PLAN OF RAILING ON BRIDGE DECK (WITHOUT SIDEWALK SHOWN, WITH SIDEWALK SIMILAR)

(Reinforcing Steel Not Shown For Clarity)

** 1/2 Intermediate Open Joint

** 1/2 Intermediate Open Joint in the Railroad (over Substructure supports where the Superstructure deck is continuous)

NOTE: End Post dimensions for a given span shall match.

ELEVATION OF INSIDE FACE OF RAILING

(BRIDG DECK SHOWN, APPROACH SLAB WITHOUT GUARDRAIL OR ADJACENT TO ROADWAY BARRIER SIMILAR)

TRAFFIC RAILING NOTES

CONCRETE AND REINFORCING STEEL: See Structures Plans General Notes.

AGGREGATE UTILIZATION: The aggregate used in the concrete mix shall be a 50% aggregate.

MARKERS: Elevation 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 less than 100 ft, 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.

GUARDRAIL: For Guardrail connection details see Index No. 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 any modifications will be at the Contractor's expense.

RETAINING WALL: If the Traffic Railing Barrier is to be provided on a retaining wall, the railing sections will be the same as on Sheets 3 and 4. See Section W-3-5 for payment.

NAME, DATE AND BRIDGE NUMBER: The Name and Bridge Number shall be placed on this Traffic Railing section to be seen on the driver's right side when approaching the bridge. The Name shall be shown in the General Notes in the Structures Plans. The Date shall be placed on the driver's left side when approaching the bridge. If the Traffic Railing is removed, use both the existing date and the year of the widening. Black plastic letters and figures 3" in height may be used, as approved by the Engineer, in lieu of the letters and figures formed by "V"-grooves.

REFLECTIVE RAILING MARKERS: Reflective Railing Markers shall meet Specification Section 363. Potters markers on top of the Traffic Railing 2" from the face on the traffic side at the spacing shown in the table above. Reflector 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.

REFLECTIVE RAILING MARKER SPACING:

<table>
<thead>
<tr>
<th>Distance to Face of Railing</th>
<th>Spacing (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>End Railing</td>
<td>10</td>
</tr>
<tr>
<td>4 to 8</td>
<td>10</td>
</tr>
<tr>
<td>10 to 20</td>
<td>20</td>
</tr>
<tr>
<td>20 to 80</td>
<td>40</td>
</tr>
</tbody>
</table>

NOTES:

(a) Measured at the face of the next, (IP) means for face.

CROSS REFERENCES:

For Sections see Sheets 3 and 4.
For Quantities and Quantity Breakdown see Sheet 5.

INSTRUCTION TO DESIGNER

1. Indicate use of curb in the railing on low side of deck without sidewalks and other locations where required to contain bridge deck runoff. Define curb location in Structures Plans Superstructure Sheets by stationing units or other appropriate methods.

2. Define lengths of end posts in Structures Plans Superstructure Sheets.

2010 FDOT Design Standards

TRAFFIC RAILING - (CORRALL SHAPE)
ELEVATION OF INSIDE FACE OF RAILING WITH GUARDRAIL ON APPROACH SLABS 40'-0" OR LESS ALONG GUTTER (WITHOUT CURB SHOWN, WITH CURB SIMILAR)

Approach Slabs greater than 40'-0" (Measured Along Gutter Line)

- **Note:** For curb details and reinforcement of typical End Sections, Typical Interior Section and Posts with or without curbs see Elevation of Inside Face of Railing Sheet L.

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

NOTES:
- (NF) means near Face.
- (FR) means For Face.

CROSS REFERENCES:
- For Sections see Sheets 3 and 4.
- For Quantities and Quantity Breakdown see Sheet 5.
SECTION A-A (WITH CURB SHOWN, WITHOUT CURB SIMILAR)

TYPICAL SECTIONS THRU RAILING (BRIDGE DECK SHOWN, APPROACH SLAB SIMILAR)

SECTION B-B (WITH CURB SHOWN, WITHOUT CURB SIMILAR)

SECTION C-C

TYPICAL SECTIONS THRU RAILING END SECTIONS ON APPROACH SLAB WITH GUARDRAIL

(APPORACH SLAB (FLEXIBLE PAVEMENT APPROACHES) SHOWN, APPROACH SLAB (RIGID PAVEMENT APPROACHES) SIMILAR)

PARTIAL PLAN VIEW OF BRIDGE DECK AND APPROACH SLAB
(END POST SHOWN, INTERIOR POST SIMILAR)
(Bars R, S and T not shown for clarity)

NOTES:
1) Shift deck and approach slab transverse reinforcement minimally to allow placement of Bars 7P1 & 4V1.
2) For decks to 620” place Bars 7P1 & 4V1 with the bottom mat of reinforcement as shown in Section A-A. For decks and slabs thicker than 620” place Bars 7P1 and 4V1 with 6” embedment. At skewed joints, place Bars 7P1 and 4V1 with 5” embedment.

