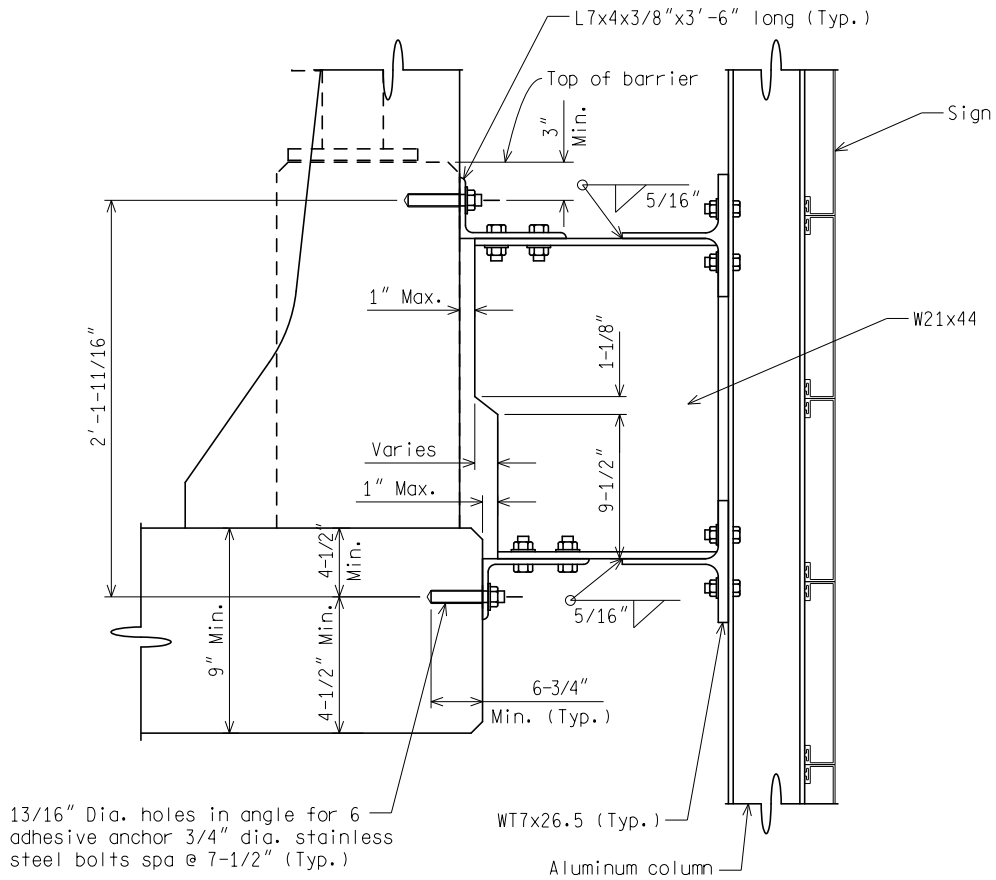
  
 PREPARED BY  
 BY  
 DESIGN DIVISION  
 DRAWN BY: BMS  
 CHECKED BY: AJU

DEPARTMENT DIRECTOR  
 Kirk T. Steudle  
 APPROVED BY: *Randy U. Puffler*  
 DIRECTOR, BUREAU OF FIELD SERVICES  
 APPROVED BY: *Paul A. Van Park*  
 DIRECTOR, BUREAU OF HIGHWAY DEVELOPMENT

MICHIGAN DEPARTMENT OF TRANSPORTATION  
 BUREAU OF HIGHWAY DEVELOPMENT STANDARD PLAN FOR  
 BRIDGE SIGN CONNECTION  
 TYPE U, V & W  
 09/10/2013 F.H.W.A. APPROVAL    08/20/13 PLAN DATE    SIGN-890-B    SHEET 1 OF 5





DETAIL OF CONNECTION

NOT TO SCALE

MICHIGAN DEPARTMENT OF TRANSPORTATION BUREAU OF HIGHWAY DEVELOPMENT STANDARD PLAN	09/10/2013 F.H.W.A. APPROVAL	08/20/13 PLAN DATE	SIGN-890-B	SHEET 3 OF 5
--	---------------------------------	-----------------------	------------	-----------------

NOTE: THE ORIGINAL SIGNED COPY IS KEPT ON FILE AT THE MICHIGAN DEPARTMENT OF TRANSPORTATION.

