Vertical joints in concrete rail are not required, unless shown elsewhere.

Showing 0° skew culvert. Skewed culverts similar. See RAC standard for details not shown.

Terminus Connectors and associated hardware are to be paid for under the Item “Metal Beam Guard Fence”. Affix Metal Beam Guard Fence Transitions to the bridge rail and extend along the embankment unless otherwise shown in the plans.

Terminal Connectors and associated hardware are to be paid for under the Item “Metal Beam Guard Fence”. Affix Metal Beam Guard Fence Transitions to the bridge rail and extend along the embankment unless otherwise shown in the plans. Ms. Tool: 18-0° (Varies)

Wingwall Length minus 5'-0" (Varies)

Traffic Rail
Type T223
**TERMINAL CONNECTION DETAILS**

- **SECTION A-A**
  - Field bend W#3 as shown.
  - S1(#3) match bars W#3
  - Top of Abut Wingwall or M/C/Culvert Parallel Wings

- **SECTION B-B**
  - 1'-10" (Varies)
  - 2'-0" (Varies)
  - 3'-0" (Varies)

**ELEVATION**

- **TERMINAL CONNECTION DETAILS**
- **SECTION**
  - Top of Abut Wingwall or M/C/Cutout Parallel Wings

**POST JOINT DETAIL**

- **Opening**
  - 4'-0" Min & 9'-0" Max
  - 3" Max U Spa at 3'-0" Opening
  - 4'-0" Min & 9'-0" Max
  - 3" Max U Spa at 6" Max

**EXPANSION JOINTS**

- AT SLAB
  - 4'-0" Min & 9'-0" Max
  - 3" Max U Spa at 3'-0" Opening
  - 4'-0" Min & 9'-0" Max

- AT END POST
  - 4'-0" Opening
  - 4'-0" Min & 9'-0" Max

**PARAPET END**

- AT ABUT WINGWALL
  - Same as Slab
  - 6" Opening
  - 4'-0" Min & 9'-0" Max

**ELEVATION SHOWING TYPICAL REINFORCING PLACEMENT**

- Showing rail on slab. Rail on box culvert similar.

**TRAFFIC RAIL**

- **TYPE T223**

- Terminal Connectors and associated hardware are to be paid for under the Item "Metal Rail Guard Fences". Attach Metal Rail Guard Fences Transitions to the bridge rail and extend along the embankment unless otherwise shown in the plans.

- Terminal Connectors and associated hardware are to be paid for under the Item "Metal Rail Guard Fences". Attach Metal Rail Guard Fences Transitions to the bridge rail and extend along the embankment unless otherwise shown in the plans.

- Increase 2" for structures with overlay.

- Bars L(#5) are part of rail reinforcing and are included in unit price bid for railing. Space with Bars R(#5). Bars L match slab bar cover. Bars L may be bundled with top slab reinforcing.

- Bars SU1(#3), SU2(#3) and WU(#5) not shown for clarity.

- Substitute Bars WU(#5) for Bars SU2(#3) when parapet end is located on an aggregate curb over cement top slab. Use Bars WU(#5) in concrete parallel wings.

- Bars SU1(#3), SU2(#3) and WU(#5) not shown for clarity.

- Substitute Bars WU(#5) for Bars SU2(#3) when parapet end is located on an aggregate curb over cement top slab. Use Bars WU(#5) in concrete parallel wings.
**Section C-C**

ON ABUTMENT WINGWALLS OR CIP RETAINING WALLS

- Vertical Reinforcing Steel
- 9’ Chamfer (Typ)
- Approach Sidewalk or CIP
- 4” H Bounded Recycled Tire Rubber

**Section D-D**

ON ABUTMENT WINGWALLS OR CIP RETAINING WALLS

- Reinforcing Steel
- Vertical
- 1’-0” Bars L (#5)

**At Post**

ON BRIDGE SLAB

- Bending of slab or wall may rest on top of slab or wall.
- Cross-hatched area must have 1/8” Preformed Bituminous Fiber Material under concrete face. As shown.
- Concrete Rail Footprint and perpendicular to slab outside edge.
- Traffic Side of Rail
- Rail Footprint and perpendicular to slab outside edge.
- Concrete Rail Expansion Joint. Location of Rail Expansion Joint must be at the intersection of Slab Expansion Joint. Rail Footprint and perpendicular to slab outside edge.
- Epoxy coat or galvanized – #5 = 3'-0”

**Elevation at Abutment Wingwall**

Box curb parallel wings or rail shoulder curb similar

**Construction Notes:**

- Faces of rail and parapet must be vertical transversely unless otherwise approved by the Engineer.
- Provide water barriers at openings spanning underslung railings and sidewalks. They may be cast-in-place or precast in convenient lengths and bolted to the bridge deck with an approved spay connect.
- Chamfer all exposed corners.

**Material Notes:**

- Provide Class C’ concrete. Provide Grade C” (HPC) if required elsewhere.
- Provide Grade 60 reinforcing steel.
- Epoxy cover or galvanize all reinforcing if slab bars are epoxy coated or galvanized.
- Deformed Hotrolled Reinforcing (OEHR) ASTM A1064 of equal size and spacing may be substituted for Bars U, V, and WU unless stated otherwise. Provide the same laps as required for reinforcing in slab.
- Provide bar laps, where required, as follows: uncoated or galvanized – #5 = 2'-0”
- Epoxy coated – #5 = 3'-0”

**General Notes:**

- This rail has been evaluated by full-scale crash test to meet applicable requirements. This rail can be used for speeds up to 50 mph and greater when a TL-3 rated guard fence transition is used. When a TL-2 rated guard fence transition is used, this rail can only be used for speeds of 45 mph and less.
- Do not use this railing on bridges with expansion joints providing more than 3” movement.
- Rail anchorage details shown on this standard may require additional details elsewhere in plans for these modifications. See appropriate details elsewhere in plans for these modifications.

**Sheet 3 of 3**

- Traffic Rail
- Type T223
- Elevation AT ABUTMENT WINGWALL
- Reinforcing Steel dimensions shown are out-to-out of bar. Cover dimensions are core dimensions, unless noted otherwise. Reinforcing bar dimensions shown are out-to-out of bar.