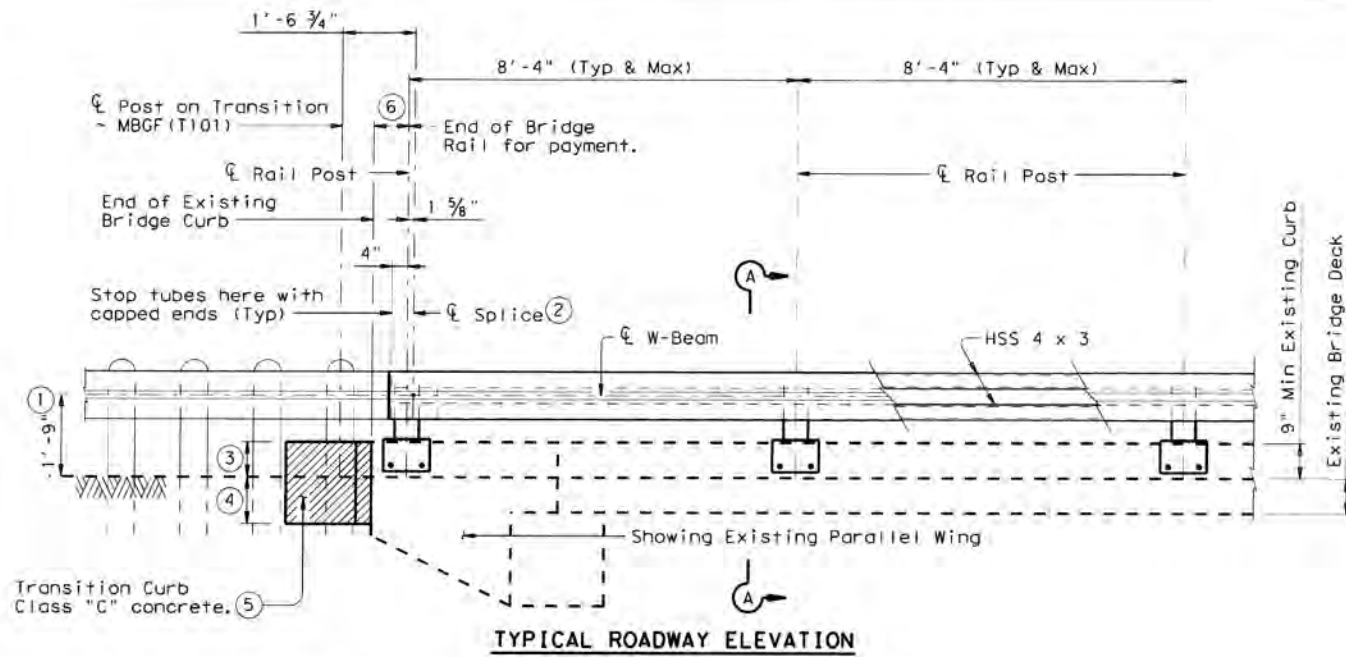
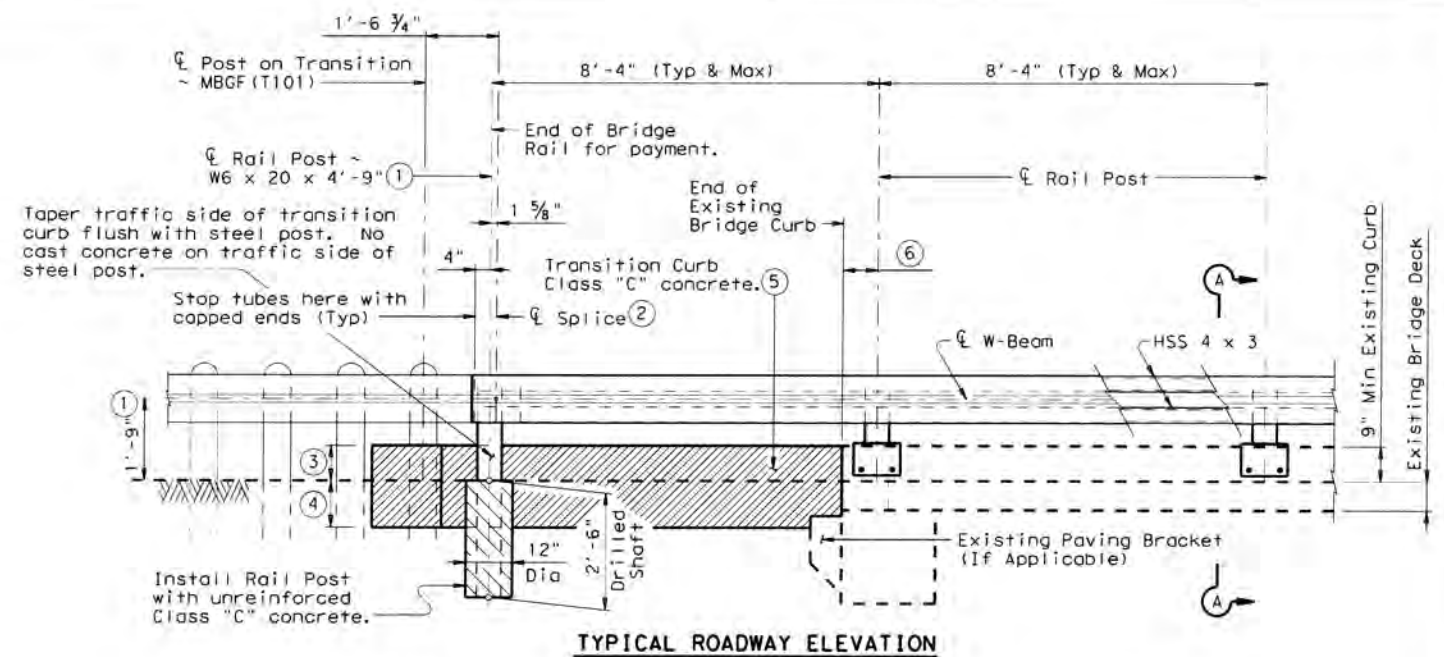


