BRIDGE RAILING, GALVANIZED
3 RAIL BOX BEAM

NOTES:
1. ALL WORK AND MATERIALS SHALL CONFORM TO SECTION 525.
2. PRIOR TO GALVANIZING, GRIND ALL EDGES TO A MINIMUM RADIUS OF 1/8".
3. ALL POSTS SHALL BE SET NORMAL TO GRADE.
4. SECTIONS OF RAIL TUBE SHALL BE ATTACHED TO A MINIMUM OF TWO BRIDGE RAIL POSTS AND PREFERABLY TO AT LEAST FOUR POSTS.
5. RAIL TUBE EXPANSION JOINTS SHALL BE PROVIDED IN ANY RAIL BAY SPANNING THE END OF AN INTEGRAL ABUTMENT BRIDGE AND AT ALL SUPERSTRUCTURE EXPANSION JOINTS. EXPANSION JOINT RAIL TUBE SHALL BE "x" AT POST AND WILL BE ADJUSTED IN THE FIELD BY THE ENGINEER FOR OTHER TEMPERATURES. REFER TO DETAIL AND TABLE ON SD-361.00B FOR DIMENSION "x".
6. HOLES IN RAILS FOR RAIL TUBE ATTACHMENT AND HOLES IN POSTS FOR DELINEATORS MAY BE FIELD-DRILLED. HOLES SHALL BE COATED WITH AN APPROVED ZINC-RICH PAINT IN ACCORDANCE WITH TABLE PRIOR TO INSTALLATION.
7. RAIL POST ANCHORING NUTS SHALL BE TIGHTENED TO A SNUG FIT AND GIVEN AN ADDITIONAL ONE-EIGHTH TURN.
8. RAIL TUBES SHALL BE ATTACHED USING 3/8" FULL DIAMETER BOLT TYPE I GALVANIZED ROUND HEAD BOLTS INSERTED THROUGH THE FACE OF THE TUBE. HOLES IN POSTS FOR RAIL TUBE ATTACHMENT AND HOLES IN POSTS FOR HOLES IN RAILS FOR RAIL TUBE ATTACHMENT AND HOLES IN POSTS FOR DELINEATORS SHALL BE COATED WITH AN APPROVED ZINC-RICH PAINT IN ACCORDANCE WITH TABLE PRIOR TO INSTALLATION.
9. ANY BENDING OF RAIL SHALL BE DONE AT A FABRICATION PLANT ACCORDING TO A PROCEDURE PROVIDED BY THE FABRICATOR.
10. THE MINIMUM DISTANCE FROM THE POST TO AN EXPANSION JOINT SHALL BE DETERMINED BY THE MINIMUM EDGE DISTANCE OF 5" FROM ANY ANCHOR STUD TO THE END OF THE SLAB, OR TO THE EXPANSION JOINT RECESS, IF ONE IS USED.
11. A Delineator Shall be erected at 30 foot spacing or the nearest post, which is to be installed on the driver's hand, for one way bridges, yellow to be installed on the driver's left. Payment shall be incidental to other items.
12. THIS RAILING MEETS THE REQUIREMENTS FOR A MASH TL-4 SERVICE LEVEL.

APRIL 04, 2022
APPROVED FOR USE BY VAST STRUCTURES SECTION

PAY LIMITS: BRIDGE RAILING, GALVANIZED 3 RAIL BOX BEAM

STRUCTURES DETAIL
SD-361.00A
BRIDGE RAILING, GALVANIZED
3 RAIL BOX BEAM

REVISIONS
APRIL 04, 2022
APPROVED FOR USE BY VAOT STRUCTURES SECTION

SD-361.00B

STRUCTURES DETAIL
PAY LIMITS STEEL BEAM GUARDRAIL, GALVANIZED
TRANSITION TO HIGHWAY
RAIL-TO-RAIL WIDTH IS 25'-0" UNLESS DIRECTED OTHERWISE.

