THREE-BEAM PANEL:  Three-Bead Elements shall meet the requirements for Class B (10 Gauge) Guardrail of AASHTO M 180, Type II (Zinc coated).  The minimum panel length for Three-Beam Elements shall be 12'-0".  Field drilled holes for Post connections shall be 3/8" by 2 1/2" slotted holes.

BOLTS, NUTS AND WASHERS:  Bolts, nuts and round washers shall be in accordance with AASHTO M180.  Plate Washers shall be in accordance with ASTM A66 or ASTM A709 Grade 36.

COATINGS:  All Nuts, Bolts, Anchors, and Washers shall be hot-dip galvanized in accordance with the Specifications.

BOLTS, NUTS AND WASHERS:  Bolts, nuts and round washers shall be in accordance with AASHTO M180.  Plate Washers shall be in accordance with ASTM A36 or ASTM A709 Grade 36.

CONCRETE:  Concrete for Transition Blocks shall be Class II (Bridge Deck).

THREE-BEAM EXPANSION SECTION:  Three-Bead Expansion Sections shall be installed at locations shown in the Plans.  Install nuts for splice bolts finger-tight at 2 1/2" slots in three-beam expansion sections.  Nuts shall fully engage bolts with a minimum of one bolt thread extending beyond the nuts.  Distort the first thread on the outside of the nut to prevent loosening.  Tighten bolts with a minimum of one bolt thread extending beyond the nuts.  Distort the first thread on the outside of the nut to prevent loosening.  Tighten bolts in 3" x 2" Slots (2 Per Post) with Post Bolts, Recessed Nuts, Round Washers and Plate Washers (2 of each required).  Bolt required when splice is located between posts.

NOTE:  All Three Beam Panels shall be lapped in the direction of adjacent traffic.  At the Contractor's option, laps may be extended.  Field drill holes in Trail Bead Beam Panel as required.

TRAILING THREE-BEAM PANEL

THREE-BEAM PANEL SPLICE

NOTE:  All Three Beam Panels shall be lapped in the direction of adjacent traffic.  At the Contractor's option, laps may be extended.  Field drill holes in Trail Bead Beam Panel as required.

PLAN VIEW

PLATE WASHER DETAIL

FRONT VIEW

WEDGE SHAPED BLOCK DETAIL

1" WOOD BLOCK

L (in) THREAD LENGTH (in) APPLICATION

Splice Bolt

Post Bolt

1/8" OVAL SHOULD BUTTON HEAD BOLT
Wingwall mounted railing section (if present; length varies)

NOTES:
1. Dimensions and elevations for existing guardrails to be verified by the Contractor before beginning construction.
2. Provide Transition Block (as shown) or Curb if existing Approach Slab Curb does not extend to end of Approach Slab. Shape and height of the traffic face of Transition Block or Curb shall match existing bridge curb. See Sheet 4 for Transition Block details. Block may be omitted on trailing ends with no opposing traffic.
3. Do not bolt nested rails to the blocks and posts at posts (a), (c) & (e).
**ELEVATION VIEW A-A**

*At Double Posts*

(View at Intermediate Double Posts shown; View at Expansion Joints similar)

Existing Concrete Traffic Railing

Thrie-Beam Panel

6" x 2-6' End Post

2-6' Post Bolt, Nut, Round Washer & Plate Washer (Typ.)

6" x 10'10" Wood Block (Typ.)

Existing Curb

Existing Bridge Deck

**ELEVATION VIEW A-A**

*At Single Post*

Existing Concrete Traffic Railing

Thrie-Beam Panel

6" x 2-6' End Post

2-6' Post Bolt, Nut, Round Washer & Plate Washer (Typ.)

6" x 10'10" Wood Block (Typ.)

Existing Curb

Existing Bridge Deck

**ELEVATION VIEW A-A**

*At End Post*

Existing Concrete Traffic Railing

Thrie-Beam Panel

6" x 2-6' End Post

2-6' Post Bolt, Nut, Round Washer & Plate Washer (Typ.)

6" x 10'10" Wood Block (Typ.)

Existing Curb

Existing Bridge Deck

**TYPICAL SECTION THRU RAILING POST ON BRIDGE DECK**

* Measured from edge of existing Post. Bolts may be installed at either side of any Post.

NOTES:

1. Post Bolts shall be $\frac{3}{4}$" x 14' long set in $\frac{5}{8}$" core drilled holes, see Sheet No. 1.

2. Shift Post Bolt holes minimally inward toward center of posts if existing reinforcement is encountered during drilling of holes. If reinforcement is still encountered, notify the Engineer before proceeding with drilling.

3. Post Bolt spacing not to exceed 8'-0" (± 1').

**PLAN OF END POST**

- Existing concrete wedge or existing wedge shaped wood block
- For End Posts with an existing wedge shaped wood block, remove existing wood block and replace with new Wedge Shaped Wood Block (see Sheet 1 for notes and details).
Estimating Quantities Per Transition Block

<table>
<thead>
<tr>
<th>Item</th>
<th>Unit</th>
<th>Quantity</th>
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<tbody>
<tr>
<td>Concrete Class II (Bridge Deck)</td>
<td>CF</td>
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</tr>
<tr>
<td>Reinforcing Steel</td>
<td>LB</td>
<td>61</td>
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<tr>
<td>Guardrail (Reset)</td>
<td>LF</td>
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