



**OHIO DEPARTMENT OF TRANSPORTATION**  
CENTRAL OFFICE, 1980 W. BROAD ST., COLUMBUS, OHIO 43216-0899

July 15, 2011

To: Users of the Standard Bridge Drawings  
From: Tim Keller, Administrator, Office of Structural Engineering  
By: Sean Meddles, Bridge Standards Engineer  
Re: New Standard Bridge Drawing

A new Standard Bridge Drawing, Deep Beam Bridge Retrofit Railing (DBR-3-11), is now available. This drawing provides a retrofit upgrade for existing Deep Beam Bridge Guardrail (DBR-2-73) to NCHRP Report 350 TL-3 acceptance criteria. This drawing is the culmination of ODOT sponsored research to improve the crashworthiness of the Deep Beam Bridge Guardrail system. A copy of the final research report is available at:

<http://www.dot.state.oh.us/Divisions/Planning/SPR/Research/reportsandplans/Reports/2011/Structures/134394-FR.pdf>

This new drawing shall be referenced to all projects requiring upgrading of Deep Beam Bridge Guardrail (DBR-2-73) with Stage 1 design submissions after July 15, 2011.

**DESCRIPTION:** THIS STANDARD DRAWING PROVIDES AN UPGRADE RETROFIT TO THE DEEP BEAM BRIDGE GUARDRAIL SYSTEM, DBR-2-73. THE RETROFIT RAILING SYSTEM HAS BEEN ACCEPTED BY FHWA TO NCHRP REPORT 350 TEST LEVEL 3 CRITERIA. SEE FEDERAL ACCEPTANCE LETTER HSSD/B-207 DATED NOVEMBER 10, 2010.

REPAIRS TO THE EXISTING RAILING SYSTEM ARE NOT ADDRESSED BY THIS STANDARD DRAWING. FOR REHABILITATION OR REPLACEMENT OF EXISTING RAILING ITEMS, REFER TO THE DBR-2-73 STANDARD BRIDGE DRAWING.

**MATERIALS:**  
STEEL TUBING SHALL BE ASTM A500, GRADE B IN ACCORDANCE WITH C&MS 707.10.

STEEL ANGLES AND BEVELED WASHERS SHALL BE ASTM A36 GALVANIZED ACCORDING TO C&MS 711.02.

BOLTS AND HARDWARE SHALL BE GALVANIZED ASTM A325 ACCORDING TO C&MS 711.09. INSTALL BOLTS ACCORDING TO C&MS 513.

FABRICATE ALL STEEL IN ACCORDANCE WITH C&MS 513 LEVEL SF.

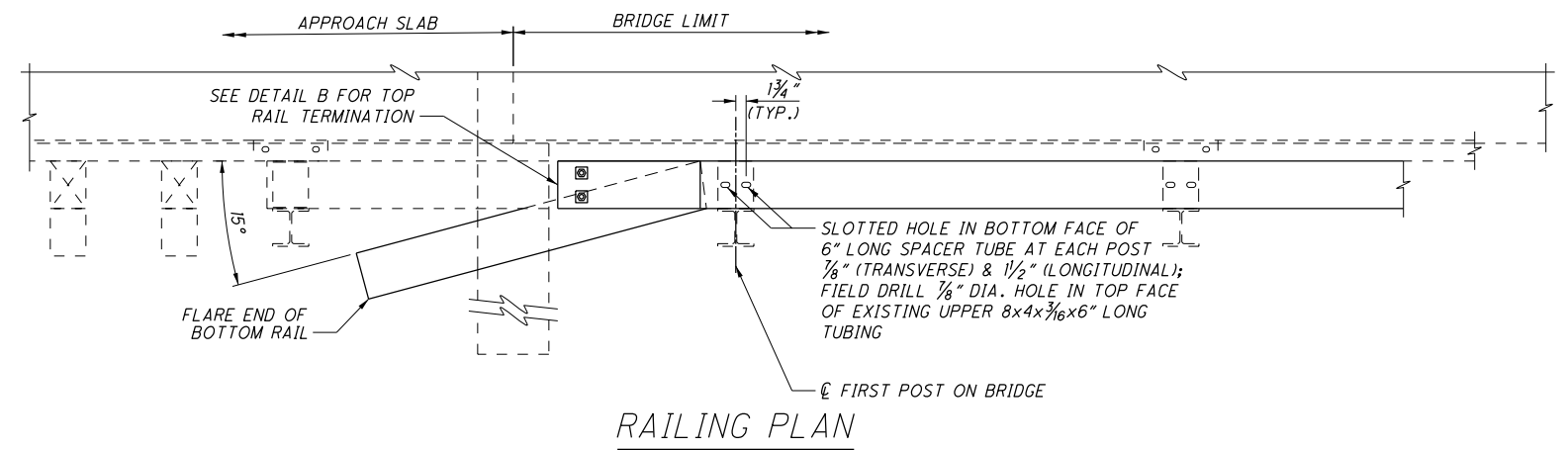
**COATING REPAIRS:** REPAIR EXISTING GALVANIZED COATINGS DAMAGED BY FIELD DRILLING IN ACCORDANCE WITH C&MS 711.02.

