DATE:
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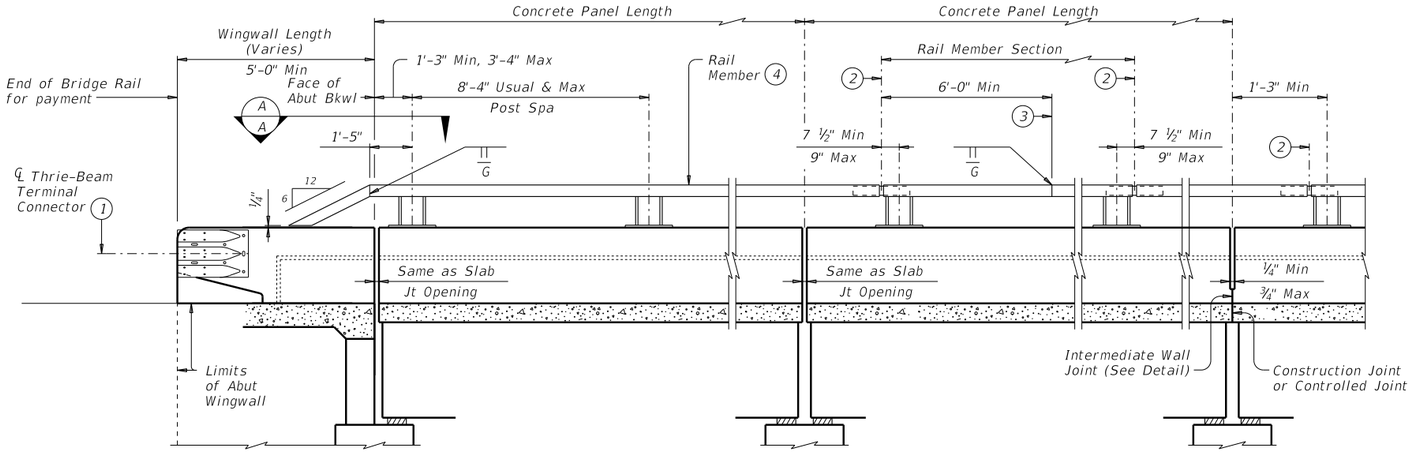
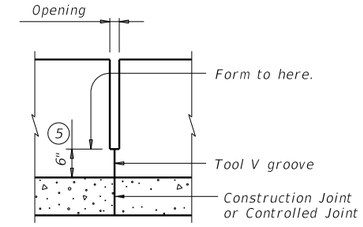


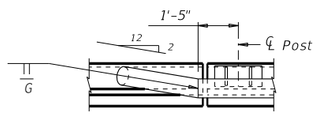
ROADWAY ELEVATION OF RAIL

(Rail Member showing Elliptical Tube Option, Rectangular Tube Option similar).



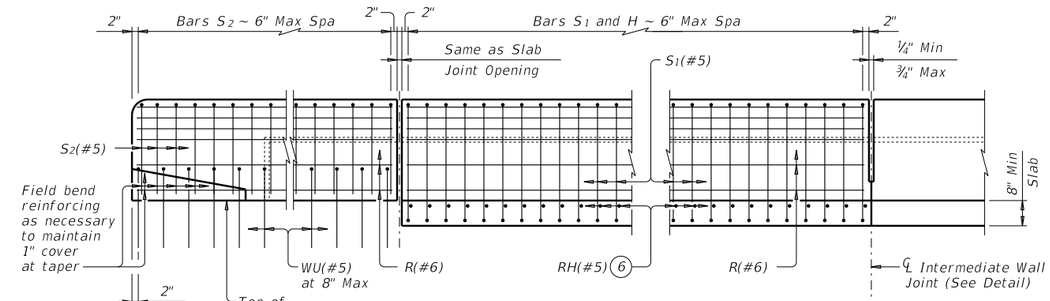
INTERMEDIATE WALL JOINT DETAIL

Provide at all interior bents without slab expansion joints. Location independent of rail member splices.



