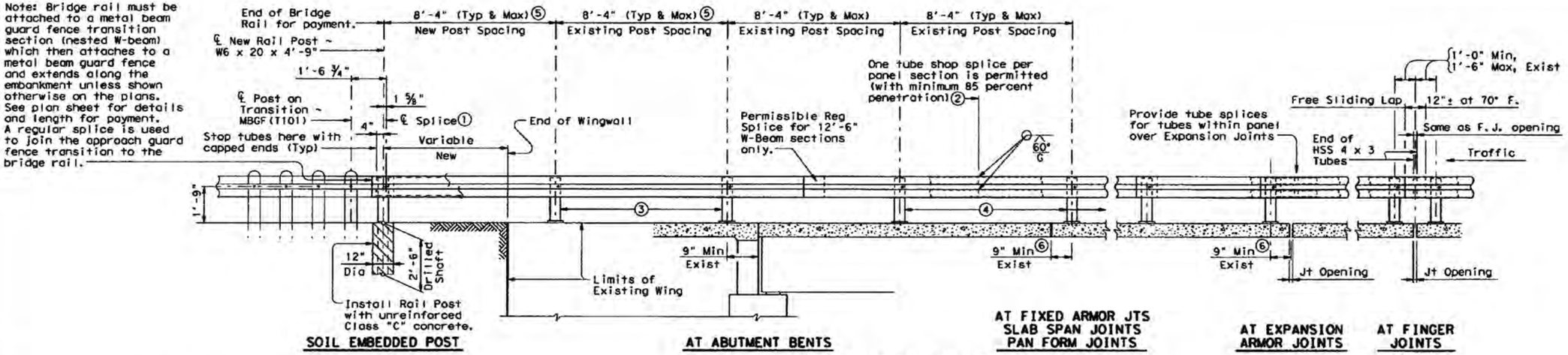
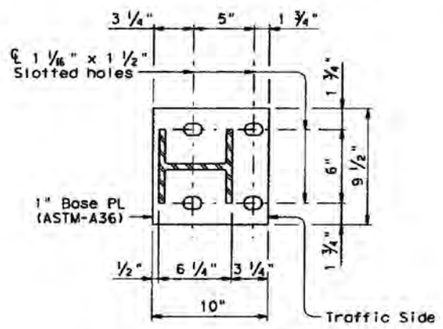
Note: Bridge rail must be attached to a metal beam guard fence transition section (nested W-beam) which then attaches to a metal beam guard fence and extends along the embankment unless shown otherwise on the plans. See plan sheet for details and length for payment. A regular splice is used to join the approach guard fence transition to the bridge rail.

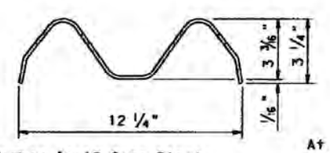


ROADWAY ELEVATION OF RAIL⑦



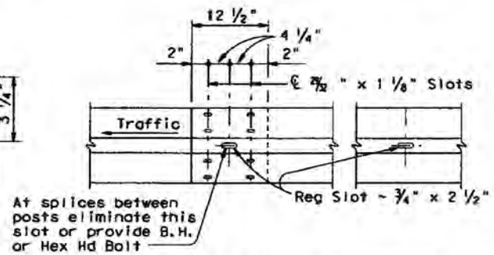
SECTION A-A

(Showing existing post & base plate.)



Member is 12 Gage Steel Nom thickness = 0.1046" exclusive of protective coating. Actual section may vary slightly with the manufacturer and conforms to AASHTO M-180.

