This railing has been structurally evaluated to be equivalent or greater in strength to other safety shape railings which have been crash tested to NCHRP Report 350 TL-4 criteria.

CONCRETE AND REINFORCING STEEL: See Structures Plans, General Notes.

GUARDRAIL: For Guardrail connection details see Index 400.

SUPERELEVATED BRIDGES: At the option of the Contractor the Traffic Railing on superelevated bridges may be constructed perpendicular to the roadway surface. The cost of all modifications will be at the Contractor’s expense.

BARRIER DELINEATORS: Barrier Delineators shall meet Specification Section 993. Install Barrier Delineators along the centerline of the Traffic Railing along the centerline at the spacing shown in the table above. Barrier Delineator color (white or yellow) shall match the color of the near edgeline. The cost of the Barrier Delineators shall be included in the Contract Unit Price for the Traffic Railing.

JOINTS: See Plans, Superstructure, Approach Slab and Retaining Walls Sheets for actual dimensions and joint orientation. Provide open Railing Joints at Deck Expansion Joint locations matching the dimensions of the Deck Joint. For treatment of Railings on skewed bridges see Sheet 3.

Provide 3/8” Intermediate Open Joints at:
(1) Superstructure supports where slab is continuous.

For Railing End Transition see Detail "A" (Typical except as noted below)

Approach Slab

Bridge Deck

3/8" Intermediate Open Joint (see Notes)

3/8" V-Groove in both faces and top of Traffic Railing (Equally spaced between open joints)

Deck Joint (see Notes)

30'-0" Maximum

Spacing 3/8" V-Grooves

Deck Joint (see Notes)

Guardrail Approach Transition Connection (When called for in Plans)

Approach Slab (Flexible Pavement Approach Slab Shown, Rigid Pavement Approach Slab Similar)

CROSS REFERENCE:
For Section A-A, View B-B and Detail "A" see Sheet 2.
For Detail "B" see Sheet 4.
**SECTION A-A**

**TYPICAL SECTION THRU TRAFFIC RAILING**

*(SECTION THRU BRIDGE DECK SHOWN - SECTION THRU APPROACH SLAB SIMILAR)*

**NOTE:**

- Begin placing Railing Bars 5R and 5W on Approach Slab at the railing end and proceed toward Begin or End Bridge to ensure placement of guardrail bolt holes. If required, adjustments to the bar spacing for Bars 5R and 5W shall be made immediately adjacent to Begin or End Bridge. Shift and rotate Bars 5R and 5W as required to maintain cover in Railing End Transition.
- Omit Railing End Transition and Guardrail if Index 410 Concrete Barrier Wall is used beyond the Approach Slab. See Structures Plans, Plan and Elevation Sheet and Roadway Plans. If Railing End Transition is omitted, extend Typical Section to the end of Approach Slab and space Bars 5R and 5W at 1'-0" (Typ.).

**PLAN - Railing End Transition**

*(Showing Bars 5W and 5S)*

**PLAN - Railing End Transition**

*(Showing Bars 5R and 5S)*

**DETAIL "A"**

**VIEW B-B**

**NOTE:**

Begin placing Railing Bars 5R and 5W on Approach Slab at the railing end and proceed toward Begin or End Bridge to ensure placement of guardrail bolt holes. If required, adjustments to the bar spacing for Bars 5R and 5W shall be made immediately adjacent to Begin or End Bridge. Shift and rotate Bars 5R and 5W as required to maintain cover in Railing End Transition.

Omit Railing End Transition and Guardrail if Index 410 Concrete Barrier Wall is used beyond the Approach Slab. See Structures Plans, Plan and Elevation Sheet and Roadway Plans. If Railing End Transition is omitted, extend Typical Section to the end of Approach Slab and space Bars 5R and 5W at 1'-0" (Typ.).
NOTES:
1) Median Traffic Railing reinforcement vertical Bars 5W may be shifted up to 1" (Max.) and rotated up to 10 degrees as required to allow proper placement.
2) Transition Stirrup Bars 5W shall be used as required at railing ends adjacent to expansion joints to facilitate placement of bars in acute corners. Place Transition Bars 5W in a fan pattern to maintain spacing. Rotate bars in 10° (Max.) increments as required.
3) Median Traffic Railing ends at dock expansion joints shall follow the deck joint with allowance for joint movement. See Structures Plans, Superstructure and Approach Slab Sheets for Details.
4) ½" Intermediate Open Joints and V-Grooves in railing shall be placed perpendicular or radial to the XI of the median railing. See Structures Plans, Superstructure and Approach Slab Sheets for locations.
5) At begin or end approach slab extend slab at the median railing ends 3’ (open side) as shown to provide a base for casting of the railing.
6) Work this Sheet with Approach Slab Indexes as applicable.
7) Deck Expansion Joint at begin or end bridge shown. Deck Expansion Joints at XI Pier or Intermediate Bents are similar.
8) Partial Plan Views shown are intended as guides only. See Structures Plans, Superstructure and Approach Slab Sheets for skew angles, joint orientation, dimensions and details.
9) If Welded Wire Reinforcement is used in lieu of conventional reinforcement, placement of the WWR vertical elements shall be similar to those shown above. Clipping of horizontal elements to facilitate placement shall be minimized where possible. Where clipping is required, supplement horizontal elements by lap splicing deformed bars with an equivalent area of steel.
**ALTERNATE REINFORCING STEEL (WELDED WIRE REINFORCEMENT) DETAILS**

**CONVENTIONAL REINFORCING STEEL BENDING DIAGRAMS**

**BILL OF REINFORCING STEEL**

<table>
<thead>
<tr>
<th>MARK</th>
<th>SIZE</th>
<th>LENGTH</th>
</tr>
</thead>
<tbody>
<tr>
<td>R</td>
<td>5</td>
<td>6'-7&quot;</td>
</tr>
<tr>
<td>S</td>
<td>5</td>
<td>As Req'd</td>
</tr>
<tr>
<td>ØA</td>
<td>5</td>
<td>9'-3&quot;</td>
</tr>
</tbody>
</table>

**ITEM**

**UNIT**

**QUANTITY**

1. Concrete CY/LF 0.120
2. Reinforcing Steel LB/LF 23.29

*Note: The above quantities are based on a crowned roadway, with a 2% cross slope.*

**DESCRIPTION:**

**CONSTRUCTION:**

1. All bar dimensions in the bending diagrams are out to out.
2. All reinforcing steel at the open joints shall have a 2" minimum cover.
3. Bars S5 may be continuous or spliced at the construction joints. Bar splices for Bars S5 shall be a minimum of 2'-2".
4. At the Contractor's option, Bars S5 may be fabricated as a two piece bar with a 1'-2" lap splice of the bottom legs.

**INTERMEDIATE JOINT SEAL NOTES:**

1. At Intermediate Open Joints, seal the lower 6" portion of the open joint with Pre-cured Silicone Sealant in accordance with Specification Section 932.
2. Apply sealant prior to any Class V finish coating and remove all curing compound and loose material from the surface prior to application of bonding agent.
3. The cost of the Pre-cured Silicone Sealant shall be included in the Contract Unit Price for the Traffic Railing.

**ITEM**

**UNIT**

**QUANTITY**

1. Concrete CY/LF 0.120
2. Reinforcing Steel LB/LF 23.29

*Note: The above quantities are based on a crowned roadway, with a 2% cross slope.*