VIEW A-A

(Showing Rail Member turn-down)
(Rail Member showing Elliptical Tube Option, Rectangular Tube Option similar).



ELEVATION SHOWING TYPICAL REINFORCING PLACEMENT

(1) Terminal Connectors and associated hardware are to be paid for under the Item "Metal Beam Guard Fence". Attach Metal Beam Guard Fence Transitions to the bridge unless otherwise shown in the plans.

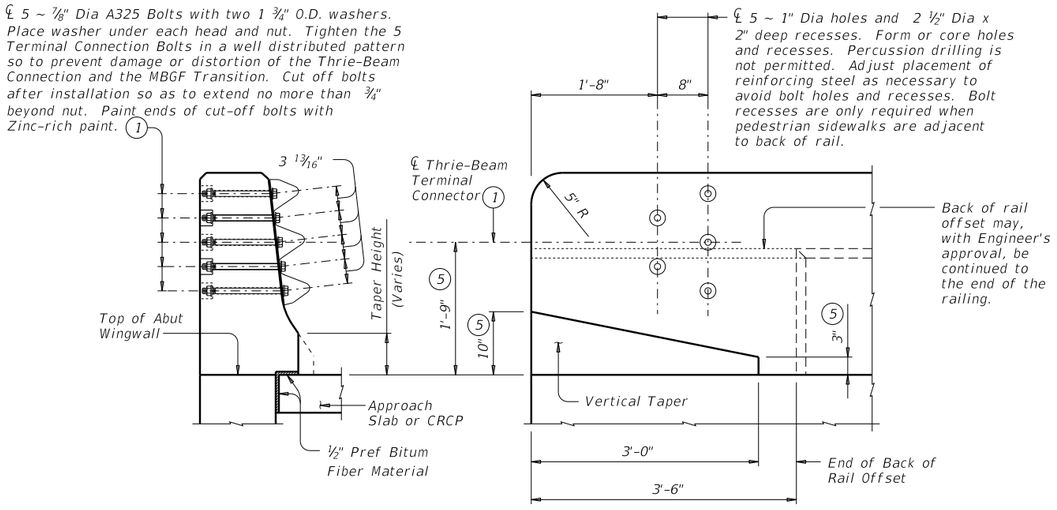
(2) ℄ Exp Jt or Splice Jt as required.

(3) One shop splice per panel is permitted with minimum 85 percent penetration. The weld may be square groove, double vee groove, or single groove. Grind smooth.

(4) Unless directed otherwise by the Engineer, the Fabricator may use the rectangular tube in lieu of the elliptical tube for the rail member.

(5) Increase 2" for structures with Overlay.

(6) Bars RH(#5) are part of rail reinforcing and are included in unit price bid for railing. Bars RH(#5) are in addition to slab overhang reinforcement shown elsewhere. Extend Bars RH(#5) 2'-0" Min past ℄ of beam/girder. Space with Bars S1(#5). Bars RH(#5) match slab bar cover. Bars RH(#5) may be bundled with top slab reinforcing if spacing is equivalent. Omit Bars RH(#5) when top slab reinforcement is spaced less than 4".