CROSS REFERENCES:
For Locations of Sections see Sheets 1 and 2.
For Quantities and Shop Details see Sheet 5.
SECTION A-A (WITH CURB SHOWN, WITHOUT CURB SIMILAR)

TYPICAL SECTIONS THRU RAILING ON BRIDGE DECK WITH SIDEWALK (SHOWN) (RAILING ON APPROACH SLAB SIMILAR)

SECTION B-B

TYPICAL SECTIONS THRU RAILING ON BRIDGE DECK WITH SIDEWALK (SHOWN) (RAILING ON APPROACH SLAB SIMILAR)

SECTION C-C

END VIEW D-D

TYPICAL SECTIONS THRU RAILING END SECTION ON APPROACH SLAB WITH SIDEWALK AND GUARDRAIL

(APPROACH SLAB (FLEXIBLE PAVEMENT APPROACHES) SHOWN, APPROACH SLAB (RIGID PAVEMENT APPROACHES) SIMILAR)
CONVENTIONAL REINFORCING STEEL BENDING DIAGRAMS

BILL OF REINFORCING STEEL

<table>
<thead>
<tr>
<th>MARK</th>
<th>SIZE</th>
<th>LENGTH</th>
<th>LB/BAR</th>
</tr>
</thead>
<tbody>
<tr>
<td>P1</td>
<td>7</td>
<td>7-4&quot;</td>
<td>15.00</td>
</tr>
<tr>
<td>P2</td>
<td>7</td>
<td>7-3&quot;</td>
<td>14.82</td>
</tr>
<tr>
<td>R3</td>
<td>7</td>
<td>2-3&quot;</td>
<td>14.65</td>
</tr>
<tr>
<td>P4</td>
<td>7</td>
<td>7-3&quot;</td>
<td>14.82</td>
</tr>
<tr>
<td>P5</td>
<td>4</td>
<td>2-1/2&quot;</td>
<td>1.94</td>
</tr>
<tr>
<td>K1</td>
<td>6</td>
<td>As Req.</td>
<td>15.6 (R/P)</td>
</tr>
<tr>
<td>K2</td>
<td>5</td>
<td>As Req.</td>
<td>1.64 (R/P)</td>
</tr>
<tr>
<td>K3</td>
<td>6</td>
<td>As Req.</td>
<td>0.67 (R/P)</td>
</tr>
<tr>
<td>S2</td>
<td>6</td>
<td>3-0&quot;</td>
<td>3.34</td>
</tr>
</tbody>
</table>
| S2   | 4    | Varies | 6-3" min | 9.0-3" max | Varies | 4.18 min | 10.86 max |}

* Bars 4P4 and 4R3 are to be used with a curb only.
** Bars 4S1, 4S2 & 4S3 around a m3 Stirrup flr.
*** Bars 7P4 & 4V2 are to be used on CDP Concrete Retaining Walls.

REINFORCING STEEL NOTES:
1. All dimensions in the bending diagrams are cut to cut.
2. The reinforcement for the railing on a CDP Concrete retaining Wall shall be the same as detailed above for a 8" dock with QA = 90° where applicable. If bottom horizontal bars of Bars 7P1, 7P2 and 4V1 prohibit placement, Bars 7P4 and 4V2 may be substituted for Bars 7P1, 7P2 and 4V1 as shown.
3. All reinforcing steel at the point joints shall have a 2" minimum cover unless otherwise noted.
4. At Construction Joints Bars 6R1, 5R2 and 4R3 may be continuous or spliced. Where bars are spliced provide a 2-6" min. lap length for Bar 6R1, a 2-0" min. lap length for Bar 5R2 and a 1-3" min. lap length for Bars 4R3.

The skew angle for Bars 7P3 may vary from joint to joint and side to side, see Structures Plans for details.

ROADWAY OR SIDEWALK CROSS-SLOPE | HIGH SIDE | LOW SIDE |
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>0% to 2%</td>
<td>QA</td>
<td>QA</td>
</tr>
<tr>
<td>2% to 6%</td>
<td>90°</td>
<td>90°</td>
</tr>
<tr>
<td>6% to 10%</td>
<td>84°</td>
<td>84°</td>
</tr>
</tbody>
</table>

Bar 7P1

Bar 4P5

Stirrup Bar 4S1

Stirrup Bar 6T

Stirrup Bar 4S2

8° 10° 12° 14°

8" 6" 4" 2"

2-3/4" 3-1/8" 3-1/2" 3-5/8"

Bar 7P2

Parallel to Joint

Line Perpendicular or Radial to Gutter

Bar 7P3 (Requires 3 Dimensional Bend)