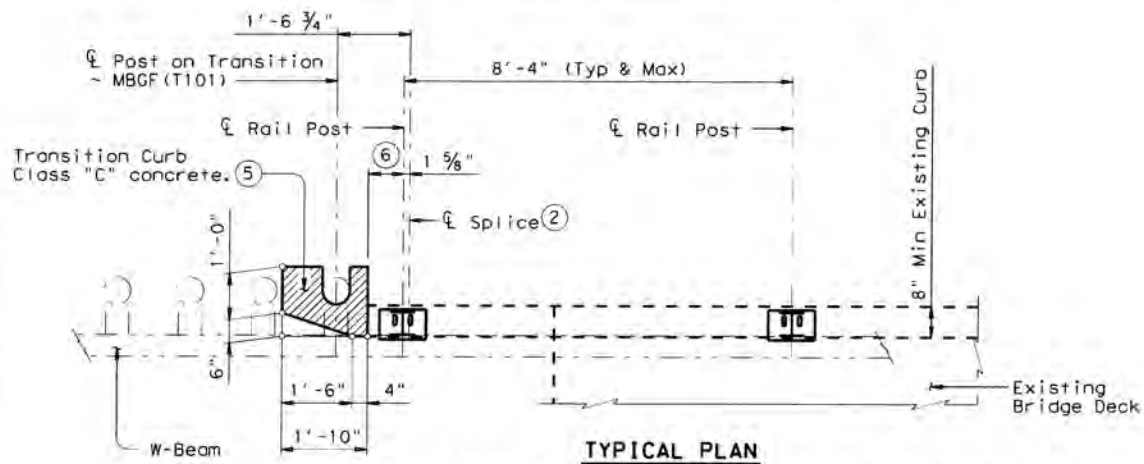
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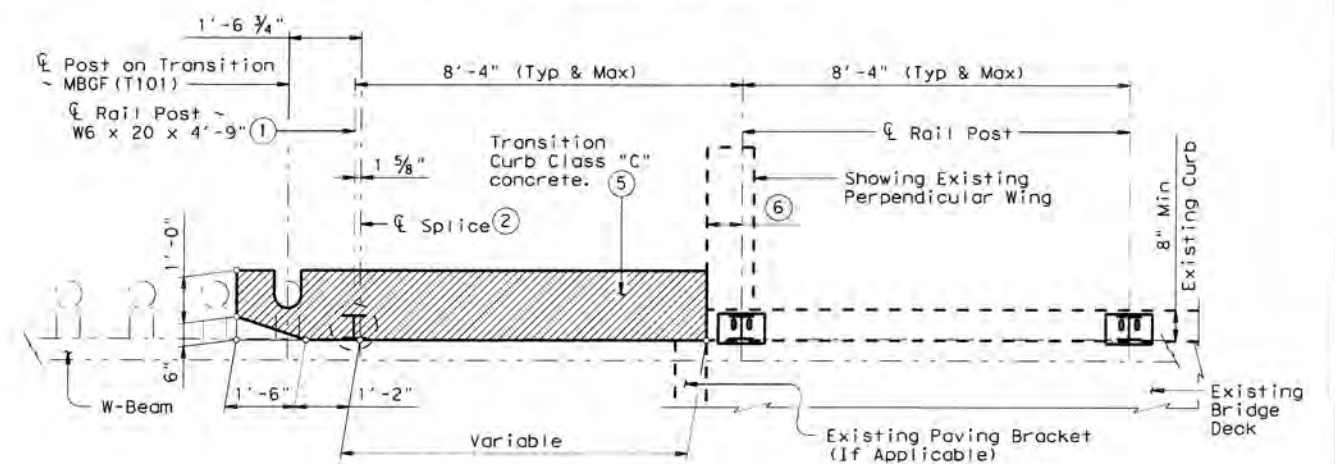
TYPICAL ROADWAY ELEVATION