**APPROACH RAILING:** REFER TO STANDARD CONSTRUCTION DRAWING GR-3.4, BRIDGE TERMINAL ASSEMBLY, TYPE 4.

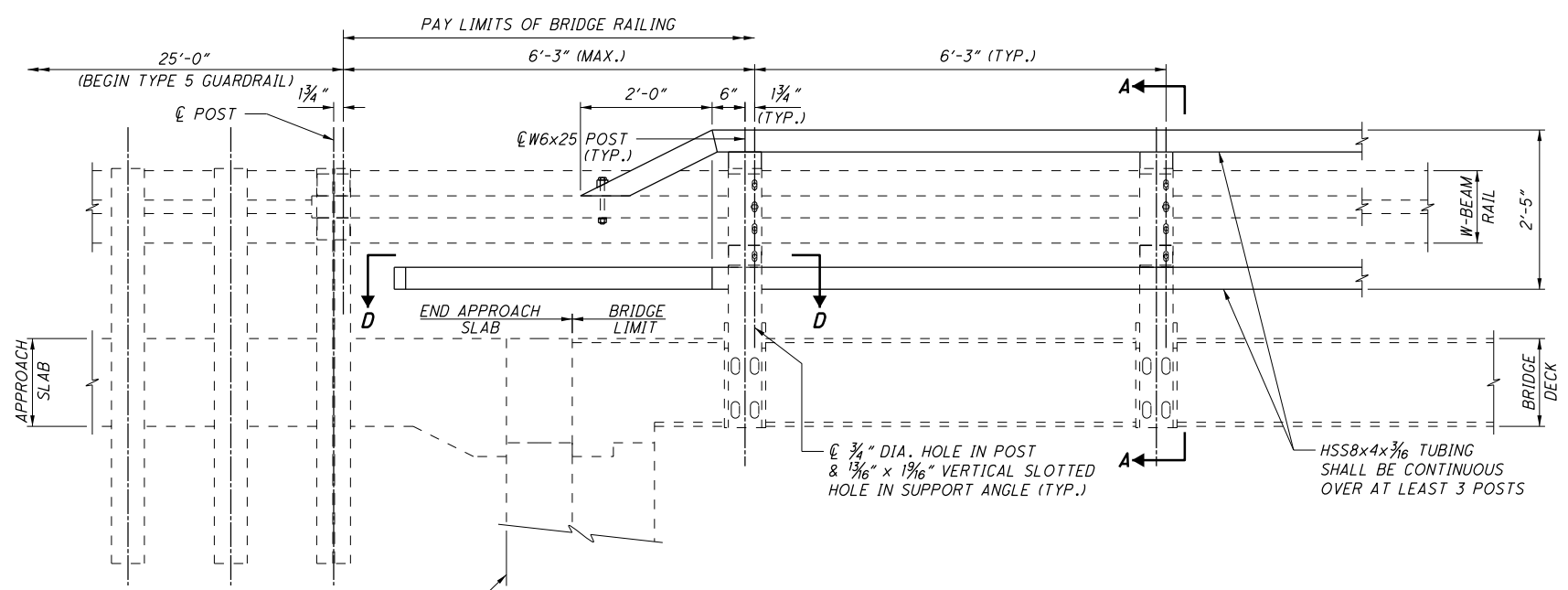
**METHOD OF MEASUREMENT:** THE DEPARTMENT WILL MEASURE THE DEEP BEAM BRIDGE RETROFIT RAILING BY THE NUMBER OF FEET BETWEEN THE FIRST POSTS OFF THE BRIDGE AS SHOWN HEREIN.

**BASIS OF PAYMENT:** THE DEPARTMENT WILL PAY FOR THE FIRST POST OFF THE STRUCTURE AT EACH END OF THE BRIDGE RAILING, SEPARATELY. THE DEPARTMENT WILL PAY FOR ACCEPTED QUANTITIES AT THE CONTRACT PRICE AS FOLLOWS:

