GENERAL NOTES

CONCRETE: Concrete for the Traffic Railing (Vertical Face Retrofit) shall be Class IV. Concrete for Curb Transition Blocks shall be Class I (Bridge Deck).

ADHESIVE-BONDED DOWELS: Adhesive Bonding Material Systems for Dowels shall comply with Specification Section 937 and be installed in accordance with Specification Section 416. The field testing proof loads required by Specification Section 416 shall be 23,800 lbs for Dowel Bars 6D on the inside face (traffic side) of the railing (7'-0" embedment) and 18,500 lbs for Dowel Bars 6D along the outside face of the traffic railing (5'-0" min. embedment).

BRIDGES ON CURVED ALIGNMENTS: The details presented in this Standard are shown for bridges on tangent alignments. Details for bridges on horizontally curved alignments are similar.

BARRIER DELINEATORS: Barrier Delineators shall meet Specification Section 993. Install Barrier Delineators on top of the Traffic Railing along the entire length of the bridge 2'-0" from the face on the traffic side in accordance with Specification Section 705. Barrier Delineator color (white or yellow) shall match the color of the near edgeline.

GUARDRAIL: See Index 538-002 for guardrail component details, geometric layouts and associated notes not fully detailed herein.

BRIDGE NAME PLATE: If a portion of the existing Traffic Railing is to be removed that carries the bridge name, number and or date, or if the installation of the Traffic Railing (Thrie Beam Retrofit) will obscure the bridge name, number and or date, then replace the information that has been removed or obscured, with 3" tall black lettering on white nonreflective sheeting applied to the top of the adjacent guardrail. The information must be clearly visible from the right side of the approaching travel lane. The sheeting and adhesive backing shall comply with Specification Section 994 and may comprise individual decals of letters and numbers.

PAYMENT: Concrete Traffic Railing-Bridge Retrofit - Post & Beam Railing (EA) includes all material and labor required to demolish a portion of the existing structure where required and to construct the concrete portion of the retrofit railing. Guardrail Approach Transition to rigid Barriers (EA) includes transition block, and necessary hardware to complete the Guardrail transitions shown:

Note: Shift dowel holes to clear if the existing reinforcement is encountered.
REVISION DESCRIPTION:

GUARDRAIL TRANSITIONS-EXISTING POST & BEAM BRIDGE RAILINGS (NARROW & RECESSED CURBS)

LEGEND

SCHEME 1 - APPROACH ENDS OF BRIDGES
WITH BEAM OR GIRDER SUPERSTRUCTURE

SCHEME 2 - APPROACH ENDS OF BRIDGES
WITH FLAT SLAB SUPERSTRUCTURE & PARALLEL WINGWALLS (SHOWN)
OR BEAM OR GIRDER SUPERSTRUCTURE & PARALLEL OR CURVED WINGWALLS (SIMILAR)

LIMITS OF REMOVAL OF EXISTING STRUCTURE - POST & BEAM RAILING WITH NARROW CURB

LAST REVISION 07/01/13

INDEX 521-404

Sheet 2 of 8

STANDARD PLANS

FY 2020-21

GUARDRAIL TRANSITIONS-EXISTING POST & BEAM BRIDGE RAILINGS (NARROW & RECESSED CURBS)
**Revision Description:**

**Standard Plans**

**Guardsrail Transitions - Existing Post & Beam Bridge Railings (Narrow & Recessed Curbs)**

**FY 2020-21**

**Bill of Reinforcing Steel**

**Concrete**

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<thead>
<tr>
<th>Unit</th>
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<tr>
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**Reinforcing Steel**

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<th>Quantity</th>
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<tbody>
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**Conventional Reinforcing Steel Bending Diagram**

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<tr>
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<td>S</td>
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**Estimation of Traffic Railing Quantities**

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<tr>
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**Sections**

**A-A**

**B-B**

**Vertical Face Retrofit Railing Details - Post & Beam Railing with Narrow Curb**

**Scheme 1 - Approach Ends of Bridges with Beam or Girder Superstructure**

**Scheme 2 - Approach Ends of Bridges with Flat Slab Superstructure & Parallel Wingwalls (Shown) or Beam or Girder Superstructure & Parallel or Curved Wingwalls (Similar)**
3 OR MORE CONTINUOUS RAILING PANELS ON WINGWALL ADJACENT TO END POST

2 CONTINUOUS RAILING PANELS ON WINGWALL ADJACENT TO END POST

1 RAILING PANEL ON WINGWALL ADJACENT TO END POST

SCHEME 3 - APPROACH ENDS OF BRIDGES
WITH BEAM OR GIRDER SUPERSTRUCTURE

3 OR MORE CONTINUOUS RAILING PANELS ADJACENT TO BEGIN OR END BRIDGE

2 CONTINUOUS RAILING PANELS ADJACENT TO BEGIN OR END BRIDGE

1 RAILING PANEL ADJACENT TO BEGIN OR END BRIDGE

SCHEME 4 - APPROACH ENDS OF BRIDGES
WITH FLAT SLAB SUPERSTRUCTURE & PARALLEL WINGWALLS (SHOWN)
OR BEAM OR GIRDER SUPERSTRUCTURE & PARALLEL OR CURVED WINGWALLS (SIMILAR)

LEGEND

Limits of Existing Structure to be removed

Limits of Existing Railing

Remove exposed existing reinforcing steel by burning or grinding to 1" below finished end of saw cut. Repair resulting holes and then coat entire cut end of railing or curb with Type F-1 epoxy in accordance with Section 926. (Typ.)

