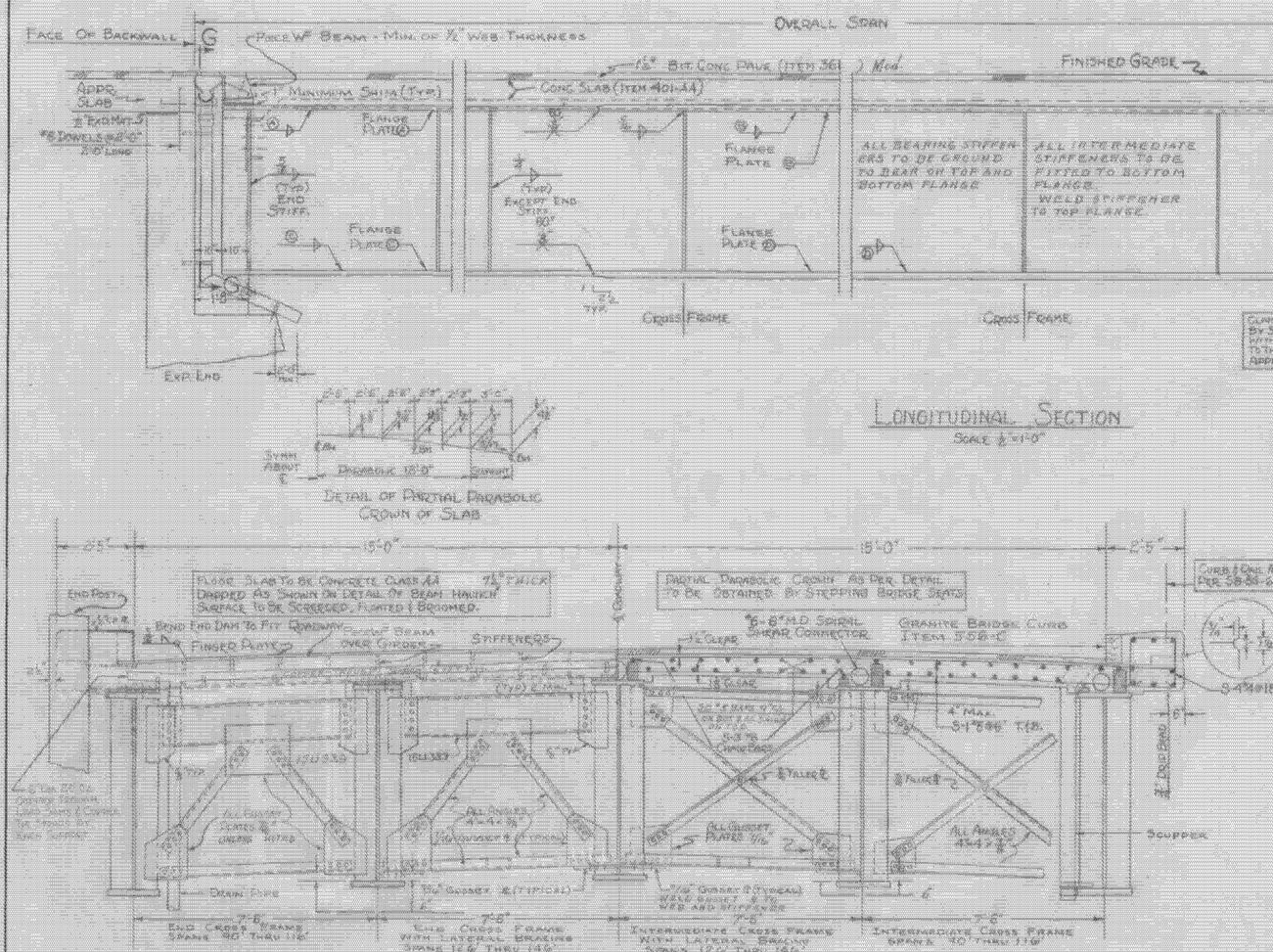
# DETAILS OF WF BEAM BRIDGES

Ⓐ CURTAIN WALL AT BEARING DEVICES
Ⓑ ELASTOMERIC BEARING PADS

VERMONT
DEPARTMENT OF HIGHWAYS
STRUCTURE STANDARDS

WESTMINSTER-NORWICH
IM BPNT (8)
SHEET 54 OF 58
FOR REFERENCE ONLY

# SCB-D9-65




LONGITUDINAL SECTION
Scale 1/4"=1'-0"