NOTES:

1. Field verify bridge dimensions prior to fabrication.
2. Welding shall be in accordance with the Standard Specifications for Construction.
3. All structural steel members shall be hot-dip galvanized in accordance with the Standard Specifications for Construction.
4. All aluminum members shall be ASTM B 308 aluminum alloy 6061-T6 and shall conform to ASTM B 221.
5. Structural steel members shall conform to AASHTO M 270 Grade 36.
6. All high-strength bolts, nuts and washers shall be in accordance with Subsection 906.07 and installed according to Subsection 707.03.D.7 of the Standard Specifications except for stainless steel bolts, nuts and washers.
7. Stainless steel bolts and washers shall conform to ASTM A 320, Class 1, Grade B8. Nuts shall be self-locking nylon insert type and must conform to ASTM A 320, Grade 8F. Stainless steel nuts and washers shall always accompany stainless steel bolts. Stainless steel bolts, nuts and washers shall be used at connections with aluminum members. All other connections shall utilize galvanized high strength bolts, nuts and washers unless other wise specified.
8.  $\emptyset$  = Angle between sign and bridge fascia. Angle is a function of permissible cantilever length (C) and sign length.
9. All concrete anchors shall be chosen from the qualified product list in the current MDOT Materials Source Guide. All concrete anchors shall be installed according to the manufacturers recommendations and subject to the requirements of Section 712.03.J of the Standard Specifications except that all field testing must demonstrate the anchor can develop 70 percent of the minimum Effective Ultimate Strength shown in the plans with less than 1/16 inch slip. Field testing up to 90 percent of the bolts Yield Strength is waived. Extreme caution shall be exercised when drilling holes for concrete anchors. Existing bridge plans shall be reviewed to determine reinforcing steel locations and to evaluate the risk of damaging reinforcement associated with installing concrete anchors.
10. The bottom edge of the sign shall be horizontal when erected.
11. If replacing an existing sign support, existing holes in concrete shall not be reused and shall be filled with a non-shrink grout in accordance with Section 702.02.B of the Standard Specifications.
12. Inspection of proposed locations shall be performed to determine viability of connection to existing bridge.
13. See Subsection 810.03.P of the Standard Specifications for bolt replacement in retained bridge mounted sign connections.
14. Removal of existing bridge sign connections shall be according to Subsection 810.03.T of the Standard Specifications.
15. See Section 712 of the Standard Specifications for bridge sign connections to existing bridges.
16. The design of this sign connection is based on the assumption that the concrete has a minimum Compressive Strength of 4000 psi. If it is suspected that the concrete is of lesser strength or is in poor condition, this sign connection shall not be used.
17. See Sign-810 series and Sign-820 series for other details.
18. Surface rustication (texturing) at connections to railing shall be eliminated behind signs.

NOT TO SCALE

MICHIGAN DEPARTMENT OF TRANSPORTATION BUREAU OF HIGHWAY DEVELOPMENT STANDARD PLAN	09/10/2013 F.H.W.A. APPROVAL	08/20/13 PLAN DATE	SIGN-890-B	SHEET 4 OF 5
--	---------------------------------	-----------------------	------------	-----------------

NOTE: THE ORIGINAL SIGNED COPY IS KEPT ON FILE AT THE MICHIGAN DEPARTMENT OF TRANSPORTATION.

19. The minimum Effective Ultimate Strength for concrete anchors shall be 10,400 pounds (tension) and 6,000 pounds (shear). The Effective Ultimate Strength is equal to the Ultimate Strength modified by the appropriate edge distance and anchor spacing reduction factors recommended by the manufacturer.
20. Sign panel connections to aluminum columns shall have the same bolt arrangement as shown for sign panel connections to aluminum columns for cantilever and trusses (see typical plan Sign-700 series).
21. All members are steel except aluminum columns.
22. The design of this bridge sign connection is according to the AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals, current Edition.
23. This typical shall only be used with new bridge railing of the following types: Bridge Barrier Railing, Type 4; Bridge Barrier Railing, Type 5; or Bridge Railing, Aesthetic Parapet Tube.
24. This typical is to be used only for spread prestressed concrete box beam bridges.
25. Minimum distance from edge of existing hole to closest edge of proposed hole must be 3 inches minimum.

NOT TO SCALE

MICHIGAN DEPARTMENT OF TRANSPORTATION BUREAU OF HIGHWAY DEVELOPMENT STANDARD PLAN	<u>09/10/2013</u> F.H.W.A. APPROVAL	<u>08/20/13</u> PLAN DATE	SIGN-890-B	SHEET 5 OF 5
--	--	------------------------------	------------	-----------------

NOTE: THE ORIGINAL SIGNED COPY IS KEPT ON FILE AT THE MICHIGAN DEPARTMENT OF TRANSPORTATION.