SECTION

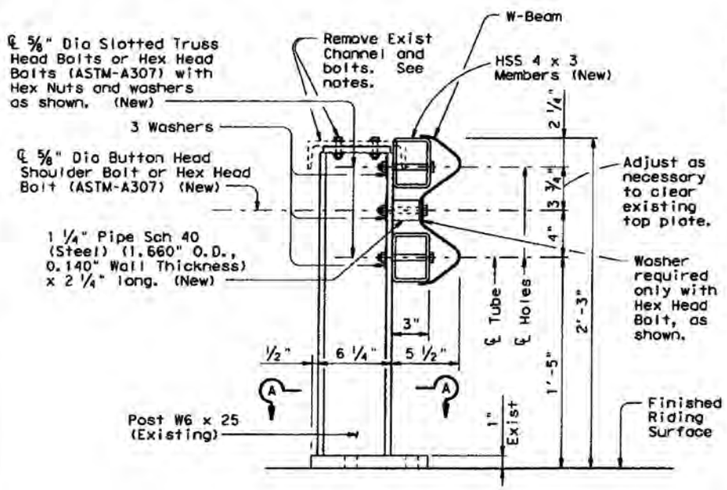


Note: Provide 5/8" Dia Button Head Shoulder Bolts or Hex Head Bolts (ASTM-A307) with Hex Nuts at all splice slots

SPLICE

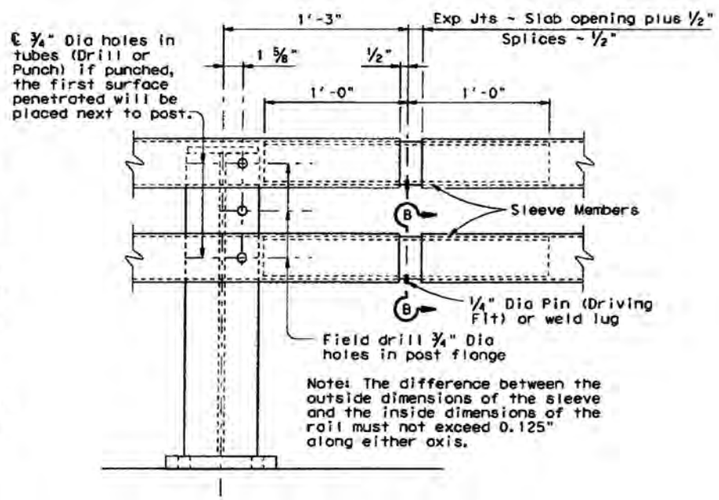
POST CONN

W-BEAM DETAILS



T1 CONVERTED TO T101 RAIL SECTION

(Showing Existing Post being converted without overlay/seal coats.)



Note: The difference between the outside dimensions of the sleeve and the inside dimensions of the rail must not exceed 0.125" along either axis.

TUBE SPLICE DETAILS

① Splice may be on either side of bridge rail post web.

② The weld may be square groove or single vee groove. Grind smooth.

③ Post must be sufficient length to accommodate top of W-Beam to roadway finish grade height of 27". If 27" cannot be achieved with existing posts, provide new posts.

④ Post must be sufficient length to accommodate top of W-Beam to roadway finish grade height of 27". If 27" cannot be achieved with existing posts the provide new posts or shims under existing posts.

⑤ Do not provide a tube splice in section unless it crosses an expansion joint.

⑥ For Prestressed Box Beam Spans the minimum distance from end of box to centerline of post was 6" Existing.

⑦ Field verify existing post spacing and top of W-Beam to roadway finish grade height. See "Retrofit Notes".

SHEET 1 OF 2

Texas Department of Transportation
Bridge Division

RETROFIT TRAFFIC RAIL (CONVERTS T1 TO T101 TYPE RAIL)

TYPE T1-101R

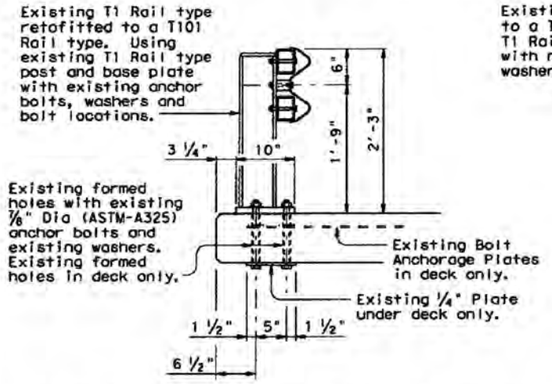
FILE: rlstd024.dgn	DN: JJP	CK: TxDOT	DW: RNP/JTR	CK: JAH		
©TxDOT April 2009	DISTRICT	FEDERAL AID PROJECT			SHEET	
REVISIONS	14				52	
	COUNTY		CONTROL	SECT	JOB	HIGHWAY
	BASTROP		0472	01	037	SH 21