Detail of Partial Parabolic Crown of Slab

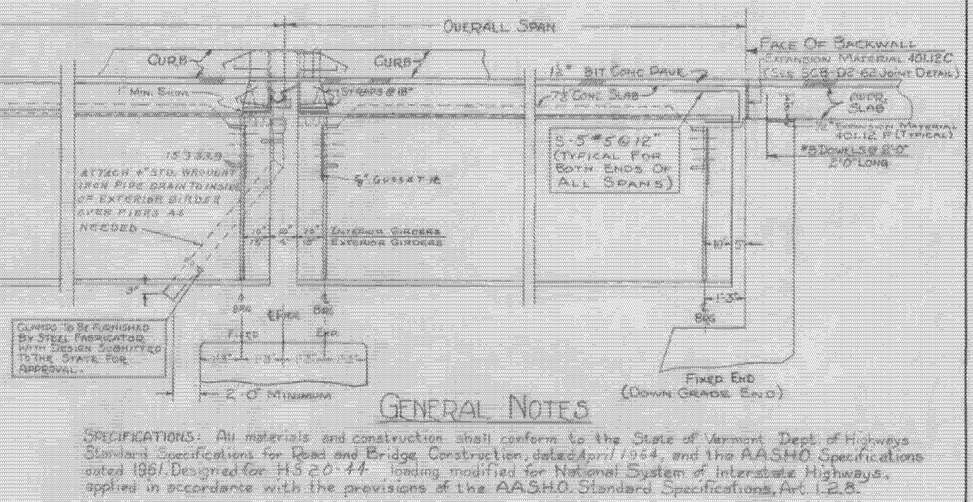



END SECTION G-G

TYPICAL SECTION
Scale 1/2"=1'-0"

Notes:
See SCB-D2-62 SCB Detail For Detail Of Beam Haunch, Joint Detail, Scupper Detail, Adjacent Cross Frames May Be Sloped Equally Or Placed Horizontal To Facilitate Fabrication. All End Connections Of Angles Shall Be Made With 3(Three) Rivets Or 3 High Strength Bolts (Minimum).

Allowable Design Stresses:
Concrete f'c = 3000 P.S.I. fc = 1200 P.S.I.
Structural Steel fs = 20,000 P.S.I. (A-36)
Other steel as per AASHO Specifications
Reinforcing Steel fs = 24,000 P.S.I. Tension
fs = 16,000 P.S.I. Compression




## GENERAL NOTES

SPECIFICATIONS: All materials and construction shall conform to the State of Vermont Dept. of Highways Standard Specifications for Road and Bridge Construction, dated April 1964, and the AASHO Specifications dated 1961. Designed for H S 20-44 loading modified for National System of Interstate Highways, applied in accordance with the provisions of the AASHO Standard Specifications, Art. 1.2.8.

STRUCTURAL STEEL: The steel shall conform to A.S.T.M. A 36-62T. Field splices will only be permitted provided that the length of girder is too excessive for shipment. Field splices are to be made with High Strength Bolts and details are to be submitted to the State for approval. Girders shall be cambered for dead load deflection plus ½", plus allowance for effect of vertical curvature. Loss of camber due to shrinkage shall be compensated for by additional camber to be determined by the fabricator.
The maximum allowable stiffener spacing is given in the accompanying table. Spacing shall be modified on skewed spans to match lateral bracing and or cross frames.
Unless otherwise noted: open holes are 7/8", all bolts are 7/8" ϕ
For location of fixed and expansion bearings see contract plans.
Expansion bearing rockers are to be plumb at 45°F.

One Scupper is to be placed midway between each cross frame @ both curbs except as follows:
Scuppers are to be omitted over roadways or sidewalks under a bridge and placed at least 2'0" outside of shoulder point or edge of sidewalk, but not within 4'0" of face of abutment or pier.
On a banked bridge, scuppers are to be placed on the lower side only.
Details of shear connectors shall be submitted to the State for approval. Either channel or stud shear connectors may be substituted for the designed spiral connectors.

WELDING: The metal arc process shall be used for shop and field fabrication. Fillet welds ¼" unless otherwise noted. It is the intent that there shall be no field welding. Field welding of a minor nature will be permitted only with written permission of the Field Engineer.

