This railing has been structurally evaluated to be equivalent or greater in strength to other single slope railings which have been crash tested to MASH TL-5.

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

SUPERELEVATED BRIDGES: At the option of the Contractor the Traffic Railing on superelevated 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 will be at the Contractor's expense.

GUARDRAIL: For Guardrail connection details, see Index 536-001.

V-GROOVES: Construct $\frac{1}{2}$ V-Groove in both faces and top of Traffic Railing. See Structures 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.

Provide $\frac{1}{2}$ Intermediate Open Joints shall be provided at:

1. - Superstructure supports where slab is continuous.
2. - Ends of approach slabs when adjacent to retaining walls and at V-Groove locations on Retaining Wall footings.

END TRANSITIONS: When guardrail approaches are shown in the Plans, provide the Railing End Transition as shown in Detail "A". When a concrete traffic railing or barrier is shown on the approaches, provide the Railing Height Transition as shown in Detail "B".

For Railing End Transition see View C-C and Detail "A" (Typical when Guardrail Connection required)
NOTE:
Begin placing Railing Bars 5P and 5V 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 5P and 5V shall be made immediately adjacent to Begin or End Bridge. Shift Bars 5P and 5V (see Detail "A") as required to maintain cover in Railing End Transition.

* Where railings of adjacent bridges are to be built back to back, the outside vertical plane of the railing and deck may coincide along a plane centered 1'-6" from each gutter line. A bond breaker will be required. See Structures Plans, Superstructure Sheets for Details.

** See joint orientation note on Sheet 1.

*** Field Cut & Lap Bars 5V in Toe Transition to maintain clearance.

NOTE: Omit Detail "A" and provide Detail "B" if 44" Concrete Barrier or Single-Slope Traffic Railing is used beyond the Approach Slab. See Structures Plan and Elevation Sheet and Roadway Plans. If Transitions are not required, extend Typical Section to end of Approach Slab.
Raise Bars 5P to maintain 2" cover on top.

Begin or End Approach Slab

Bars 6S1 (Typ.)

Raise Bars 5P to maintain 2" cover on top.

Bars 5S2
Bars 5V @ 6" (Typ.)

Approach Slab

Edge of Approach Slab Coping

Construction Joint Location

NOTE: Provide Detail "B" Height Transition where 44" Single-Slope Traffic Railings or Barriers are shown on approaches.

ELEVATION
RAILING HEIGHT TRANSITION

DETAIL "B"
RAILING HEIGHT TRANSITION
(Section Thru Approach Slab shown)
**Note:**
The estimated railing quantities are based on a 2% deck cross slope; railing on low side of deck.

### Reinforcing Steel Notes:
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 6S1 may be continuous or spliced at the construction joints. Lap splices for Bars 6S1 and 5S2 shall be a minimum of 3'-0" and 2'-2", respectively.
4. The Contractor may utilize deformed WWR when approved by the Engineer. WWR must meet the requirements of Specification Section 931.

### Bill of Reinforcing Steel

<table>
<thead>
<tr>
<th>MARK</th>
<th>SIZE</th>
<th>LENGTH</th>
</tr>
</thead>
<tbody>
<tr>
<td>P</td>
<td>5</td>
<td>7'-0&quot;</td>
</tr>
<tr>
<td>S1</td>
<td>6</td>
<td>As Req.</td>
</tr>
<tr>
<td>S2</td>
<td>5</td>
<td>As Req.</td>
</tr>
<tr>
<td>T1 &amp; T2</td>
<td>6</td>
<td>10'-0&quot;</td>
</tr>
<tr>
<td>V</td>
<td>5</td>
<td>9'-8&quot;</td>
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</table>

### Estimating Traffic Railing Quantities

<table>
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<tr>
<th>ITEM</th>
<th>UNIT</th>
<th>QUANTITY</th>
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</thead>
<tbody>
<tr>
<td>Concrete</td>
<td>CY/LF</td>
<td>0.143</td>
</tr>
<tr>
<td>Reinforcing Steel</td>
<td>LB/LF</td>
<td>39.34</td>
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</tbody>
</table>

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

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**Roadway Cross-Slope**

<table>
<thead>
<tr>
<th>LOW GUTTER</th>
<th>HIGH GUTTER</th>
</tr>
</thead>
<tbody>
<tr>
<td>ØA to 2%</td>
<td>101°</td>
</tr>
<tr>
<td>2% to 6%</td>
<td>98°</td>
</tr>
<tr>
<td>6% to 10%</td>
<td>95°</td>
</tr>
</tbody>
</table>

 Bosnia and Barb shall be 90° if Contractor elects to place Railing perpendicular to the Deck.

**Concrete Sealing 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.