This railing has been structurally evaluated to be equivalent or greater in strength to other safety railings which have been crash tested to NCHRP Report 350: F-5 Criteria.

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

MARKERS: Elevated Markers shall be placed on top of the Traffic Railing at the end bents. On bridges longer than 100 ft one marker shall be placed at each end of the bridge. On bridges 100 ft or less one marker shall be placed at each end of the bridge only. Markers are to be furnished by the Florida Department of Transportation and installed by the Contractor. The cost of installing the markers shall be included in the Contract Unit Price for the Traffic Railing.

ELEVATED BRIDGES: At the option of the Contractor the Traffic Railing on super-elevated bridges may be constructed perpendicular to the roadway surface. If an adjoining railing is constructed plumb, transition the end of the Traffic Railing from perpendicular to plumb over a minimum distance of 20'-0". The cost of all modifications while at the Contractor's expense.

GUARDRAIL: For Guardrail connection details, see Index No. 400.

RAILINGS ON RETAINING WALLS: If the Traffic Railing is to be provided on a retaining wall, the railing section shall be the same as shown on Sheet 2. All other details such as the guardrail transition attachment, the maximum spacing of the 3/8" open joints and 5/8" V-groove shall apply.

V-GROVES: Construct 3/8" V-groves plumb. Space V-grooves equidistant between 3/8" Open Joints and/or Deck joints and at V-groove locations on Retaining Wall footings.

ELEVATION OF INSIDE FACE OF RAILING (Reinforcing Steel not shown for clarity) (Railing on Bridge Deck and Approach Slab shown, Railing on Retaining Wall Similar)

TRAFFIC RAILING NOTES:

NAME, DATE, AND BRIDGE NUMBER: The name and Bridge number shall be placed on the Traffic Railing so as to be seen on the driver's right side when approaching the bridge. The date shall be placed on the driver's left side when approaching the bridge. The name shall be shown in the General Notes in the Structures Plans. The Bridge number for the year the bridge is completed. For bridge widening when the existing railings is removed, use both the existing date and the year of widening. Black plastic letters and figures 3" in height may be used, as approved by the Engineer, in lieu of metal letters and figures formed by 3/8" V-grooves. V-grooves shall be formed by prefabricated letters and figures.


Provide 3/8" Intermediate Open Joints shall be provided at:

(1) Substructure supports where superstructure slab is continuous.
(2) Midspan where span length exceeds 90 ft.
(3) Intermediate locations (egularly spaced) between midspan and support points where span length exceeds 120 ft.
(4) At ends of approach spans where adjacent to retaining walls and at expansion joints on retaining wall junctions.

REFLECTIVE RAILING MARKERS: Reflective Railing Markers shall meet Specification Section 395. Install markers on top of the Traffic Railing 2" from the face on the traffic side of the snowing shown in the table above. Reflectors color (white or yellow) shall match the color of the near edge. The cost of the reflective markers shall be included in the Contract Unit Price for the Traffic Railing.
**PLAN – Railing End Transition**

(Showing Bars 5V, 8SI, 552 and 8T2)

**DETAIL “A”**

- Rotate Bars 5V as shown to maintain clearance.

**INSTRUCTION TO DESIGNER**

For bridge decks up to a maximum thickness of 11", the two Bars 552 placed in the Bridge Deck may substitute for the longitudinal deck steel located within the limits of Bars 5V, provided that the total area of longitudinal deck steel beneath the railing, as required by calculation, is not reduced. Show these bars on the Structures Plans, Superstructure Sheets with the deck steel.

**Bar 5V, 8SI and 552 as shown are included in the Estimated Traffic Railing Quantities. Do not include Bars 5V, 8SI and 552 in the reinforcing bar lists and estimated quantities for supporting bridge decks, approach slabs or retaining walls.**

**Note:**
- Lap Bars 8T2 and 552 with Bars 8SI (4-3/4" min. Lap Splice).
- Lap Bars 8SI, 552 and 8T2 with Bars 5V (4-3/4" min. Lap Splice).
- Field bend bars as required.

**VIEW C-C**

ELEVATION – RAILING END TRANSITION

(Guardrail and back leg of Stirrups not shown for clarity)

**SECTION A-A**

TYPICAL THRU TRAFFIC RAILING

(SECTION THRU BRIDGE DECK SHOWN – SECTION THRU APPROACH SLAB SIMILAR)

**VIEW B-B**

(Section thru Approach Slab shown, Section thru Retaining Walls similar)
CONVENTIONAL REINFORCING STEEL BENDING DIAGRAMS

<table>
<thead>
<tr>
<th>BILL OF REINFORCING STEEL</th>
<th>ROADWAY CROSS-SLOPE</th>
<th>LOW GUTTER</th>
<th>HIGH GUTTER</th>
</tr>
</thead>
<tbody>
<tr>
<td>MARK</td>
<td>SIZE</td>
<td>LENGTH</td>
<td>%</td>
</tr>
<tr>
<td>P</td>
<td>5</td>
<td>7-2''</td>
<td>0% to 2%</td>
</tr>
<tr>
<td>S1</td>
<td>8</td>
<td>As Rcd.</td>
<td>2% to 6%</td>
</tr>
<tr>
<td>S2</td>
<td>5</td>
<td>As Rcd.</td>
<td>6% to 10%</td>
</tr>
<tr>
<td>T1 &amp; T2</td>
<td>8</td>
<td>13-0''</td>
<td></td>
</tr>
<tr>
<td>V</td>
<td>5</td>
<td>6-2''</td>
<td></td>
</tr>
</tbody>
</table>

Length as Required

BARS BS1 & 552
TRANSITION BARS 8T1 & 8T2
(2 of each required per Railing End Transition)

STIRRUP BAR 5P
TRANSITION STIRRUP BARS 5P
To Be Field Cut (10 of each required per Railing End Transition)

STIRRUP BAR 5V
END STIRRUP BAR 5V
To Be Field Cut (One required per Railing End Transition)

REINFORCING STEEL NOTES:
1. All bar dimensions in the bending diagrams are out to a 2".
2. The reinforcement for the railing on a retaining wall shall be the same as detailed above for a 10" deck with 6% to 80° to 90°.
3. All reinforcing steel at the open joints shall have a 2" minimum cover.
4. Bars BS1 may be continuous or spaced at the construction joints. Lap splice bars BS1 shall be a minimum of 4'-0" and 2'-5" respectively.
5. The Contractor may utilize Welded Wire Reinforcement as approved by the Engineer. Welded Wire Reinforcement shall conform to ASTM A497.

DETAIL "B" – SECTION AT INTERMEDIATE OPEN JOINT

NOTE:
As Intermediate Open Joints, the lower 3" portion of the open joint shall be plugged by filling it with mortar in accordance with Section 400 of the Specifications.

SECTION THRU RECESSED "V" GROOVE TO FORM INSCRIBED LETTERS AND FIGURES

ESTIMATED TRAFFIC RAILING QUANTITIES

<table>
<thead>
<tr>
<th>ITEM</th>
<th>UNIT</th>
<th>QUANTITY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Concrete</td>
<td>CY/CF</td>
<td>0.015</td>
</tr>
<tr>
<td>Reinforcing Steel</td>
<td>LF/LF</td>
<td>44.7</td>
</tr>
</tbody>
</table>

Note:
The estimated railing quantities are based on a 2% deck cross slope railing on low side of deck.