RAILING TRANSITION ELEVATION

NOTES:
1. PAYMENT FOR GUARDRAIL APPROACH SECTION, GALVANIZED 3 RAIL BOX BEAM SHALL INCLUDE THE TERMINAL CONNECTOR, CONNECTION PLATE, DEFLECTOR PLATE, RAIL POSTS, BLOCKS, END CAPS AND ATTACHMENT HARDWARE.
2. ALL APPROACH RAIL SPACES SHALL BE LAPPED IN THE DIRECTION OF TRAFFIC FLOW.
3. TUBE AND STEEL POST MATERIALS, DIMENSION SIZES AND NOTES SHALL BE THE SAME AS THOSE OF THE BRIDGE RAIL UNLESS OTHERWISE NOTED.
4. W6x8.5 POSTS SHALL MEET THE REQUIREMENTS OF SUBSECTION 728.01(b).
5. PRIOR TO GALVANIZING, GRIND ALL EDGES TO A MINIMUM RADIUS OF ½".
6. WELD EXPANSION TUBES ADJUSTED FOR SLOPE AND BEND, USE COMPLETE JOINT PENETRATION BUTT WELDS (U2).

GUARDRAIL APPROACH SECTION, GALVANIZED 3 RAIL BOX BEAM

REVISIONS
APRIL 04, 2022
APPROVED FOR USE BY VAOT STRUCTURES SECTION

GUARDRAIL APPROACH SECTION, GALVANIZED 3 RAIL BOX BEAM

APRIL 04, 2022
APPROVED FOR USE BY VAOT STRUCTURES SECTION

SD-361.00C
STRUCTURES DETAIL
1. Fabric trough shall be thoroughly cleaned and flushed after paving operation. A dry back-up of 1'-0" thick of preformed fabric material shall be coated to the bottom of the fabric trough using an adhesive approved by the manufacturer. The dry back-up shall be applied a from the downstream end of the trough. Preformed fabric material shall be continuous for the full length of the joint.

2. The expansion device shall be covered to protect the finish during placing of bridge deck concrete.

3. See joint gap dimension table for distance "A" values in temperature range provided.

4. Joint bracket length "F" varies dependent on the bridge skin angle. The bracket location shall be determined such that the threaded rods are not less than 1'-0" from girders or flange sides.

5. All steel components shall be galvanized or metalized and meet the requirements of subsection 516.02. Prior to galvanizing or metalizing, all corners and edges of steel plates, shapes, etc., shall be ground to a 1" radius. Galvanized, threaded rods shall conform to the requirements of subsection 516.02. The "Welded Stud Anchor Plate" and Welded Studs may be supplied without galvanizing or metalizing.

6. The 4"x8"x8" angles may be furnished as one continuous piece or spliced as shown in the Joint Assembly Details. The 2'-0" o/c of concrete shall be provided in the equal length.

7. Projected threads of the 3/4" bolts in the joint shall be greased by the contractor prior to placing adjacent concrete. Bolts shall be removed if required in the future.

8. Fill counterbored holes with hot poured joint sealant (STD. SPEC. 707.04) before bolt installation. Payment for the work shall be incidental to test all bridge expansion joint, Vermont.

9. The joint shall be covered with the fabric trough as shop assembled and shipped as one unit. If the expansion joint has a field splice detail, the fabric trough shall be furnished with one unit and assembled with the second unit prior to concrete placement.

10. Temporary shipping attachments shall be attached by bolting to ensure that the finish will not be damaged.

11. Base deck joint plate as shown in a physical section at cross section drawing shall be included on bridges with bare concrete deck. The field plate shall be furnished for both sides and match the lengths of the 4"x8"x8" angles. The base plate can be removed if the deck is milled in the future.
FOLDED TROUGH END DETAIL

1. Trough shall be folded at high ends. Trough shall slope at min 2% down toward the nearest drainage spout hopper location.

2. Bolts, nuts and washers for fold shall meet requirements of subsection 714.04 and shall be galvanized.

JOINT GAP DIMENSION TABLE

<table>
<thead>
<tr>
<th>A Distance (in)</th>
<th>Expansion Length (in)</th>
</tr>
</thead>
<tbody>
<tr>
<td>100-120</td>
<td>1-5/8</td>
</tr>
<tr>
<td>120-140</td>
<td>1-5/16</td>
</tr>
<tr>
<td>140-160</td>
<td>1-5/32</td>
</tr>
<tr>
<td>160-180</td>
<td>1-1/8</td>
</tr>
<tr>
<td>180-200</td>
<td>1-1/4</td>
</tr>
</tbody>
</table>

1) Expansion Length: Length of span, from Expansion Joint to nearest Fixed Bearing.

2) "A" Distance: measured distance during joint placement.

3) Temp: Approximate temperature of steel during joint placement.

EXPANSION JOINT PLAN

SCALE 3" = 1'-0"

JOINT ASSEMBLY DETAIL

SCALE 3" = 1'-0"

BRIDGE EXPANSION JOINT, VERMONT

SD-516.11b