Saw cut Railing and Recessed Curb and grind flat to align with edge of post.

Existing Recessed Curb

DETAIL A

SECTION A

SECTION B-B

LIMITS OF REMOVAL OF EXISTING STRUCTURE - POST & BEAM RAILING WITH RECESSED CURB

EXISTING POST & BEAM RAILING TO REMAIN

EXISTING POST & BEAM RAILING TO REMAIN

EXISTING POST & BEAM RAILING TO REMAIN
**REVISION DESCRIPTION:**

**STANDARD PLANS FY 2020-21 SHEET INDEX**

**GUARDRAIL TRANSITIONS-EXISTING POST & BEAM BRIDGE RAILINGS (NARROW & RECESSED CURBS)**

**ESTIMATED TRAFFIC RAILING QUANTITIES**

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**CONVENTIONAL REINFORCING STEEL BENDING DIAGRAM**

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<tr>
<td>S</td>
<td>5</td>
<td>AS REDD</td>
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**REINFORCING STEEL NOTES:**

1. All bar dimensions in the bending diagrams are out to out.
2. The reinforcement for the railing on a retaining wall shall be the same as detailed for a bridge deck.
3. All reinforcing steel in the Vertical Face Retrofit Railing shall have a 2" minimum cover.

**SECTION A-A**

**SECTION B-B**

**VERTICAL FACE RETROFIT RAILING DETAILS - POST & BEAM RAILING WITH RECESSED CURB**

**SCHEME 3 - APPROACH ENDS OF BRIDGES WITH BEAM OR GIRDER SUPERSTRUCTURE**

**SCHEME 4 - APPROACH ENDS OF BRIDGES WITH FLAT SLAB SUPERSTRUCTURE & PARALLEL WINGWALLS (SHOWN) OR BEAM OR GIRDER SUPERSTRUCTURE & PARALLEL OR CURVED WINGWALLS (SIMILAR)**
PARTIAL PLAN - APPROACH TRANSITION

Limiting Station of Transition

Varies (7'-6" Min, 9'-0" Max)

Guardrail Transition

Two 12'-6" Thrie-Beam Panels (Nested)

12'-6" Thrie-Beam Panel

6'-3" W-Thrie Beam

Transition Panel

PARTIAL ELEVATION - APPROACH TRANSITION

SCHEMES 1 & 3

(Narrow Curb Shown, Recessed Curb Similar)

Existing Bridge Coping

Existing Post & Beam Railing

Cutter Line

Begin or End Bridge

Thrie-Beam Terminal Connector

Existing Bridge Deck

Existing Approach Slab (if present)

Guardrail Post (Typ.)

Transition Block (if shown in Plans)

PARTIAL PLAN - APPROACH TRANSITION

Limiting Station of Transition

Varies (7'-6" Min, 9'-0" Max)

Guardrail Transition

Two 12'-6" Thrie-Beam Panels (Nested)

12'-6" Thrie-Beam Panel

6'-3" W-Thrie Beam

Transition Panel

PARTIAL ELEVATION - APPROACH TRANSITION

SCHEMES 2 & 4

(Narrow Curb Shown, Recessed Curb Similar, Flat Slab Superstructure Shown, Beam or Girder Superstructure Similar)

Existing Bridge Coping

Existing Post & Beam Railing

Cutter Line

Begin or End Bridge

Thrie-Beam Terminal Connector

Existing Bridge Deck

Existing Approach Slab (if present)

Guardrail Post (Typ.)

Transition Block (if shown in Plans)

Two 12'-6" Thrie-Beam Panels (Nested)

12'-6" Thrie-Beam Panel

6'-3" W-Thrie Beam

Transition Panel

* See Limits of Removal of Existing Structure, Sheets 2 of 8 and 4 of 8.
**PLAN VIEW OF TRANSITION BLOCK**
(GUARDRAIL NOT SHOWN FOR CLARITY)

**ELEVATION OF TRANSITION BLOCK**
(GUARDRAIL AND POSTS NOT SHOWN FOR CLARITY)

### ESTIMATED QUANTITIES PER TRANSITION BLOCK

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**NOTES:**

ANCHOR RODS: Steel Anchor Rods shall be ASTM A36, ASTM A709 Grade 36 or ASTM A615 Grade 60 hot-dip galvanized in accordance with Specification Section 962.

ADHESIVE-BONDED DOWELS: Adhesive Bonded Dowels are shown installed in an existing curb or sidewalk integrally reinforced with Approach Slab, Wingwall or Bridge Deck. For installations in existing detached curbs or sidewalks, install dowels in available sound concrete.

Shift bars (as needed) to install six dowels into existing bridge or approach slab mounted curb.