TYPICAL ROADWAY ELEVATION



TYPICAL PLAN



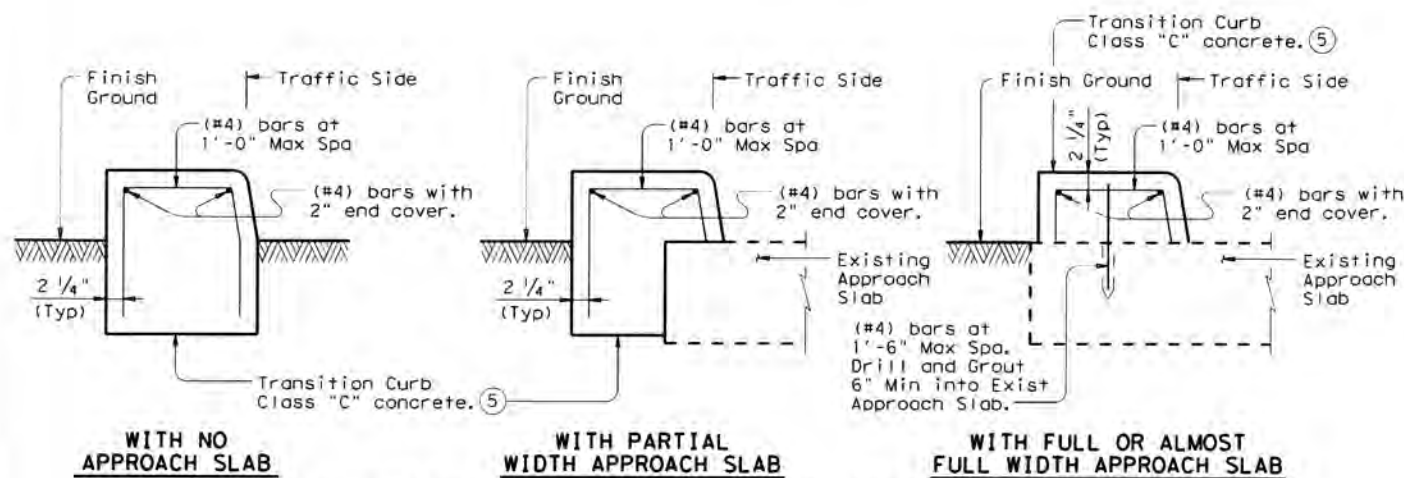
TYPICAL PLAN

EXAMPLE "A" RETROFIT WITH PARALLEL WING

(Showing 9" high and 8" wide curbs, higher and wider curbs similar)

EXAMPLE "B" RETROFIT WITH PERPENDICULAR WING

(Showing 9" high and 8" wide curbs, higher and wider curbs similar)