TERMINAL CONNECTION DETAILS

SHEET 1 OF 3

Texas Department of Transportation

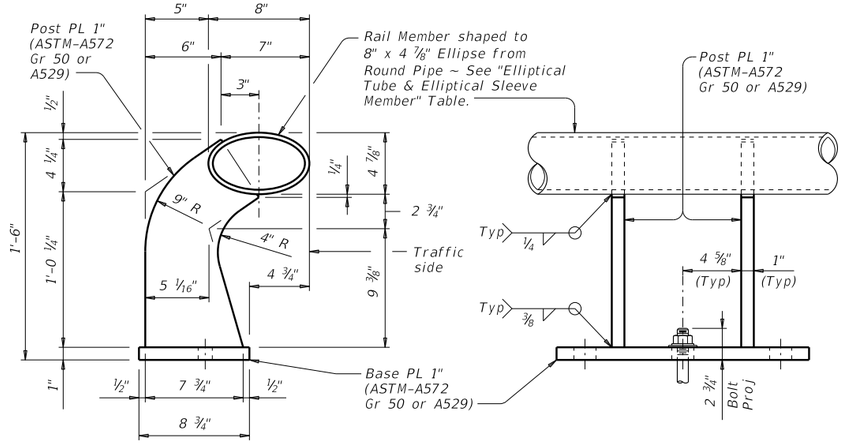
Bridge Division Standard

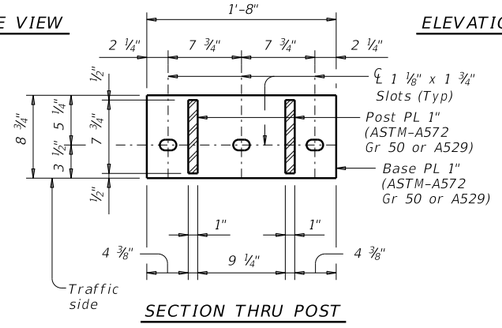
TRAFFIC RAIL

TYPE T80HT

FILE: rlstd015.dgn	DN: TxDOT	CK: TxDOT	DW: JTR	CK: TxDOT
©TxDOT July 2014	CONT	SECT	JOB	HIGHWAY
REVISIONS				
03-16: Renamed bars H to RH. Added Class D, E, or F epoxy to Material Notes.	DIST	COUNTY		SHEET NO.

DATE:
FILE:





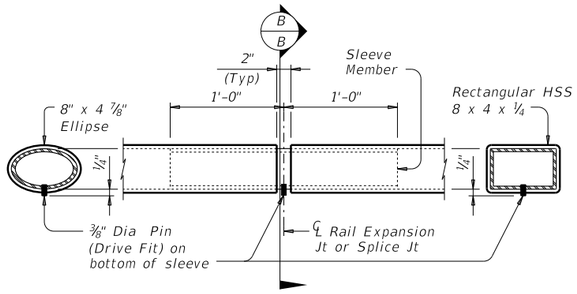
SECTION THRU POST

ELLIPTICAL TUBE WITH RAIL POST AND ANCHORAGE DETAILS

(Showing Elliptical Tube Option)

ELLIPTICAL TUBE & ELLIPTICAL SLEEVE MEMBER		
8" x 4 7/8" Ellipse	Elliptical Sleeve Member	
Material	Material	Thickness
6" Dia Std Pipe ASTM-A53 E or S Gr B)	ASTM-A53 Gr B	0.353"
	A36 or A500 Gr B	0.339"
	API-5LX52	0.224"
6 5/8" O.D. Pipe x 0.188" API-5LX52	ASTM-A53 Gr B	0.339"
	A36 or A500 Gr B	0.325"
	API-5LX52	0.188"

Notes: Other sections of equal or greater strength are acceptable for elliptical sleeves. The major and minor diameters of the rail member may vary +/- 0.1875" from plan dimension. However, the difference between the outside diameters of the elliptical sleeve and the inside diameters of the rail member cannot exceed 0.25 inches.

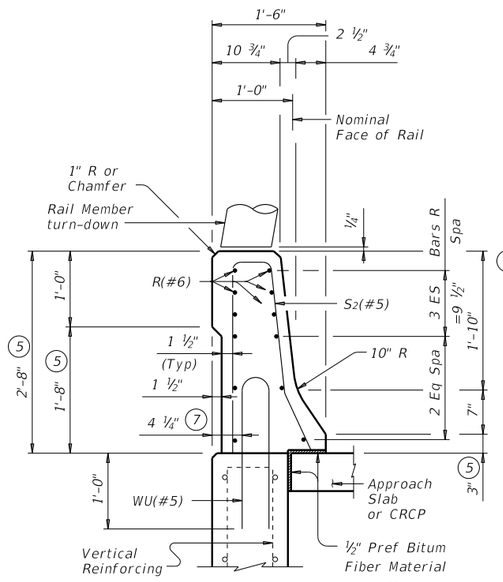


SECTION B-B (Showing Ellipse Tube Option)

