Span length of rail must always have a minimum of three concrete posts. Spans always have a concrete post located at each end of span. Space concrete posts equally within a span unless directed otherwise by the Engineer.

Increase 2" for structures with 2" Max overlay.

Wingwall length minus 4"-0" (Variable) 7'-0" Min.

Bars L, U and UB are spaced at 8" Max.

Side Slot Drains must be centered between rail posts.

Side Slot Drains must be centered between rail posts within the joints shown. Side Slot Drains may be used where shown elsewhere on the plans or as directed by the Engineer. Do not place drains over railroad tracks, lower roadways, or sidewalks. When this rail is used as a separator between a roadway surface and a sidewalk surface, side drain slots are not permitted.

Bars L, U and UB match Bars U(#5)

Bars V ~ 2 4" Max

Bars UB(#5) at post.

10 Bars V(#5) at post spaced as shown. (Typ)

6 Bars VP(#5) at post.

3 Bars SB(#4) at post centered as shown. (Typ)

5 Bars V(#5) at post.

3 Bars SV(#3) at post spaced as shown. (Typ)

3 Bars SP(#3)

6" Max (Typ)

5'-0" Min, 6'-0" Max

Elevation showing typical reinforcing placement

Combination Rail

Type C66

Sheet 2 of 4

Texas Department of Transportation

Bridge Design Standard

Revisions

September 2019

File: TxDOT

County: 83

Job: 700241

Sheet No: 1

Control Joint (Typ)

Same as Slab Joint Opening

See "Sealed Curb Joint Detail" (Typ)

Initials: C TxDOT

Sheet: 2 of 4

Controlled Joint or Construction Joint

Construction Joint (Typ)

* Joint

1/2" Min

1/2" Max

Joint Opening

1/2" Min

Same as Slab Joint Opening

Side Slot Drain

Side Slot Drain

Optionalside slot drain detail

Optionalside slot drain
The use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is given.

**PIPE SPICE DETAILS**

- **AT SPLICE JT or EXP JT**

**PLAN OF RAIL AT EXPANSION JOINTS**

- Example showing Slab Expansion Joints without breakbacks.

**RAIL DATA FOR HORIZONTAL CURVES**

- **RADIUS TO FACE OF RAIL**
  - Over 2800’
  - Over 700’ thru 1400’
  - Over 1400’ thru 2800’
  - 11’ thru 10’
  - Through 0’
- **MAX CHOICE LENGTH**
  - 29’ 0”
  - 27’ 0”
  - 24’ 0”
  - 21’ 0”
  - Zero
- **CONSTRUCT OR FABRICATE**
  - FIRST RIGHT
  - SECOND LEFT

**COMBINATION RAIL**

- **TYPE C66**

**CONSTRUCTION NOTES**

Face of rail, splices and parapets must be vertical transversely unless otherwise approved by the Engineer. HSS rail posts and opening end facts must be perpendicular to top of adjacent concrete parapet grade. Use Type VIII epoxy mortar for HSS rail post base plates if gaps larger than 1/8” exist.

- **Material Notes**
  - Reinforcing bar dimensions shown are out-to-out of bar. Cover dimensions are clear dimensions, unless noted otherwise. 
  - Provide Class "S" concrete. Provide Class "C" concrete if required elsewhere.
  - Provide Grade 60 reinforcing steel.
  - Epoxy coat or galvanize all reinforcing steel if slab bars are epoxy coated or galvanized. Provide ASTM A416, A500Gr B or A53Gr B for all HSS.
  - Chamfer all exposed concrete corners. 
  - Clear cover is 2” minimum, unless shown otherwise.
  - Chamfer all exposed concrete corners.

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  - Reinforcing bar dimensions shown are out-to-out of bar.
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**GENERAL NOTES**

- The rail has been successfully evaluated by full-scale crash test to meet NCHRP TL-5 criteria. This rail can be used for speeds of 30 mph and greater when a TL-3 rated guard fence transition is used. When a TL-3 rated guard fence transition is used, this rail can only be used for speeds of 30 mph and less.
- This railing cannot be used on bridges with expansion joints providing more than 5” movement.
- Rail anchorages details shown on this standard may require modification for select structure types. See appropriate details elsewhere in plans for these modifications.
- Coat exterior surfaces with type III, class "S" (HPC) if required elsewhere.
- Provide ASTM A1085, A500Gr B or A53Gr B for all HSS.

- **Anchor Bolt Options**
  - Provide Class "S" concrete. Provide Class "C" concrete if required elsewhere.
  - Provide Grade 60 reinforcing steel.
  - Epoxy coat or galvanize all reinforcing steel if slab bars are epoxy coated or galvanized. Provide ASTM A416, A500Gr B or A53Gr B for all HSS.
  - Chamfer all exposed concrete corners.
  - Clear cover is 2” minimum, unless shown otherwise.
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- **CAST-IN-PLACE ANCHOR BOLT OPTIONS**

- **PLAN OF RAIL AT EXPANSION JOINTS**

Example showing Slab Expansion Joints without breakbacks.

**PLAN OF RAIL AT EXPANSION JOINTS**

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  - The rail has been successfully evaluated by full-scale crash test to meet NCHRP TL-5 criteria. This rail can be used for speeds of 30 mph and greater when a TL-3 rated guard fence transition is used. When a TL-3 rated guard fence transition is used, this rail can only be used for speeds of 30 mph and less.
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- **PLAN OF RAIL AT EXPANSION JOINTS**

Example showing Slab Expansion Joints without breakbacks.