PAINT: The final coat of field paint shall be green, unless otherwise directed by the Engineer.

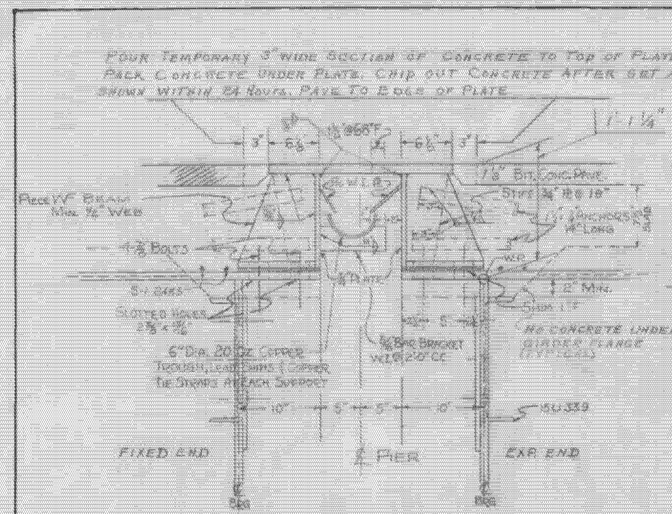
CONCRETE: All concrete in slab to be Concrete Class AA. Exposed edges of concrete to be chamfered 1". All construction joints to be made as on Standard Structures Drawing SCB D6-62 details (A) & (C) unless otherwise noted.

REINFORCING STEEL: When bridge is on a skew, transverse bars shall be furnished as for a square span. Bars shall be cut in field to fit skew end and cut-offs shall be used on opposite skew end.

QUANTITIES: Quantities given in the accompanying table are for a square single span bridge.

| Revisions & Corrections | Drawn By: RND-WMS | Details of 30 ft. Roadway-Composite Welded Plate Girder Bridges | Department of Highways Standard Structures |
|---|---|---|---|
| Specifications changed to April 1964. Wind Loading designated as H S 20-44 this was. Allowable Design Stresses added. This was. | Traced By: RSH-RND<br>Checked By: WMS-JJH-EFB<br>Correct Dec 31 1962 Bridge Engineer<br>Approved Dec 30 1962 Chief Engineer | | SCWPG-30-62<br>1 of 4 |

WESTMINSTER-NORWICH
IM BPNT (8)
SHEET 55 OF 58
FOR REFERENCE ONLY




Revisions & Corrections

Revised Joint At Edges Of Finger Plates & Other Details To Conform To AASHO Specs. 3/1/60 WMS