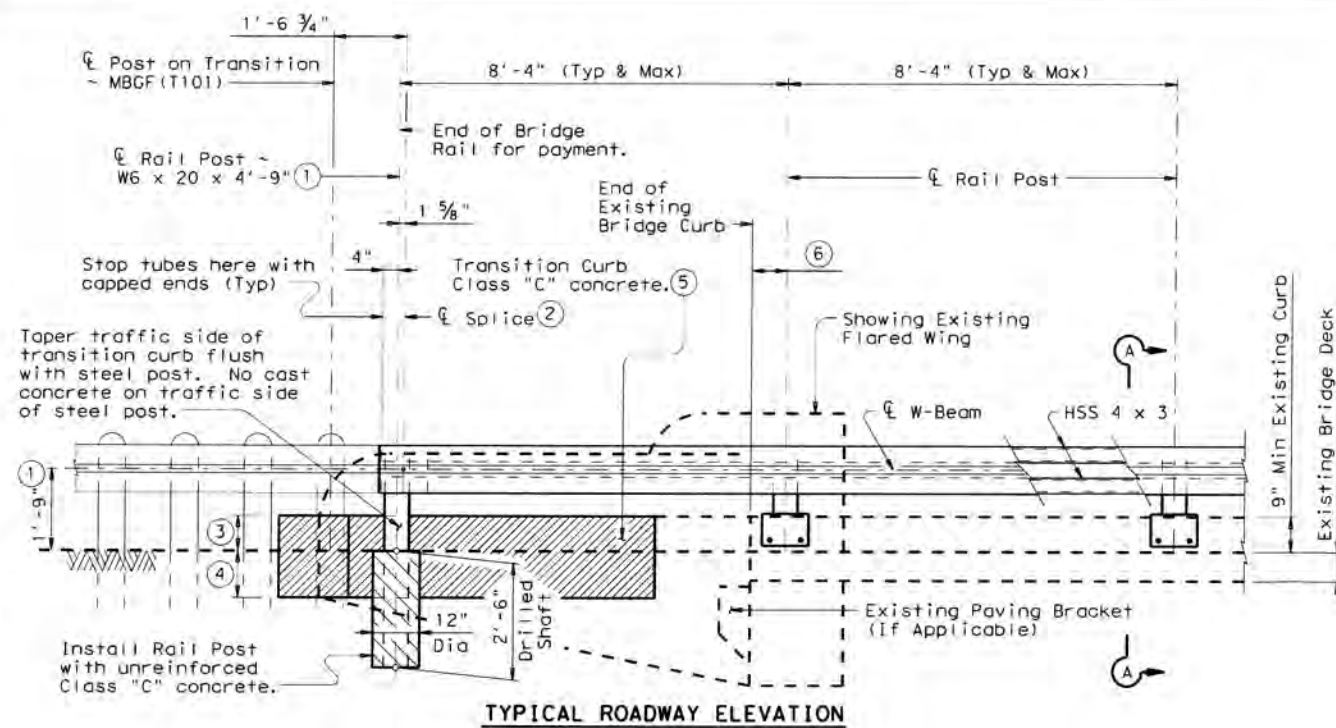
EXAMPLES OF TRANSITION CURB SECTIONS

(Reinforcement may be omitted for transition curbs less than 2 ft long).

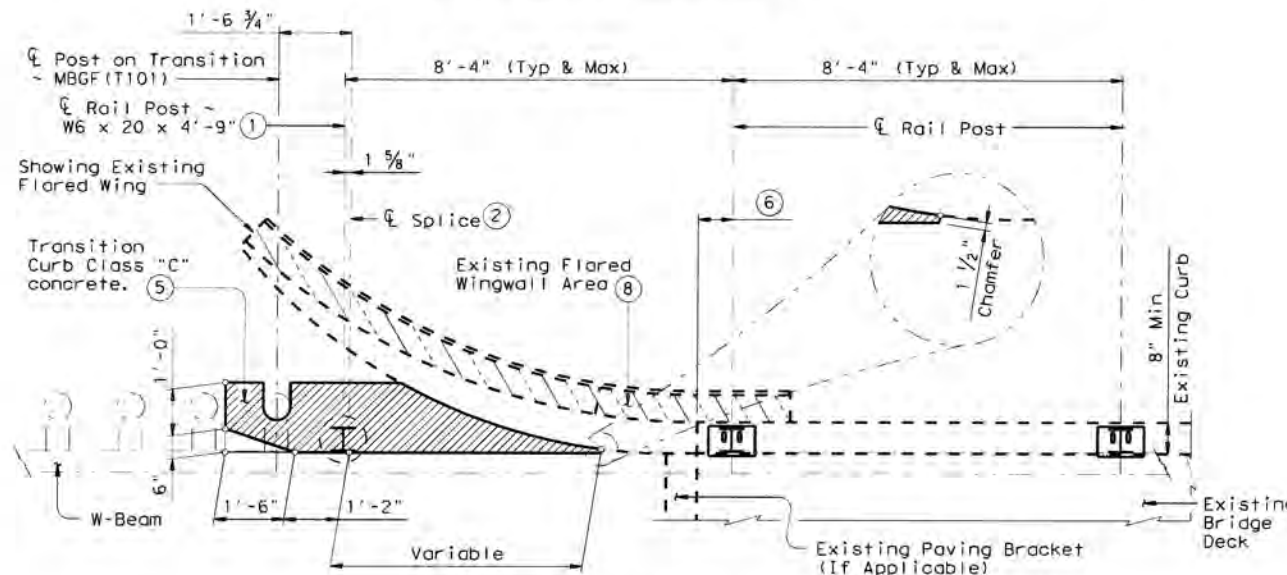
- Increase by amount of existing overlay/seal coat thickness, not to exceed 2". If thickness of existing overlay/seal coat is greater than 2" at toe of rail, taper overlay at a 1:10 or flatter slope over the shoulder width to a thickness of 2" or less at toe of rail.
- Splice may be on either side of bridge rail post web.
- Match existing bridge curb height.
- Cast transition curb 1'-0" into soil or top of concrete approach slab.
- Match existing bridge curb face on traffic side of transition curb. Transition curb 6" x 1'-6" taper will remain vertical.
- Minimum distance from end of curb or open joint in curb to post centerline is existing curb height without overlay/seal coats, but not less than 9".
- Details similar to Example "A" may be used if no existing structure components (like Paving Brackets) interfere with or prevent locating first transition post at 1'-6 3/4" adjacent to first rail post splice on existing structure.