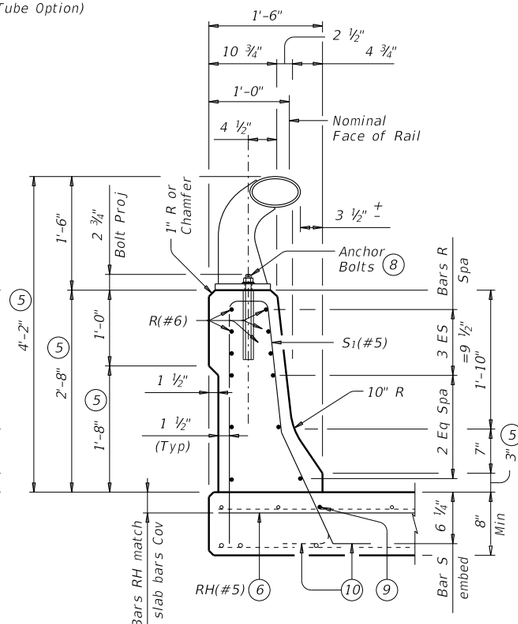
AT SPLICE OR EXP JTS

SECTION B-B (Showing Rectangular Tube Option)

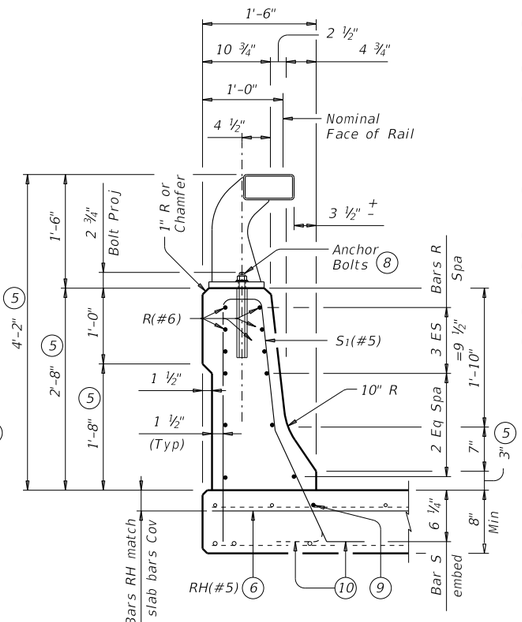
TUBE SPLICE DETAIL (4)



ON ABUTMENT WINGWALLS (11)

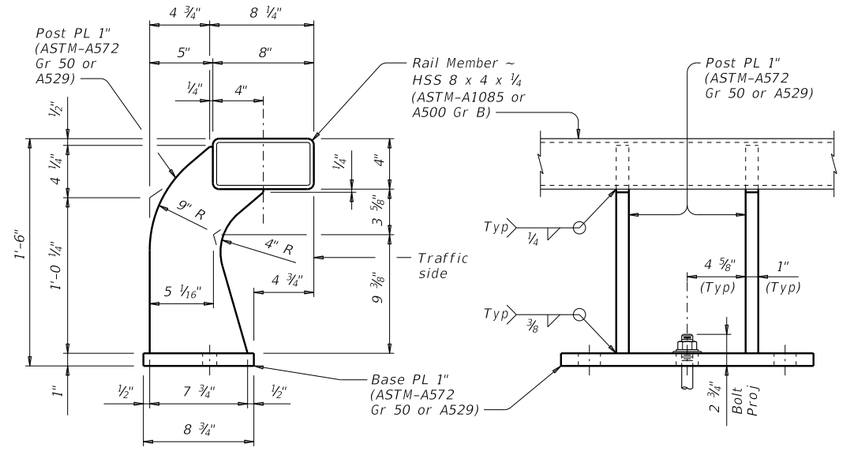


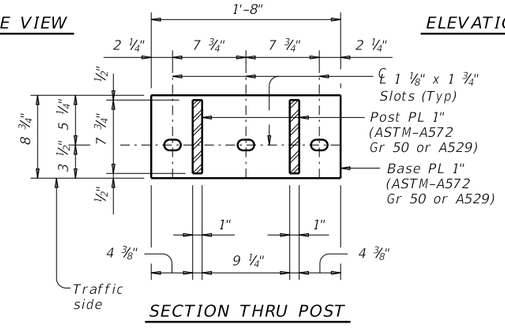
ON BRIDGE SLAB (Showing Elliptical Tube Option)