Bearings Revised 3/1/60 WMS

Drawn By: RND

Traced By: RND - WMS

Checked By: WMS - JLH - EFP

Correct — Dec 30, 1960 — Bridge Engineer

Approved Dec 30, 1960 — Chief Engineer

# Girder End Details - Composite Welded Plate Girder Bridges

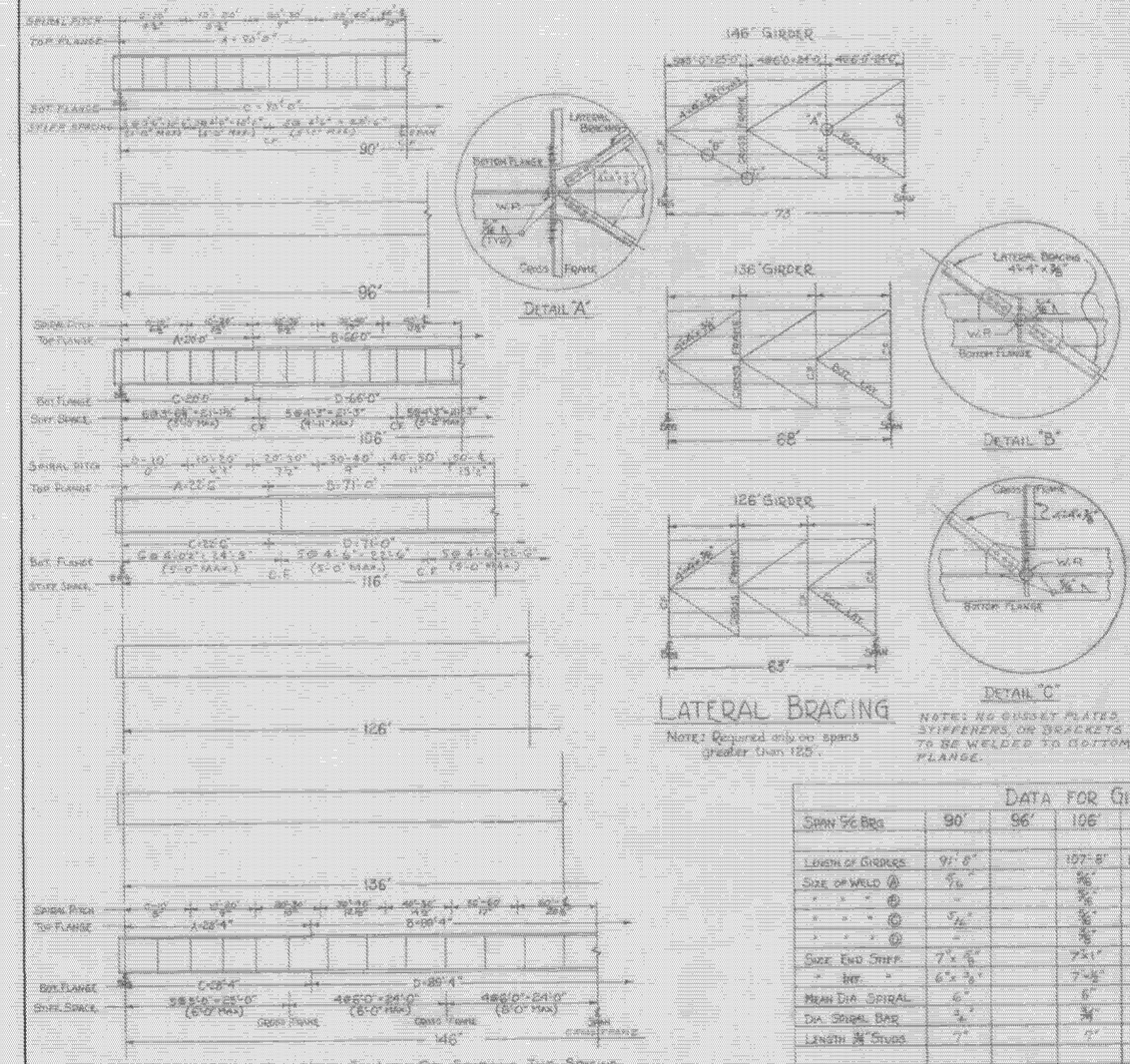
Department of Highways Standard Structures

WESTMINSTER-NORWICH IM BPNT (8) SHEET 56 OF 58 FOR REFERENCE ONLY

SCWPG-30-62

2 of 4

211




## Structural Steel

| Span | Univ. Mill Plates A | B | C | D | Web | D.L. Defl. d | 3/4 d | Depth H | Stiffs | Square Span Net Wgt. lbs | Max. Moments D.L. | S.D.L. (N=20) | L.L.+I. | Moment of Inertia (Max) D.L. (n=30) | S.D.L. (n=10) | L.L.+I. | Dead Load Plus Live Load Max. Reaction (Kips) G=(L+I) Girder* | Abut | Pier** | Span |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 90 | 16"x¾" | " | 16"x⅞" | " | 60"x⅜" | 1⅞" | 1⅜" | 7'-4⅝" | 8 | 117,800 | 1823 | 344 | 1132 | 38,840 | 87,170 | 93,830 | 116 | 438 | 557 | 90 |
| 96 | | | | | | | | | | | | | | | | | | | | 96 |
| 106 | 16"x⅞" | 16"x⅝" | 16"x1⅛" | 16"x1⅜" | 62"x⅜" | 2⅜" | 1⅝" | 7'-5⅞" | 10 | 157,900 | 1473 | 478 | 1353 | 58,080 | 83,970 | 117,860 | 129 | 505 | 838 | 106 |
| 116 | 18"x⅞" | 18"x⅝" | 18"x1⅜" | 18"x1⅝" | 64"x⅝" | 3" | 2¼" | 7'-7⅝" | 10 | 176,300 | 1766 | 511 | 1494 | 56,510 | 91,760 | 128,480 | 134 | 530 | 990 | 116 |
| 126 | | | | | | | | | | | | | | | | | | | | 126 |
| 136 | | | | | | | | | | | | | | | | | | | | 136 |
| 146 | 20"x1" | 20"x1⅛" | 20"x⅞" | 20"x2" | 84"x⅝" | 3⅜" | 2⅝" | 9'-4⅝" | 12 | 326,770 | 3197 | 906 | 2100 | 140040 | 195,390 | 263,720 | 173 | 918 | 1381 | 146 |