ITEM	UNIT	DESCRIPTION
517	FOOT	DEEP BEAM BRIDGE RETROFIT RAILING

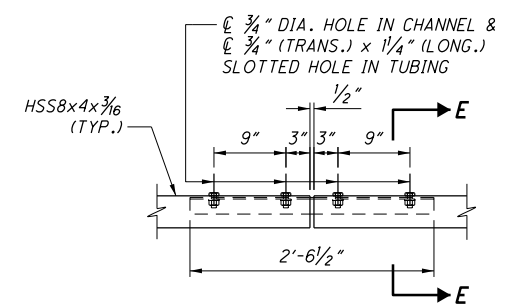


RAILING PLAN

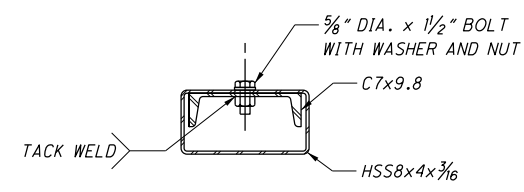


RAILING ELEVATION

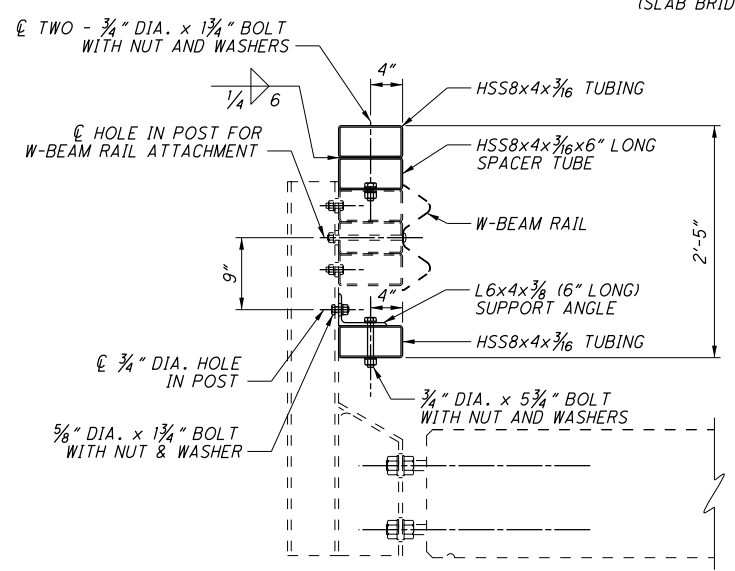
(SLAB BRIDGE SHOWN, OTHER BRIDGE TYPES SIMILAR)



HSS SPLICE DETAIL

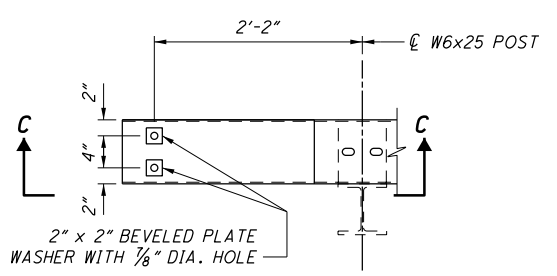


SECTION E-E



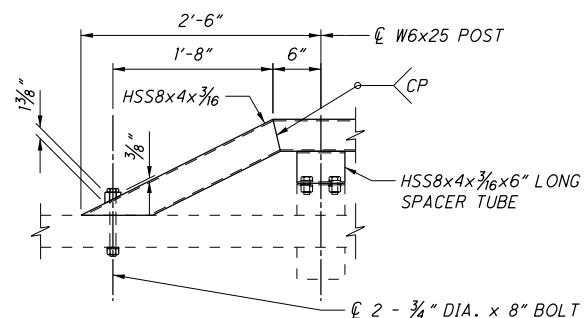
SECTION A-A

(TYPE 2 POST SHOWN, TYPE 1 POST SIMILAR)



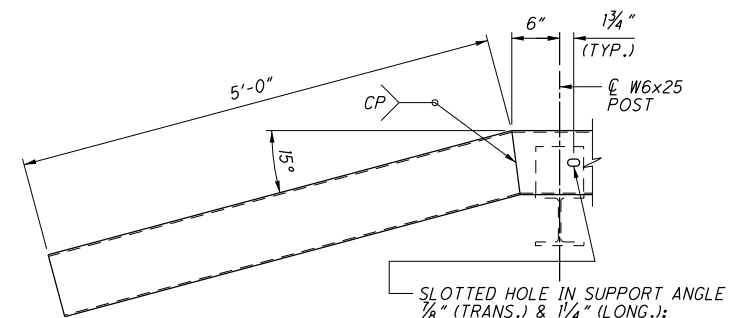
DETAIL B

(W-BEAM RAIL NOT SHOWN)



VIEW C-C

(W6x25 POST NOT SHOWN)



SECTION D-D

(W-BEAM RAIL NOT SHOWN)

2 - 3/4" DIA. x 8" BOLT WITH BEVELED PLATE WASHER, WASHER & NUT. 3/8" DIA. HOLE IN UPPER TUBE. FIELD DRILL 1/8" DIA. THROUGH HOLE IN EXISTING TUBE.

SLOTTED HOLE IN SUPPORT ANGLE 1/8" (TRANS.) & 1/4" (LONG.); SLOTTED HOLE IN TOP & BOTTOM FACE OF TUBING 1/8" (TRANS.) & 1/2" (LONG.)