Top of CDP Concrete Retaining Wall

Bar 7P4

Bar 4V1

Bar 4V2

ESTIMATED TRAFFIC RAILING QUANTITIES

<table>
<thead>
<tr>
<th>ITEM</th>
<th>CONCRETE QUANTITY (CY)</th>
<th>REBAR QUANTITY (LB)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Typical 10-0° Section w/ Curb</td>
<td>1.03</td>
<td>45.1</td>
</tr>
<tr>
<td>Typical 10-0° Section w/o Curb</td>
<td>1.03</td>
<td>42.0</td>
</tr>
<tr>
<td>Approach Slab with Guardrail End Section</td>
<td>0.14</td>
<td>44 (per LF)</td>
</tr>
</tbody>
</table>
PARTIAL PLAN VIEW OF BRIDGE DECK AND APPROACH SLAB
- SKEW ANGLE GREATER THAN 15 DEGREES

NOTES:
1. Rolling expansion joints shall match the deck expansion joint which shall be turned perpendicular or radial to the gutter line. See Structures Plans, Superstructure and Approach Slab Sheets for details.
2. Bars 4V1 (not shown) shall be placed perpendicular or radial to the gutter.
3. Bridge Deck and Approach Slab without Guardrail, Attached (Not Shown)
4. Approach Slab with Guardrail, Attached (Not Shown)
5. Approach Slab with Guardrail, Attached (Not Shown)

NOTES:
1. Approach Slab with Guardrail, Attached (Not Shown)
2. Approach Slab with Guardrail, Attached (Not Shown)

PARTIAL PLAN VIEW OF BRIDGE DECK AND APPROACH SLAB WITH SIDEWALK
- 0 DEGREE SKEW ANGLE

NOTES:
1. Parallel Bars 7P to Bars 7P and reverse direction of every other Bar 4V1 as detailed above to facilitate placement of concrete.
2. Shift deck transverse reinforcement minimally to allow placement of Bars 7P & 4V.

GENERAL NOTES:
1. Deck Expansion Joint at begin or end bridge shown. Deck Expansion Joints at Pier or Intermediate Bents are similar.
2. 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.
PARTIAL PLAN VIEW OF BRIDGE DECK AND APPROACH SLAB WITH SIDEWALK
- SKEW ANGLE GREATER THAN 15 DEGREES

NOTES:
1. Rolling ends at deck expansion joints shall follow the deck joint with allowance for joint movement. Expansion joint at the inside face of parapet shall be turned perpendicular or radial to this line. See Structures Plans, Superstructure and Approach Slab Sheets for details.
2. Bars 4/11 not shown shall be placed perpendicular or radial to the gutter.
3. Edge of Approach Slab adjacent to the roadway shall follow end of rolling Bars T1 at end of the rolling shall be field cut and shifted to maintain clearance, see detail bottom left sheet for similar details.
4. BRIDGE DECK AND APPROACH SLAB WITHOUT GUARDRAIL ATTACHED (SHOWN) Alternate Bars T11 with Bars T-F and reverse direction of every other Bar 4/11 to facilitate placement of concrete.
5. Bars T-F & 4/1 shall be rotated to match bridge deck reinforcement. Shift deck transverse reinforcement minimally to allow placement at Bars T-F & 4/1.
6. Railing End Post and reinforcement detailed above. Railing Interior Post reinforcement similar.
7. Approach Slab with Guardrail Attached (SHOWN) Begin placing Railing Bars T-F & 4/1 on Approach Slab at the railing end and proceed toward Begin or End Bridge to ensure placement of guardrail hole. If required, adjustments to the bar spacing for Bars T-F & 4/1 shall be made immediately adjacent to Begin or End Bridge.

PARTIAL PLAN VIEW AT BEGIN OR END APPROACH SLAB WITH SIDEWALK AND RAILING WITH GUARDRAIL ATTACHED
- SKEW ANGLE GREATER THAN 15 DEGREES SHOWN, 15 DEGREES OR LESS SIMILAR

NOTES:
1. Rolling ends at deck expansion joints shall follow the deck joint with allowance for joint movement. Expansion joint at the inside face of parapet shall be turned perpendicular or radial to this line. See Structures Plans, Superstructure and Approach Slab Sheets for details.
2. Bars 4/11 (not shown) shall be placed perpendicular or radial to the gutter.
3. Deck transverse reinforcement may be shifted minimally as required to allow proper placement of Bars T-F & 4/1 and to facilitate placement of concrete. Bars T-F & 4/1 shall be used on opposing sides of the joint depending on the direction of the skew, see Detail above. Approach Slab reinforcement may be shifted if conflicts occur.
4. Interior Post - alternate Bars T-F with Bars T-F and reverse direction of every other Bar 4/1 to facilitate placement of concrete.
5. End Post - alternate Bars T-F with Bars T-F and reverse direction of every other Bar 4/1 where possible.
6. Use Bars T-F and reverse direction of Bars 4/1 where skew restricts use of Bars T-F & 4/1
7. Begin placing Railing Bars T-F & 4/1 on Approach Slab at the railing end and proceed toward Begin or End Bridge to ensure placement of guardrail hole. If required, adjustments to the bar spacing for Bars T-F & 4/1 shall be made immediately adjacent to Begin or End Bridge.