ON BRIDGE SLAB (Showing Rectangular Tube Option)

SECTIONS THRU RAIL (4)(11)





SECTION THRU POST

RECTANGULAR TUBE WITH RAIL POST AND ANCHORAGE DETAILS (4)

(Showing Rectangular Tube Option)

(4) Unless directed otherwise by the Engineer, the Fabricator may use the rectangular tube in lieu of the elliptical tube for the rail member.

(5) Increase 2" for structures with Overlay.

(6) Bars RH(#5) are part of rail reinforcing and are included in unit price bid for railing. Bars RH(#5) are in addition to slab overhang reinforcement shown elsewhere. Extend Bars RH(#5) 2'-0" Min past ℄ of beam/girder. Space with Bars S1(#5). Bars RH(#5) match slab bar cover. Bars RH(#5) may be bundled with top slab reinforcing if spacing is equivalent. Omit Bars RH(#5) when top slab reinforcement is spaced less than 4".

(7) 5 ¼" when vertical reinforcing has closer clear cover over horizontal reinforcing in abutment wingwalls on traffic side of wall.

(8) See "Material Notes" for Anchor Bolt information.

(9) Top longitudinal slab bar may be adjusted laterally 3" plus or minus to tie reinforcing.

(10) Bar may be bent or adjusted as shown.

(11) Mounting this rail to retaining walls requires additional details not covered by this standard.

Texas Department of Transportation

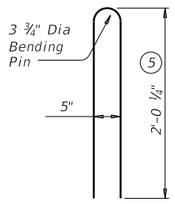
Bridge Division Standard

TRAFFIC RAIL

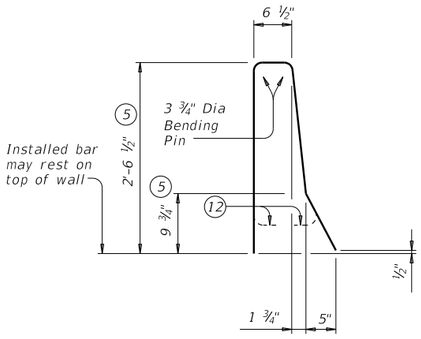
TYPE T80HT

FILE: rlstd015.dgn	DN: TxDOT	CK: TxDOT	DW: JTR	CK: TxDOT
©TxDOT July 2014	CONT	SECT	JOB	HIGHWAY
REVISIONS 03-16: Renamed bars H to RH. Added Class D, E, or F epoxy to Material Notes.	DIST	COUNTY		SHEET NO.

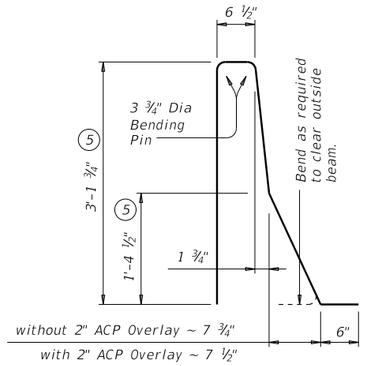
DATE:
FILE:



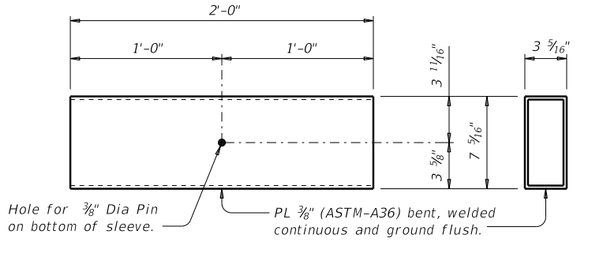
BARS WU (#5)



BARS S_2 (#5)



BARS S_1 (#5)



PLAN END VIEW

RECTANGULAR TUBE SLEEVE MEMBER DETAIL

(See Tube Splice Detail)

(4) Unless directed otherwise by the Engineer, the Fabricator may use the rectangular tube in lieu of the elliptical tube for the rail member.