ACC:

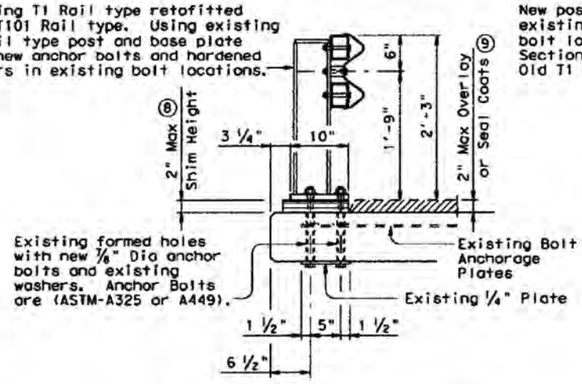
LEVELS DISPLAY

ACC:

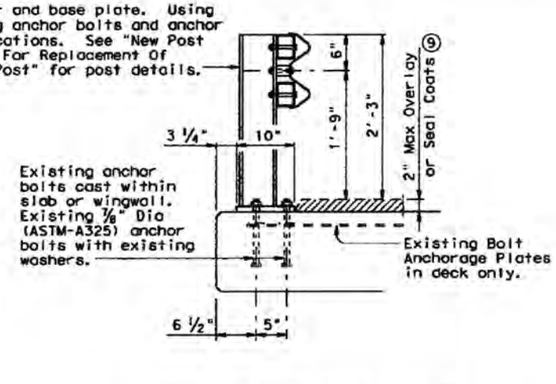
LEVELS DISPLAYED



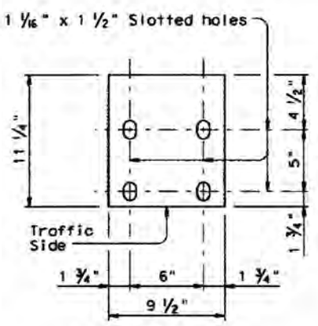
BASIC CONDITION WITH NO OVERLAY/SEAL COATS
(Showing basic retrofitted condittion. Wingwalls similar.)



SHIMS FOR OVERLAY/SEAL COATS
(Showing existing formed holes in deck for anchor bolts.)



NEW POST FOR OVERLAY/SEAL COATS
(Showing anchor bolts cast in deck. Wingwalls similar.)



SHIM DETAIL
(Shim thickness must be 1/4" or 3/4" Plate ASTM-A36)

SECTIONS THRU RETROFITTED RAILS ON EXISTING STRUCTURES

⑧ Combinations of 1/4" and 3/4" shims are maximized to reduce the number of shims used at a given location. Example: 2 course surface treatment and ACP overlay thickness at a post = 2". Use: 2 - 3/4" shims and 2 - 1/4 shims.

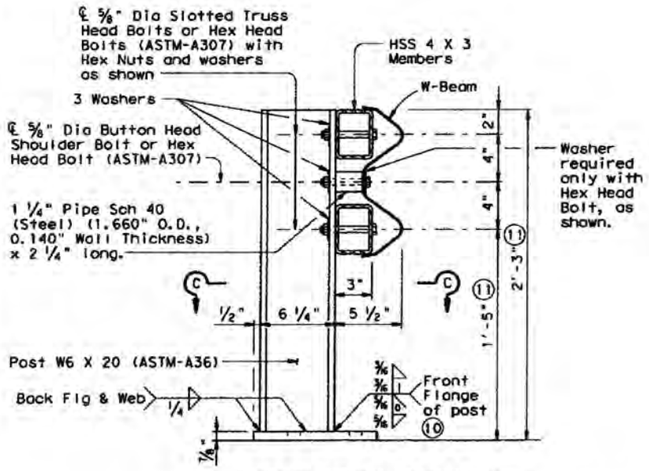
⑨ If thickness of existing overlay/seal coat is greater than 2" at toe of rail, taper overlay at a 1:10 or flatter slope over the shoulder width to a thickness of 2" or less at toe of rail.

⑩ In lieu of front Flg weld shown, a 3/8" fillet weld all around including edges of flange may be used.