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TYPICAL ROADWAY ELEVATION

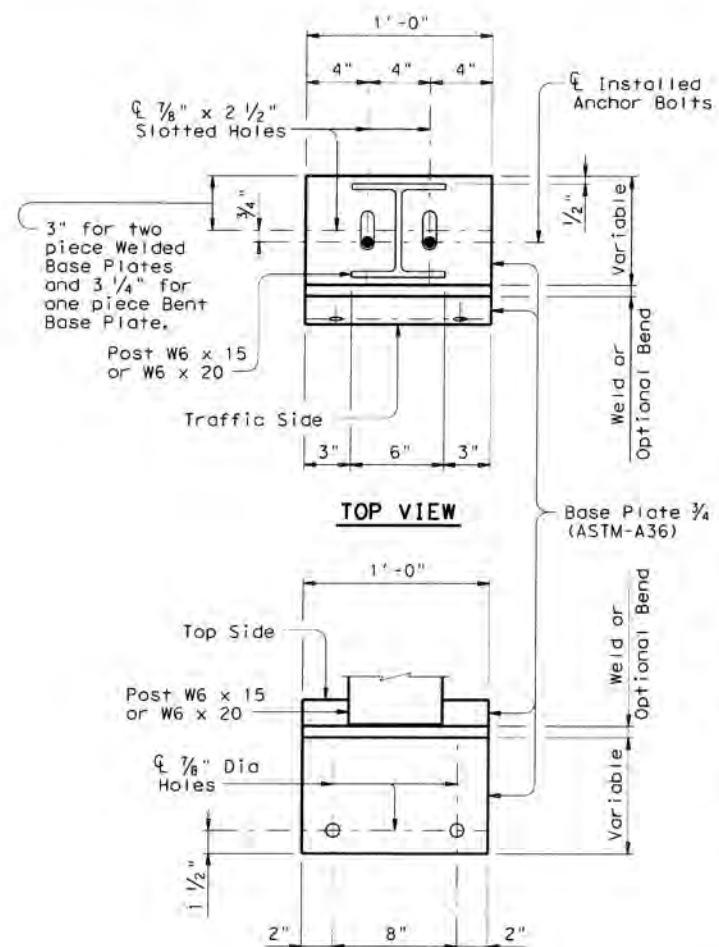


TYPICAL PLAN

EXAMPLE "C" RETROFIT WITH FLARED WING

(Showing 9" high and 8" wide curbs, higher and wider curbs similar)

- 1 Increase by amount of existing overlay/seal coat thickness, not to exceed 2". If thickness of existing overlay/seal coat is greater than 2" at toe of rail, taper overlay at a 1:10 or flatter slope over the shoulder width to a thickness of 2" or less at toe of rail.
- 2 Splice may be on either side of bridge rail post web.
- 3 Match existing bridge curb height.
- 4 Cast transition curb 1'-0" into soil.
- 5 Match existing bridge curb face on traffic side of transition curb. Transition curb 6" x 1'-6" taper will remain vertical.
- 6 Minimum distance from end of curb or open joint in curb to post centerline is existing curb height without overlay/seal coats, but not less than 9".
- 8 Remove all existing structure area from top of existing curb. Cut and grind all existing reinforcing extending from top of existing curb flush and paint ends with two coats of zinc-rich paint conforming to the item "Galvanizing".



BASE PLATE DETAILS

(Base plate can be made out of one or two plates)

Notes: Bridge rail must be attached to the MBGF (T101) transition which then attaches to a metal beam guard fence and extends along the embankment. The splice joining the approach guard fence transition to the bridge rail requires 1'-6 3/4" post spacing. Do not provide a tube splice in first section unless it crosses an expansion armor joint. Maintain 8'-4" post spacing wherever possible for use with nominal 25' W-Beam sections (26'-0 1/2" overall). Symmetry of the post spacing on both sides and along the structure is not necessary. The nominal 25' sections may also be maintained by introducing four post spaces at 6'-3" at areas of conflict. Two adjacent spaces of 8'-8" and 8'-0" each are also permissible.

CONSTRUCTION NOTES:

Panel Lengths of tube members must be attached continuously to a minimum of three posts (except at abutments with expansion joints). Rail Posts must be set perpendicular to adjacent roadway grade. Use epoxy mortar under post base plates if gaps larger than 1/8" exist. At expansion slots in W-Beam rail, tighten bolts snugly.

