

Transmittal No. 22-03
March 29, 2022

Standard Plans

Distribution: Electronic Distribution Recipients

Subject: Standard Plans 710 and 772

The following standard plans are modified:

5-297.710 Extruded Panel Mounting Details – Panel Mounting Post Details

5-297.772 Standard Overhead Sign Structures – Design D – DMS Mounting Details

See attached summaries of changes for details.

Instructions:

1. Record this transmittal letter number, date and subject on the transmittal record sheet located in the front of the manual. The last transmittal letter was 22-02, dated March 15, 2022.
2. Remove from the manual:
 - Standard Plan Index
 - Standard Plan 5-297.710 Sheets 1 and 2 of 4
 - Standard Plan 5-297.772
3. Insert into the manual:
 - Standard Plan Index, Sheets 1-8 of 8 (03-23-2022)
 - Standard Plan 5-297.710 1 of 4 (12-16-2021)
 - Standard Plan 5-297.710 2 of 4 (03-23-2022)
 - Standard Plan 5-297.772 (03-23-2022)
4. The *Standard Plans Manual* and associated transmittal letters are available online in PDF format at <https://standardplans.dot.state.mn.us/StdPlan.aspx>
5. Direct any technical questions regarding this transmittal to Khamsai Yang, State Design Standards Engineer, at (612) 322-5601 or DesignStandards.DOT@state.mn.us



Khamsai Yang, P.E.

State Design Standards Engineer

Office of Project Management and Technical Support

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Summary of Changes
Standard Plan 5-297.710
Extruded Panel Mounting Details – Panel Mounting Post Details
Transmittal Letter No. 22-03

Sheet 1 of 4 – no change

Sheet 2 of 4

1. Revised the S4x7.7 bolt hole spacing dimensions to match the industry standard.
2. Removed the reference to the direct tension indicator in the general note.

Sheet 3 of 4 – no change

Sheet 4 of 4 – no change

Summary of Changes
Standard Plan 5-297.772
Standard Overhead Sign Structures – Design D
DMS Mounting Details
Transmittal Letter No. 22-03

General

1. Mounting Angle Detail changed to replace 11/16" holes with 11/16" x 1-1/4" slotted holes. Callout and detail subtitle updated accordingly.
2. Minor edits for consistency.

<u>SERIES</u>	<u>SUBJECT</u>
5-297.000	BLANK
5-297.100	GRADING
5-297.200	SURFACING
5-297.300	VEGETATION
5-297.400	DRAINAGE, EROSION CONTROL, AND SEDIMENT CONTROL
5-297.500	BLANK
5-297.600	SAFETY FEATURES AND SPECIAL STRUCTURES
5-297.700	SIGNING
5-297.800	TEMPORARY TRAFFIC CONTROL, PAVEMENT MARKING, LIGHTING, AND SIGNALS

