PLAN OF RAILING ON BRIDGE DECK (WITHOUT SIDEWALK SHOWN, WITH SIDEWALK SIMILAR) (APPROACH SLAB WITHOUT GUARDRAIL WITH OR WITHOUT SIDEWALK SIMILAR) (Reinforcing Steel Not Shown For Clarity)

TRAFFIC RAILING NOTES

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

CONCRETE AND REINFORCING STEEL: See Structures Plans General Notes.

AGGREGATE LIMITATION: The aggregate used in the concrete mix shall be a No. 67 aggregate.

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


TRAFFIC RAILING - (CORRAL SHAPE)

ELEVATION OF INSIDE FACE OF RAILING

TRAFFIC RAILING - (CORRAL SHAPE)
**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, APPROACH SLAB SIMILAR)**

**PARTIAL PLAN VIEW OF BRIDGE DECK AND APPROACH SLAB (END POST SHOWN, INTERIOR POST SIMILAR)**

**SECTION C-C**

**TYPICAL SECTIONS THRU RAILING END SECTIONS ON APPROACH SLAB WITH GUARDRAIL**

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

**INTERMEDIATE JOINT SEAL NOTES:**

1. At Intermediate Open Joints in Curb Sections, 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.

**DETAIL A - SECTION AT INTERMEDIATE OPEN JOINT WITH CURB**

**CROSS REFERENCES:**

For sections of Sections and Detail A, see Sheets 1 and 2.
For Quantities and Rebar Details see Sheet 5.
### 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>P3</td>
<td>7</td>
<td>7'-2&quot;</td>
<td>14.66</td>
</tr>
<tr>
<td><strong>P4</strong></td>
<td>7</td>
<td>7'-3&quot;</td>
<td>14.82</td>
</tr>
<tr>
<td><strong>P5</strong></td>
<td>4</td>
<td>2'-11&quot;</td>
<td>1.53</td>
</tr>
<tr>
<td>R1</td>
<td>6</td>
<td>As Req.</td>
<td>1.3 (LB/lf)</td>
</tr>
<tr>
<td>R2</td>
<td>5</td>
<td>As Req.</td>
<td>1.04 (LB/lf)</td>
</tr>
<tr>
<td><strong>R3</strong></td>
<td>4</td>
<td>2'-11&quot;</td>
<td>0.67 (LB/lf)</td>
</tr>
<tr>
<td><strong>S1</strong></td>
<td>4</td>
<td>5'-0&quot;</td>
<td>3.34</td>
</tr>
<tr>
<td><strong>S2</strong></td>
<td>4</td>
<td>6'-3&quot;</td>
<td>10.36</td>
</tr>
<tr>
<td><strong>S3</strong></td>
<td>6</td>
<td>11'-3&quot;</td>
<td>7.52</td>
</tr>
<tr>
<td>T</td>
<td>4</td>
<td>11'-4&quot;</td>
<td>17.02</td>
</tr>
<tr>
<td>U</td>
<td>5</td>
<td>4'-8&quot;</td>
<td>4.87</td>
</tr>
<tr>
<td>V1</td>
<td>4</td>
<td>3'-2&quot;</td>
<td>2.12</td>
</tr>
<tr>
<td><strong>V2</strong></td>
<td>4</td>
<td>3'-6&quot;</td>
<td>2.34</td>
</tr>
</tbody>
</table>

* Bars 4P5 and 4R3 are to be used with a curb only.
* Bend Bars 4S1, 4S2 & 4S3 around a #3 Stirrup Pin.
** Bars 7P4 & 4V2 are to be used on C-I-P Concrete Retaining Walls.

### Bill of Reinforcing Steel - Conventional Bending Diagrams

- **Bar 7P1**: Length As Required
- **Bar 7P2**: 2'-1" 3'-10"
- **Bar 7P3**: Requires 3 Dimensional Bend
- **Bar 4P5**: * **
- **Bar 4V1**: *
- **Bar 4V2**: **

### Reinforcing Steel Notes:
1. All bar dimensions in the bending diagrams are out to out.
2. The reinforcement for the railing on a C-I-P Concrete Retaining Wall shall be the same as detailed above for a 8" deck with ØA = 90°, where applicable. If bottom horizontal legs of Bars 7P1, 7P3 and 4V1 prohibit placement, Bars 7P4 and 4V2 may be substituted for Bars 7P1, 7P3 and 4V1 as shown.
3. All reinforcing steel at the open 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 Bars 5R2 and a 1'-3" Min. lap length for Bars 4R3.
5. The reinforcement for the railing on a C-I-P Concrete Retaining Wall shall be the same as detailed above for a 8" deck with ØA = 90°, where applicable. If bottom horizontal legs of Bars 7P1, 7P3 and 4V1 prohibit placement, Bars 7P4 and 4V2 may be substituted for Bars 7P1, 7P3 and 4V1 as shown.