(5) Increase 2" for structures with Overlay.

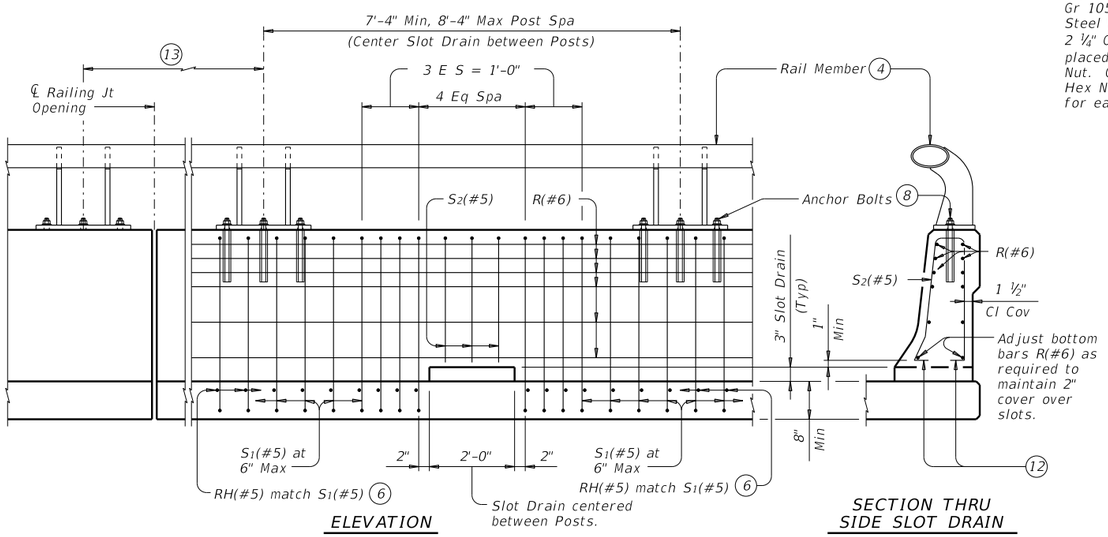
(6) Bars RH(#5) are part of rail reinforcing and are included in unit price bid for railing. Bars RH(#5) are in addition to slab overhang reinforcement shown elsewhere. Extend Bars RH(#5) 2'-0" Min past ℄ of beam/girder. Space with Bars S_1(#5). Bars RH(#5) match slab bar cover. Bars RH(#5) may be bundled with top slab reinforcing if spacing is equivalent. Omit Bars RH(#5) when top slab reinforcement is spaced less than 4".

(8) See "Material Notes" for Anchor Bolt information.

(12) Bend or cut bars as required to clear drain slots.

(13) Slots are not allowed in areas where there is a joint in the concrete panel between rail posts.

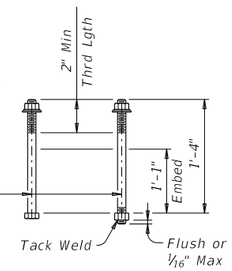
(14) Shop drawings for approval are required for tubular steel sections.



ELEVATION SECTION THRU SIDE SLOT DRAIN

OPTIONAL SIDE SLOT DRAIN DETAILS

Note: Center Side Slot Drains between rail posts within the limits 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.