<u>PLAN NO.</u>	<u>SUBJECT</u>	<u>APPROVAL DATE</u>	<u>REVISION DATE</u>
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5-297.108	Standard Acceleration and Deceleration Lanes (Urban) Bituminous Pavement	05-27-14	
5-297.111	Right and Left-Turn Lanes	05-27-14	
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5-297.115 (2 of 2)	Staking Information Sheet	08-06-14	
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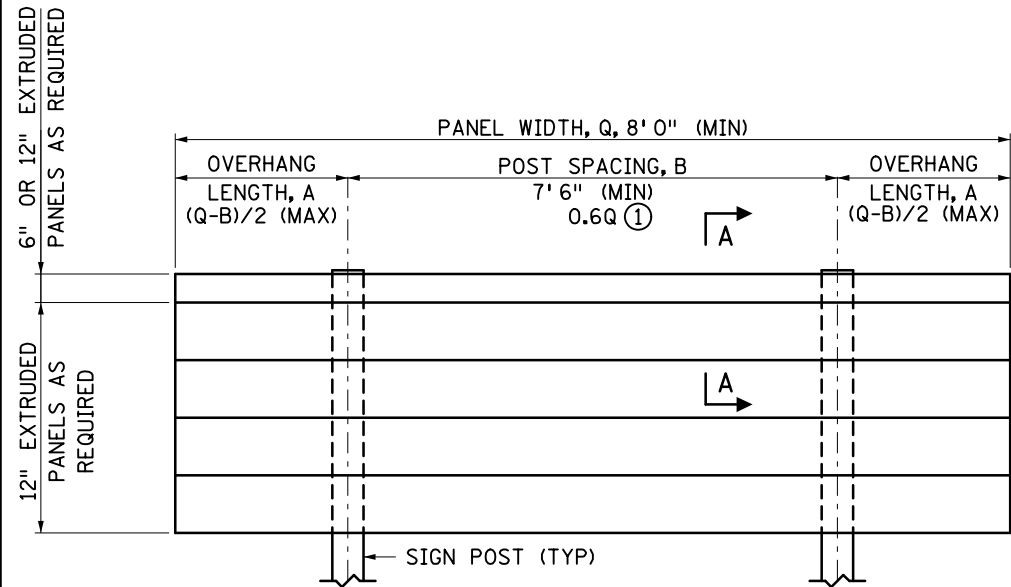
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5-297.684 (2 of 2)	W-Beam Transition to Pier Columns without Approach Curb (Steel Post)	11-17-16	
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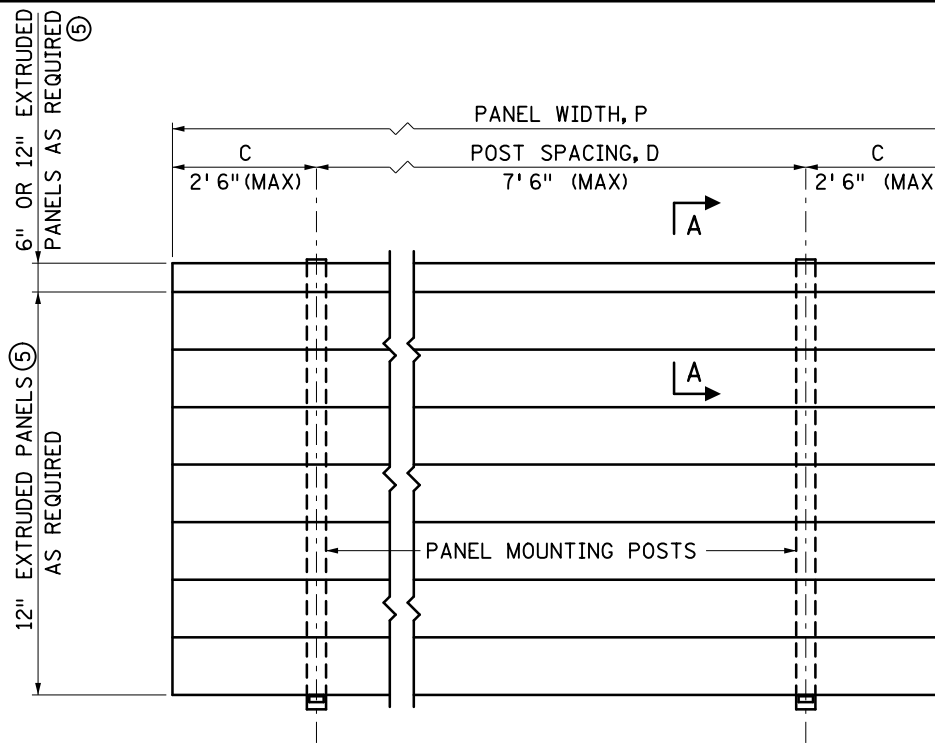
<u>PLAN NO.</u>	<u>SUBJECT</u>	<u>APPROVAL DATE</u>	<u>REVISION DATE</u>
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5-297.762	Standard Overhead Sign Structures - Design D - Camber, Post Type, and Estimated Quantities	03-05-20	
5-297.763 (1 of 2)	Standard Overhead Sign Structures - Design D - Foundation Details	03-05-20	02-22-22
5-297.763 (2 of 2)	Standard Overhead Sign Structures - Design D - Foundation Details	03-05-20	02-22-22
5-297.764	Standard Overhead Sign Structures - Design D - Base Plate, Handhole, Electrical, and Cover Plate Details	03-05-20	
5-297.765	Standard Overhead Sign Structures - Design D - Truss-to-Post Connection Details	03-05-20	
5-297.766	Standard Overhead Sign Structures - Design D - Sign Truss Details Type A	05-01-19	05-28-19
5-297.767	Standard Overhead Sign Structures - Design D - Sign Truss Details Type B	05-01-19	05-28-19
5-297.768	Standard Overhead Sign Structures - Design D - Sign Truss Details Type C	05-01-19	05-28-19
5-297.769 (1 of 3)	Standard Overhead Sign Structures - Design D - Walkway Details	03-05-20	
5-297.769 (2 of 3)	Standard Overhead Sign Structures - Design D - Walkway Details: Railing	03-05-20	
5-297.769 (3 of 3)	Standard Overhead Sign Structures - Design D - Walkway Details	05-01-19	
5-297.770	Standard Overhead Sign Structures - Design D - Walkway and Railing Retrofit Details	05-01-19	
5-297.772	Standard Overhead Sign Structures - Design D - DMS Mounting Details	03-23-22	
5-297.773	Standard Overhead Sign Structures - Design D - Rock Socket Foundation Details	01-15-21	
5-297.774	Standard Overhead Sign Structures - Design D - Variable Length Drilled Shaft Details	01-15-21	