### 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&quot; Section w/Curb</td>
<td>1.13</td>
<td>451</td>
</tr>
<tr>
<td>Typical 10'-0&quot; Section w/o Curb</td>
<td>1.03</td>
<td>428</td>
</tr>
<tr>
<td>Approach Slab w/ Guardrail End Section</td>
<td>0.14 (per LF)</td>
<td>44 (per LF)</td>
</tr>
</tbody>
</table>

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* Bars 6R1, 5R2 & 4R3 are to be used on C-I-P Concrete Retaining Walls.
* Bend Bars 4S1, 4S2 & 4S3 around a #3 Stirrup Pin.
** Bars 7P4 & 4V2 are to be used on C-I-P Concrete Retaining Walls.

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**CONVENTIONAL REINFORCING STEEL BENDING DIAGRAMS**

**Bars 6R1, 5R2 & 4R3**

- Length As Required

**Bars 7P1**

- 2'-1"
- 3'-10"

**Bars 7P2**

- 2'-1"
- 3'-10"

**Bars 7P3** (Requires 3 Dimensional Bend)

- 2'-1"
- 3'-10"

**Bars 4P5**

- 3'-3"
- 4'-8"

**Bars 4V1**

- 3'-3"
- 4'-8"

**Bars 4V2**

- 3'-3"
- 4'-8"

---

**REINFORCING STEEL NOTES:**

1. All bar dimensions in the bending diagrams are out to out.
2. The reinforcement for the railing on a C-I-P Concrete Retaining Wall shall be the same as detailed above for a 8" deck with ØA = 90°, where applicable. If bottom horizontal legs of Bars 7P1, 7P3 and 4V1 prohibit placement, Bars 7P4 and 4V2 may be substituted for Bars 7P1, 7P3 and 4V1 as shown.
3. All reinforcing steel at the open 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 Bars 5R2 and a 1'-3" Min. lap length for Bars 4R3.
5. The reinforcement for the railing on a C-I-P Concrete Retaining Wall shall be the same as detailed above for a 8" deck with ØA = 90°, where applicable. If bottom horizontal legs of Bars 7P1, 7P3 and 4V1 prohibit placement, Bars 7P4 and 4V2 may be substituted for Bars 7P1, 7P3 and 4V1 as shown.

---

**ESTIMATED TRAFFIC RAILING QUANTITIES**

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<tr>
<td>Approach Slab w/ Guardrail End Section</td>
<td>0.14 (per LF)</td>
<td>44 (per LF)</td>
</tr>
</tbody>
</table>
### 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.

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**Notes:**

1. Railing expansion joint 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 line. Place Bars 7P3 & 4V1 in acute corners of intersection of deck joint and gutter line as required. Shift deck or slab reinforcement minimally to allow proper placement of Bars 7P & 4V and to facilitate placement of concrete.

3. End Post & Approach Slab End Section - Place Bars 7P3 & 4V1 in acute corners of intersection of deck joint and gutter line as required. Interior Post - use Bars 7P1 & 4V1 placed with bottom mat of reinforcement. Shift deck or slab reinforcement minimally to allow proper placement of Bars 7P & 4V and to facilitate placement of concrete.

4. Rotate vertical Bars 7P & 4V to match bridge deck reinforcement. Shift deck & slab reinforcement minimally to allow proper placement of Bars 7P & 4V and to facilitate placement of concrete.

5. Begin placing Railing Bars 7P & 4V 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 7P & 4V shall be made immediately adjacent to Begin or End Bridge.

6. Bars 7P at end of the railing shall be field cut and shifted to maintain clearance, see Railing Taper Detail Sheet 2 for similar details.

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**Description:**

Traffic Railing - (Corral Shape)

- Skew Angle Greater Than 15 Degrees
- Skew Angle Greater Than 0 Degrees

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**Revision:** 07/01/05

**Design Standards:**

FDOT 2014

**Index No.:** 424

**Sheet No.:** 6 of 7
PARTIAL PLAN VIEW OF BRIDGE DECK AND APPROACH SLAB WITH SIDEWALK - SKEW ANGLE GREATER THAN 15 DEGREES

NOTES:
1) Railing 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 4S1 (not shown) shall be placed perpendicular or radial to the gutter.
3) Edge of Approach Slab adjacent to the roadway shall follow end of railing, Bars 7P at end of the railing shall be field cut and shifted to maintain clearance; see detail option left this sheet for similar details.
4) Alternate Bars 7P1 with Bars 7P2 and reverse direction of every other Bar 4V1 to facilitate placement of concrete.
5) Bars 7P & 4V shall be rotated to match bridge deck reinforcement. Shift deck transverse reinforcement minimally to allow placement of Bars 7P & 4V.
6) Railing End Post and reinforcement detailed above. Railing Interior Post reinforcement similar.
7) Begin placing Railing Bars 7P & 4V 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 7P & 4V 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) Railing 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 4S1 (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 7P & 4V and to facilitate placement of concrete. Bars 7P1 & 4V1 or 7P2 & 4V1 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 7P1 with Bars 7P2 and reverse direction of every other Bar 4V1 to facilitate placement of concrete.
5) End Post - alternate Bars 7P1 with Bars 7P2 and reverse direction of Bars 4V1 (as detailed) where possible.
6) Use Bars 7P2 and reverse direction of Bars 4V where skew restricts use of Bars 7P1 & 4P1.
7) Begin placing Railing Bars 7P & 4V 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 7P & 4V shall be made immediately adjacent to Begin or End Bridge.