MATERIAL NOTES:

All steel components except reinforcing must be galvanized unless otherwise shown in plans.

GENERAL NOTES:

A similar full-height railing (T101) has been evaluated to meet NCHRP Report 350 Test Level 3 (TL-3) criteria. This retrofit railing has been structurally evaluated to have strength equal to or exceeding that of the tested railing. See Traffic Rail Type T101 standard for details and notes not shown herein. Using this sheet with the T101 standard, note that anchor bolts, bolt anchor plates, post base plate and post lengths are not used as shown on the T101 standard. This sheet replaces or omits some items on the T101 standard. All bolts, nuts, washers, adhesive anchors, reinforcement, and transition curb concrete are considered as parts of the rail for payment. Erection drawings showing panel lengths, splice locations, post spacing, anchor bolt locations and adhesive anchor test data to demonstrate pullout strength must be submitted to the Engineer for approval. Shop drawings will not be required. Avg weight with no overlay increase and with 0.25" tubes:
38 pif (9", 11" & 12" Curbs)
23 pif (18" Curbs)

This sheet is to be used as a guide for preparing project-specific details to retrofit existing curbed structures with the T101 type of railing. Details with appropriate notes from this guide should be prepared for the specific application. Dimensions of existing slab thickness, curb widths, heights, etc., should be shown. Particular care should be taken in identifying the bridge abutment/wingwall conditions and providing for proper reinforcement anchorage and approach guard fence post positioning. This sheet may not be used without modification. The details shown may need to be amended if the exact existing condition is not covered. In all cases, details and notes not required must be crossed out or eliminated, "(MOD)" added, the phrase "(Not to be used as a standard)" removed, and the sheet sealed and signed.

**RETROFIT GUIDE FOR
T101 RAIL ON CURBS**

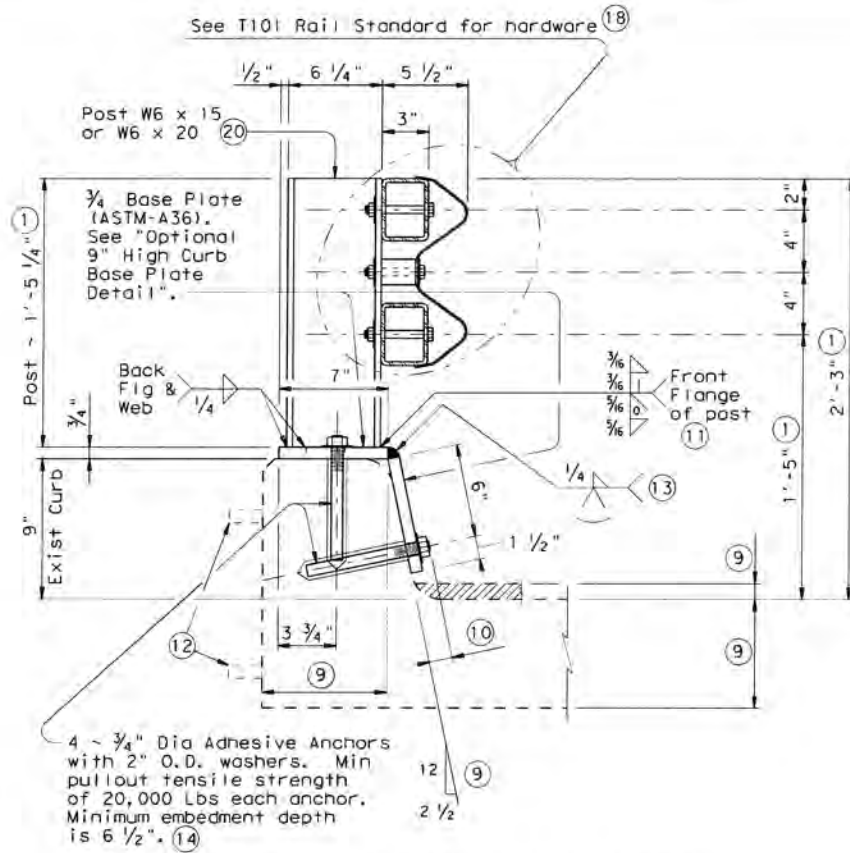
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TYPE T101RC

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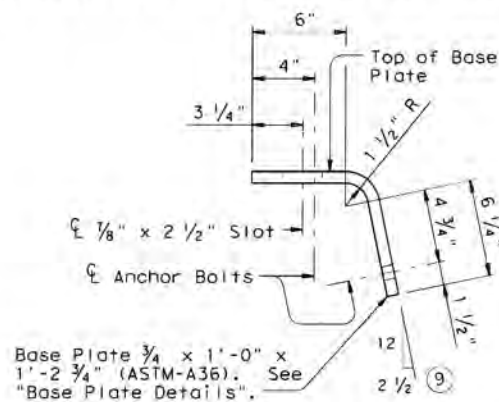
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SECTION A-A OF 9" HIGH CURBS