CAST-IN-PLACE ANCHOR BOLT OPTIONS (8)

RAIL DATA FOR HORIZONTAL CURVES

	RADIUS TO FACE OF RAIL	MAX CHORD LENGTH	CONSTRUCT OR FABRICATE
Rail Members	Over 2800'	29'-0"	Straight rail sections
	Over 1400' thru 2800'	14'-6"	To required radius or to chords shown (14)
	Over 700' thru 1400'	7'-3"	
	Thru 700'	Zero	To required radius (14)

CONSTRUCTION NOTES:

This rail may be slip-formed if approved by the Engineer when epoxy adhesive anchor bolts are used.

Slip-forming parapet is not allowed if anchor bolts are cast with parapet wall.

At the Contractor's option, anchor bolts may be cast with the parapet (See Cast-in-Place Anchor Bolt Options).

Rail parapet must be plumb unless otherwise approved. Steel posts must be square to the top of parapet. Use Type VIII epoxy mortar under post base plates if gaps larger than 1/16" exist.

Panel lengths of tube members must be attached continuously to a minimum of three posts.

Round or chamfer all exposed edges of steel components 1/16" by grinding prior to galvanizing.

Chamfer all exposed concrete corners.

MATERIAL NOTES:

Galvanize all steel components except reinforcing steel.

Anchor bolts must be ⅞" Dia A193 Gr B7 fully threaded rods with heavy hex nuts, one hardened washer and one 2 ¼" O.D. washer each. Embed threaded rods 10 ½" Min into concrete parapet using a Type III, Class C, D, E, or F epoxy adhesive anchorage system capable of obtaining an ultimate load, per threaded rod, of 34 kips in tension, considering spacing and edge distance. Submit evidence of the proposed epoxy adhesive anchorage system's ability to develop this load to the Engineer for approval prior to use (Hilti HIT RE 500 is known to achieve the necessary ultimate loads through physical testing and need not be submitted for approval if used). Anchor installation, including hole size, drilling, and clean-out, must be in accordance with the Manufacturer's instructions.

Optional cast-in-place anchor bolts must be ⅞" Dia ASTM A325 or A449 bolts (or A193 Gr B7 or F1554 Gr 105 threaded rods with one tack welded heavy hex nut each) with one heavy hex nut and one hardened steel washer plus one 2 ¼" O.D. steel washer at each bolt. Nuts must conform to A563 requirements.

Provide Class "C" concrete. Provide Class "C" (HPC) if required elsewhere.

Provide Grade 60 reinforcing steel.

Epoxy coat all rail reinforcement if slab bars are epoxy coated.

Deformed Welded Wire Reinforcement (WWR) (ASTM A1064) of equal size and spacing may be substituted for Bars S1, S2 and WU unless noted otherwise.

Provide bar laps, where required, as follows:

Uncoated ~ #6 = 2'-1"
Epoxy coated ~ #6 = 3'-1"

GENERAL NOTES:

This rail was evaluated based on the results of previous crash tests and approved for a NCHRP Report 350 TL-5 rating. This rail can be used for speeds of 50 mph and greater when a TL-3 rated guard fence transition is used.

Do not use this railing on bridges with expansion joints providing more than 5" movement.

Rail anchorage details shown on this standard may require modification for select structure types. See appropriate details elsewhere in plans for these modifications.

The T80HT Rail may terminate on the structure if safety considerations so allow. In this case, there must be a custom section, detailed elsewhere in the plans, transitioning between this and a normal traffic railing such as T551. See Bridge Layout for limits.

Submit erection drawings showing panel lengths, rail post spacing, and anchor bolt setting to the Engineer for approval.

Average weight of railing with no overlay: 447 plf total
415 plf (Conc)
32 plf (Steel).

Cover dimensions are clear dimensions, unless noted otherwise.
Reinforcing bar dimensions shown are out-to-out of bar.

Texas Department of Transportation

Bridge Division Standard

TRAFFIC RAIL

TYPE T80HT

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©TxDOT July 2014	CONT	SECT	JOB	HIGHWAY
REVISIONS				
03-16: Renamed bars H to RH. Added Class D, E, or F epoxy to Material Notes.	DIST	COUNTY		SHEET NO.