* Includes Impact  ** Two Equal Spans  + Exclusive of Expansion Dams & Drains

Notes: The "H Depth" Indicated Above Is From Finish Grade To Bridge Seat Elevation.
All Above Information Computed For Interior Girders Assuming Any Dead Load Applied After The Slab Has Cured To Be Equally Distributed Over All Girders. Interior & Exterior Girders To Be Same Steel Section.

## Roadway Cross Section (Square Span)

## Bill of Materials

| Span c/c Bearings | S-1 #5 No. | Lgth. | S-2 #5 No. | Lgth. | S-3 #8 No. | Lgth. | S-4 #4 No. | Lgth. | S-5 #5 No. | Lgth. | Estimated Quantities: Conc. CY | Reinf. St. lbs | Bit. Conc. Tons | Spiral Bars lbs | Granite C.B. L.F. | Diagram: Dimensions are Out to Out |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 90 | 340 | 34'-9" | 320 | 31'-3" | 40 | 26'-7" | 130 | 5'-5" | 60 | 4'-2" | | | | | | S-4 #4 |
| 96 | | do | | do | | do | | do | | do | | | | | | |
| 106 | 430 | do | 300 | 28'-3" | 40 | 26'-9" | 146 | do | | do | | | | | | S-5 #5 |
| 118 | 470 | do | 410 | 25'-3" | 50 | 25'-6" | 158 | do | | do | | | | | | |
| 126 | | do | | | | | | do | | do | | | | | | |
| 136 | | do | | | | | | do | | do | | | | | | |
| 146 | 590 | do | 450 | 26'-3" | 60 | 26'-8" | 196 | do | | do | | | | | | |

## Data for Girders (Square Span)

| Span c/c Brg. | 90' | 96' | 106' | 116' | 126' | 136' | 146' |
|---|---|---|---|---|---|---|---|
| Length of Girders | 91'-8" | | 107'-8" | 117'-8" | | | 147'-8" |
| Size of Weld (A) | 5/16" | | 3/8" | 7/16" | | | 5/16" |
| " " " (B) | " | | 3/8" | 5/16" | | | 3/8" |
| " " " (C) | 5/16" | | 3/8" | 3/8" | | | 3/8" |
| " " " (D) | " | | 3/8" | 3/8" | | | 3/8" |
| Size End Stiff. | 7"x⅜" | | 7"x1" | 8"x⅜" | | | 9"x1" |
| " Int. " | 6"x⅜" | | 7"x⅜" | 7"x½" | | | 9"x⅜" |
| Mean Dia. Spiral | 6" | | 6" | 6" | | | 6" |
| Dia. Spiral Bar | ⅜" | | ⅜" | ⅜" | | | ⅜" |
| Length ¾" Studs | 7" | | 7" | 7" | | | 7" |

Lateral Bracing

Note: Required only on spans greater than 125'.

Camber Diagram

4 Equal Spaces = Span

Section of Spiral Welding

Plan of Spiral Welding

If Welded Studs Are Used In Lieu Of Spirals The Spacing (Pitch) Of 2 (Two) ¾" Studs Shall Be 95% Of The Pitch Indicated For The Above Spiral Spacing.

Revisions & Corrections
Corrected Depth "H" for 106' & 146' Spans. 2/15/64 WS
Corrected Camber Diagram 2/15/64 WS

Drawn By: RND
Traced By: RND-WMS
Checked By: WMS-JLH-EFP
Correct Dec. 30, 1960 — Bridge Engineer
Approved Dec. 30 1960 — Chief Engineer