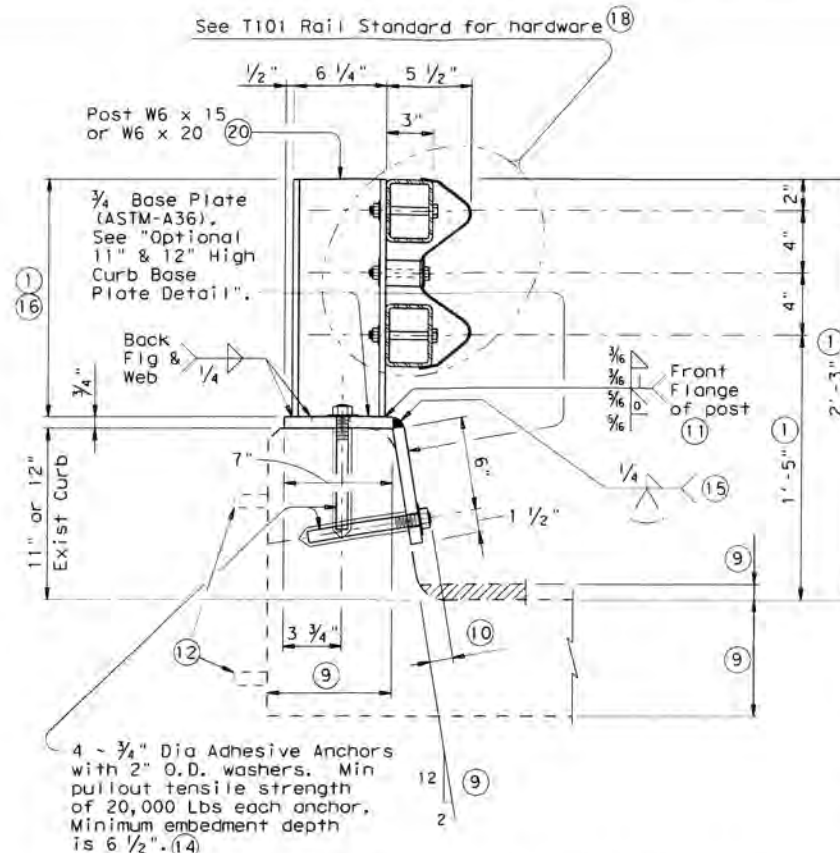
(Showing example of 8" Min width curb, wider curbs similar)



OPTIONAL 9" HIGH CURB BASE PLATE DETAIL

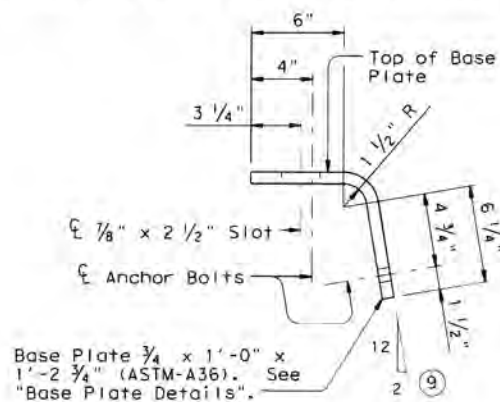
(Bend one piece base plate)

- 1 Increase by amount of existing overlay/seal coat thickness, not to exceed 2". If thickness of existing overlay/seal coat is greater than 2" at toe of rail, taper overlay at a 1:10 or flatter slope over the shoulder width to a thickness of 2" or less at toe of rail.
- 9 See elsewhere in plans for dimensions (Curb width and height, slab and overlay thickness). Slope of curb may differ from what is shown. Adjust base plate as necessary to conform to curb face geometry.
- 10 1 1/2" Bolt Projection (Typ).
- 11 In lieu of front flange weld shown, a 3/8" fillet weld all around including edges of flange may be used.
- 12 Remove existing railing (including posts), cut and grind anchor bolts flush and paint ends with two coats of zinc-rich paint conforming to the Item "Galvanizing".
- 13 Complete joint penetration weld. Optional one piece base plate may be used. See "Optional 9" High Curb Base Plate Detail".