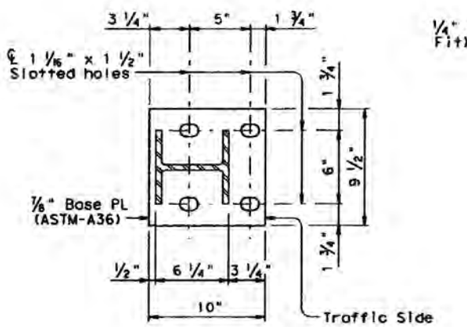
⑪ Increase 2" for structures with 2" Max overlay.

TUBE & SLEEVE MEMBERS		
Rail Member		Sleeve Thickness
Material	Thickness	Material - A36
A 500 Grade C	0.188"	0.188"
A 500 Grade B	0.250"	0.250"
A 500 Grade A or A 501	0.313"	0.250"

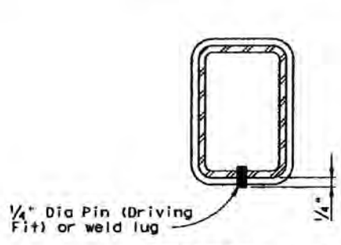
Note: Other sections of equal or greater strength are acceptable for sleeves.



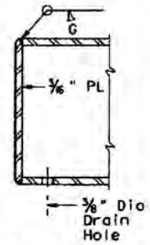
NEW POST SECTION FOR REPLACEMENT OF OLD T1 POST
(Showing taller post when existing anchor bolts are cast in deck or wingwalls with overlay/seal coats.)



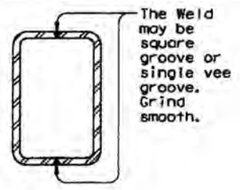
SECTION C-C
(Showing new post & base plate.)



SECTION B-B



RAIL CAP



SLEEVE FABRICATION OPTION

RETROFIT NOTES:
These retrofit details give requirements for converting existing T1 rail into a railing equivalent in strength and geometry to the standard T101 rail. The existing W6 x 25 posts exceed the strength of the W6 x 20 posts used for T101. The existing 7/8" Dia A325 anchor bolts exceed the strength of the 3/4" Dia anchor bolts used for T101.

The existing C8 x 11.5 channel is to be salvaged and delivered with any salvaged mounting bolts to the department storage site specified elsewhere in the plans or as otherwise directed by the Engineer.

Galvanized tube members are to be fabricated and installed as shown in these details. It is suggested that the holes drilled in the existing posts be field drilled using the new tube members as positioning guides. It is further suggested that the contractor field measure the existing post spacing and relationship to any bridge expansion joints and wingwalls prior to fabrication of the tube members.

All damaged galvanized surfaces on the existing posts and base plates should be cleaned (not by grinding) and painted with two coats of a zinc-rich paint conforming to the requirements of the Item "Galvanizing".

The existing W-Beam member is to be removed and reused unless indicated to be replaced by notes elsewhere in the plans. Damaged galvanizing on existing W-Beam which is reused must also be repaired by cleaning and painting with two coats of zinc-rich paint.

CONSTRUCTION NOTES:
Attach panel lengths of tube members continuously to a minimum of three posts (except at abutments with expansion joints).

At expansion slots in W-Beam rail, tighten bolts snugly.

MATERIAL NOTES:
All new steel components are galvanized unless otherwise shown in plans.

GENERAL NOTES:
This rail was evaluated based on the results of previous crash tests and approved for a NCHRP Report 350 TL-3 rating. The Metal Beam Guard Fence (T101) transition standard must be used regardless of the design speed.

All bolts, nuts, washers, shims and new posts are considered as parts of the rail for payment.

Texas Department of Transportation
Bridge Division

RETROFIT TRAFFIC RAIL (CONVERTS T1 TO T101 TYPE RAIL)

TYPE T1-101R

FILE: rlstd024.dgn	DN: JJP	CK: TxDOT	DW: RNP/JTR	CK: JMH
©TxDOT April 2009	DISTRICT	FEDERAL AID PROJECT		SHEET
REVISIONS	14			53
	COUNTY	CONTROL	SECT	JOB	HIGHWAY
	BASTROP	0472	01	037	SH 21