# Girder Details and Quantities - Composite Welded Plate Girder Bridges

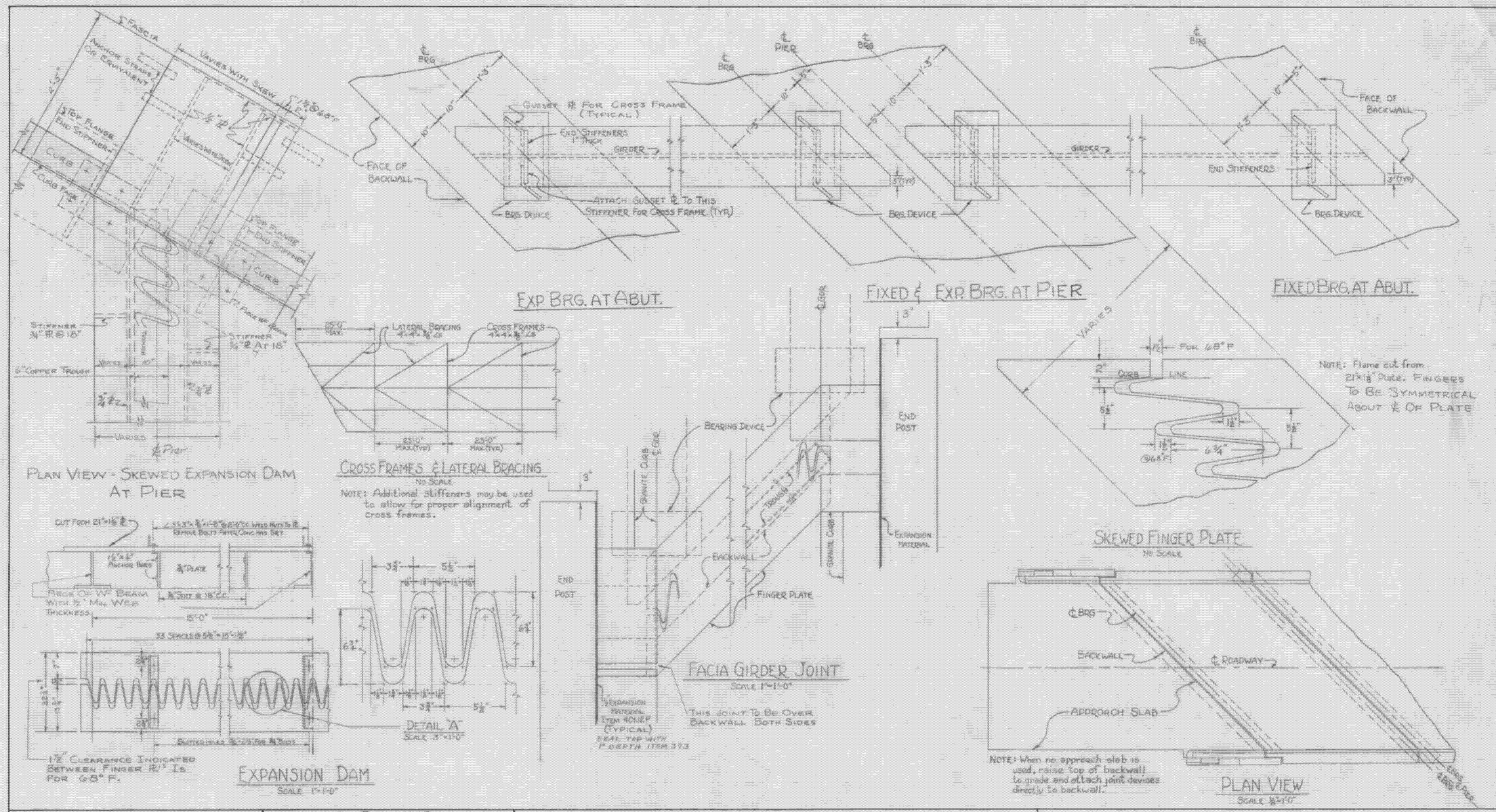
DEPARTMENT OF HIGHWAYS
STANDARD STRUCTURES

WESTMINSTER-NORWICH
IM BPNT (8)
SHEET 57 OF 58
FOR REFERENCE ONLY

3 of 4

SCWPG-30-62

2/2




Revisions & Corrections

Drawn By: RNO - WMS
Traced By: RNO
Checked By: WMS - JLH - EFP

Correct Dec. 30, 1960
Bridge Engineer

Approved Dec. 30, 1960
Chief Engineer

# Skew Details and Expansion Device - Composite Welded Plate Girder Bridges

Department of Highways
Standard Structures

WESTMINSTER-NORWICH
IM BPNT (8)
SHEET 58 OF 58
FOR REFERENCE ONLY

4 of 4

SCWPG-30-62

2/3