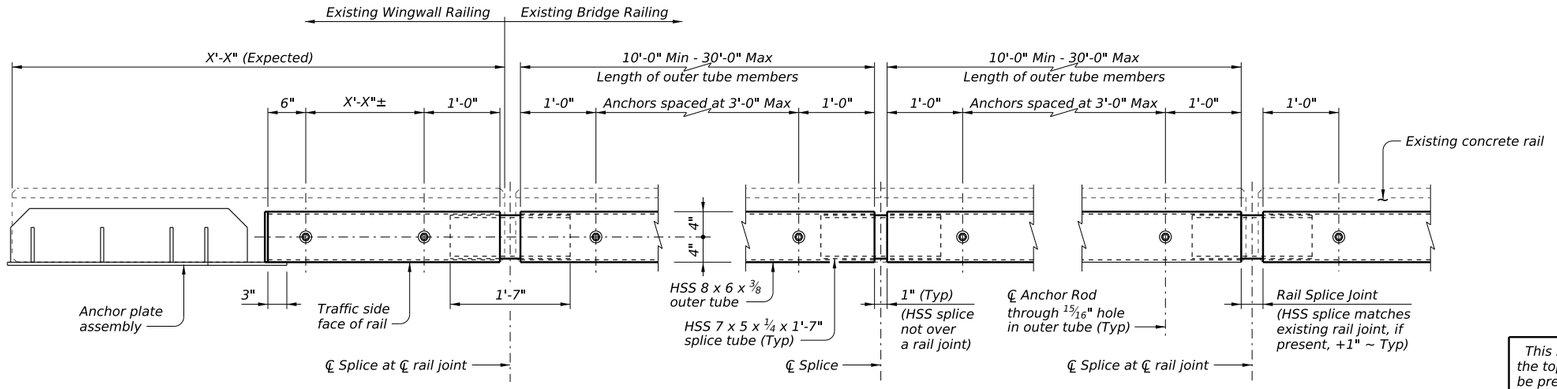
DATE:
FILE:

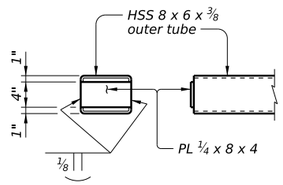


PLAN

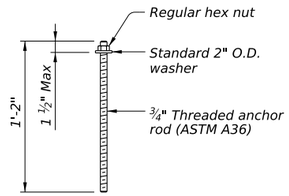
This sheet is to be used as a guide for increasing the rail height by 6" max by adding HSS tube to the top of concrete railing listed on this sheet. Details with appropriate notes from this guide should be prepared for the specific application. Dimensions of existing slab thickness, curb widths, heights, 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 and "(MOD)" added to indicate modification of the sheet. This note and the phrase "(Not to be used as a standard)" must be removed and the sheet must be signed and sealed by a Professional Engineer.

ELEVATION

SECTION A-A



TUBE END CAP



ANCHOR ROD (1)

(1) Anchor bolts must be 3/4" Dia. ASTM A36 fully threaded rods with one regular hex nut and one standard 2" O.D. washer each. Embed fully threaded anchor rods 6 1/2" minimum into concrete rail using Hilti HIT-RE 500 V3 epoxy adhesive. Other Type III, Class C, D, E or F epoxy adhesives meeting the requirements of DMS-6100, "Epoxies and Adhesives" may be used if it can be demonstrated that they meet or exceed the strength of Hilti HIT-RE 500 V3 with the same embedment depth and threaded anchor rod size and spacing. Follow Manufacturer's directions for installing the epoxied fully threaded anchor rods.

MATERIAL NOTES:

Provide ASTM A500 Grade B structural steel for HSS tube.
Provide ASTM A36 structural steel for end cap and anchor bolts.
Structural steel must conform to Item 441, "Steel Structures" and must be free from burrs, sharp edges, and weld splatter.
Grind exposed edges and corners to 1/16" flat or radius.
Galvanize all steel components in accordance with Item 445, "Galvanizing."
Provide Class 2 fit tolerances for anchor bolts, rods, and nuts.
Tap nuts after galvanizing and install to snug tight.
Burr threads after installation to prevent back turn of the nut.

GENERAL NOTES:

These details are for retrofitting HSS railing onto T2, T201, T202, T203, T5, and T501 type rails. Application for T2 type railing requires removal of the W-Beam from the rail assembly.
Use of these retrofit details will result in a railing acceptable for the MASH Test Level indicated on the applicable rail standard.
Contractor to verify all dimensions in the field prior to start of work.

Texas Department of Transportation

Bridge Division Standard

RETROFIT GUIDE FOR ADDING HSS

(TYPE T2, T201-T203, T5 AND T501 RAILS)

(Not to be used as a standard)

HSS-R

FILE: RL-HSS-R-24.dgn	DN: TxDOT	CK: TAR	DW: SFS	CK: TAR
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REVISIONS				
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