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-4 criteria.

CONCRETE AND REINFORCING STEEL: See Structures Plans, General Notes. GUARDRAIL: For Guardrail Connection details see Index 536-001.

SUPERELEVATED 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 will be at the Contractor's expense.

BARRIER DELINEATORS: Install Barrier Delineators on top of the Traffic Railing along the centerline in accordance with Specification Section 705. Match the Barrier Delineator to the color (white or yellow) of the near edgeline.

V-GROOVES: Construct 1/2" V-Grooves plumb. Space V-Grooves equally between 1/2" open joints and/or Deck Joints. 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 1/2" Intermediate Open Joints at:
1. Superstructure supports where slab is continuous.
2. Ends of Approach Slabs adjacent to a Roadway Median Barrier.

END TRANSITIONS: When guardrail approaches are shown in the Plans, provide the Railing End Transition as shown in Detail "A". When a Concrete Median Barrier is shown on the approaches, provide the Railing Height Transition as shown in Detail "B".

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

TRAFFIC RAILING NOTES:

V-Grooves: Construct 1/2" V-Grooves plumb. Space V-Grooves equally between 1/2" open joints and/or Deck Joints. Joint: 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 1/2" Intermediate Open Joints at:
1. Superstructure supports where slab is continuous.
2. Ends of Approach Slabs adjacent to a Roadway Median Barrier.

End Transitions: When guardrail approaches are shown in the Plans, provide the Railing End Transition as shown in Detail "A". When a Concrete Median Barrier is shown on the approaches, provide the Railing Height Transition as shown in Detail "B".
NOTES:
1. When guardrail approaches are shown in the plans, begin placing Railing Bars 5R and 5W on Approach Slab at the railing end and proceed toward Begin or End Bridge to avoid conflict with guardrail bolt holes. Cut, bend and lap bars as shown to maintain cover. If required, adjustments to the bar spacing for Bars 5R and 5W shall be made immediately adjacent to Begin or End Bridge.
2. When a Concrete Barrier is used beyond the Approach Slab form a 5'-0" long Height Transition and raise Bars 5R up to maintain 2" top clearance.

END TRANSITION

38" Single-Slope Barrier

Plan B-B

ELEVATION - RAILING HEIGHT TRANSITION

(Showing Transition to 38" Single-Slope Barrier)
PARTIAL PLAN VIEW OF BRIDGE DECK AND APPROACH SLAB WITH MEDIAN TRAFFIC RAILING

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 deck expansion joints shall follow the deck joint with allowance for joint movement. See Structures Plans, Superstructure and Approach Slab Sheets for Details.
4) 3⁄8" Intermediate Open Joints and V-Grooves in railing shall be placed perpendicular or radial to the line 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 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 with deformed bars having an equivalent area of steel.
The above quantities are based on a crowned roadway, with a 2% cross slope.

Reinforcing Steel
Concrete

BILL OF REINFORCING STEEL

ROADWAY CROSS-SLOPE

<table>
<thead>
<tr>
<th>Size</th>
<th>Length</th>
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<tbody>
<tr>
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<tr>
<td>S</td>
<td>5'</td>
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STIRRUP BAR 5R

TRANSITION STIRRUP BAR 5R
(5 required per Railing End Transition)

TRANSITION STIRRUP BAR 5W
To Be Field Cut
(10 required per Railing End Transition)

Reinforcing Steel Notes:
1. All bar dimensions in the bending diagrams are not to scale.
2. All reinforcing steel at the open joints shall have a 2" minimum cover.
3. Bars 5S may be continuous or spliced at the construction joints. Bar splices for Bars 5S shall be a minimum of 2'-2".
4. At the Contractor's option, Bars 5W may be fabricated as a two piece bar with a 1'-2" lap splice of the bottom legs.

Welded Wire Reinforcement Notes:
1. At the option of the Contractor deformed Welded Wire Reinforcement (WWR) may be utilized in lieu of all Bars 5R, 5S and 5W. WWR must meet the requirements of Specification Section 931.
2. WWR at Railing End Transition shall be field bent inward as required (pieces 1 & 2) to maintain cover. The bottom of Piece 1 shall be cut to allow overlap.
3. Place WWR panels so as to minimize the end overhang of longitudinal wires at Railing Ends and Open Joints. Overhangs greater than 6" are not permitted.

Optional Splice

Length as Required

ALTERNATE REINFORCING STEEL (WWR) DETAILS

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 5S may be continuous or spliced at the construction joints. Bar splices for Bars 5S shall be a minimum of 2'-2".
4. At the Contractor's option, Bars 5W 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. Include the cost of the Pre-cured Silicone Sealant in the Contract Unit Price for the Traffic Railing.

Pre-cured Silicone Sealant 4" wide (Typ.)

FIELD CUT & DISCARD

DETAIL "C" - SECTION AT INTERMEDIATE OPEN JOINT

CONVENTIONAL REINFORCING STEEL BENDING DIAGRAMS

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<thead>
<tr>
<th>Size</th>
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<tbody>
<tr>
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<td>5W</td>
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<tr>
<td>ØA</td>
<td>5S</td>
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Estimated Traffic Railing Quantities

Item
Concrete
Reinforcing Steel

Unit
CY/LF
LF/LF

Quantity
0.157
23.99

(The above quantities are based on a crowned roadway, with a 2% cross slope.)