SECTION A-A OF 11" & 12" HIGH CURBS

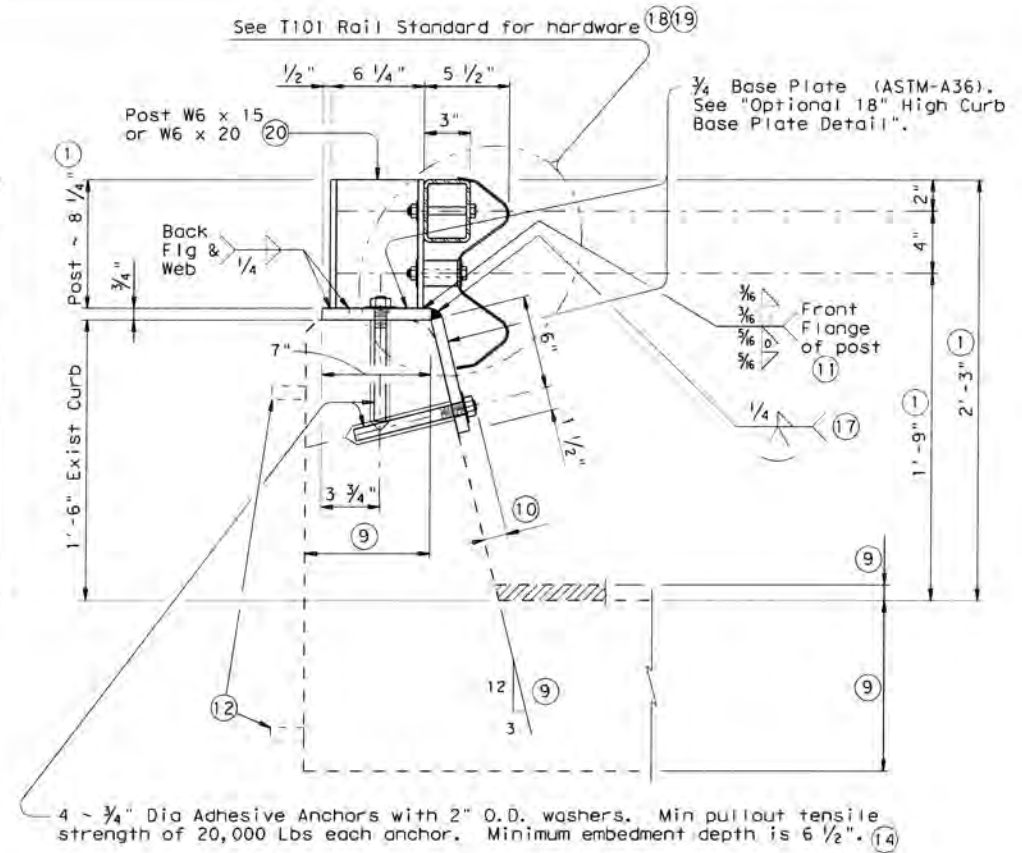
(Showing example of 8" Min width curb, wider curbs similar)



OPTIONAL 11" & 12" HIGH CURB BASE PLATE DETAIL

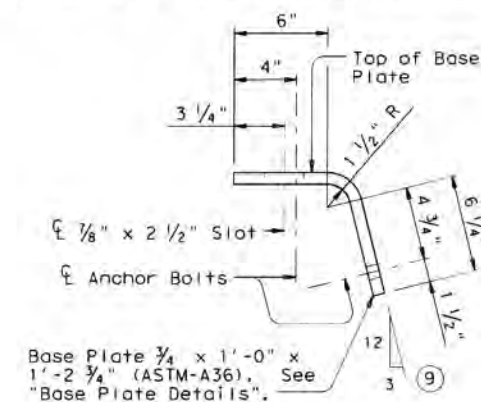
(Bend one piece base plate)

- 14 Hole size, hole cleaning and other installation requirements must conform to manufacturer's instructions. Use a Type III Class C epoxy.
- 15 Complete joint penetration weld. Optional one piece base plate may be used. See "Optional 11" & 12" High Curb Base Plate Detail".
- 16 On 11" Curbs, Posts are 1'-3 1/4". On 12" Curbs, Posts are 1'-2 1/4".
- 17 Complete joint penetration weld. Optional one piece base plate may be used. See "Optional 18" High Curb Base Plate Detail".
- 18 See T101 standard for details and notes not shown.
- 19 This retrofit condition will only accommodate one top HSS 4 x 3 member under W-Beam.
- 20 See T101 standard for post spacing, unless shown otherwise.



SECTION A-A OF 18" HIGH CURBS

(Showing example of 8" Min width curb, wider curbs similar)



OPTIONAL 18" HIGH CURB BASE PLATE DETAIL

(Bend one piece base plate)

SHEET 3 OF 3

Texas Department of Transportation
Bridge Division

RETROFIT GUIDE FOR T101 RAIL ON CURBS

(NOT TO BE USED AS A STANDARD)

TYPE T101RC

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