<u>PLAN NO.</u>	<u>SUBJECT</u>	<u>APPROVAL DATE</u>	<u>REVISION DATE</u>
5-297.779	Overhead Sign Structures - Foundation Extension - Design D Extension Details - Type 1-4 Posts	01-15-21	
5-297.780 (1 of 2)	Overhead Sign Structures - Foundation Extension - Design D Extension Details - Type 5-6 Posts	01-15-21	
5-297.780 (2 of 2)	Overhead Sign Structures - Foundation Extension - Design D Extension Details - Type 5-6 Posts	01-15-21	
5-297.781	Overhead Sign Structures - Foundation Extension – Interim Design B Extension Details - Type 1-4 Posts	01-15-21	
5-297.782 (1 of 2)	Overhead Sign Structures - Foundation Extension – Interim Design B Extension Details - Type 5-7 Posts	01-15-21	
5-297.782 (2 of 2)	Overhead Sign Structures - Foundation Extension – Interim Design B Extension Details - Type 5-7 Posts	01-15-21	
5-297.783	Overhead Sign Structures - Foundation Extension - Design B Extension Details - Type 1-3 Posts	01-15-21	
5-297.784 (1 of 2)	Overhead Sign Structures - Foundation Extension - Design B Extension Details - Type 4-5 Posts	01-15-21	
5-297.784 (2 of 2)	Overhead Sign Structures - Foundation Extension - Design B Extension Details - Type 4-5 Posts	01-15-21	
5-297.785 (1 of 2)	Overhead Sign Structures - Foundation Extension - Design B Extension Details - Type 6-7 Posts	01-15-21	
5-297.785 (2 of 2)	Overhead Sign Structures - Foundation Extension - Design B Extension Details - Type 6-7 Posts	01-15-21	
5-297.786 (1 of 2)	Overhead Sign Structures - Foundation Extension - Design B Extension Details - Type 8-9 Posts	01-15-21	
5-297.786 (2 of 2)	Overhead Sign Structures - Foundation Extension - Design B Extension Details - Type 8-9 Posts	01-15-21	
5-297.787 (1 of 3)	Overhead Sign Structures - Foundation Extension - Design B Extension Details - Type 10-13 Posts	01-15-21	
5-297.787 (2 of 3)	Overhead Sign Structures - Foundation Extension - Design B Extension Details - Type 10-13 Posts	01-15-21	
5-297.787 (3 of 3)	Overhead Sign Structures - Foundation Extension - Design B Extension Details - Type 10-13 Posts	01-15-21	
5-297.788	Overhead Sign Structures - Foundation Extension - Design B Extension Details - Type 14-15 Posts	01-15-21	
5-297.789 (1 of 2)	Overhead Sign Structures - Foundation Extension - Design B Extension Details - Type 16-19 Posts	01-15-21	
5-297.789 (2 of 2)	Overhead Sign Structures - Foundation Extension - Design B Extension Details - Type 16-19 Posts	01-15-21	
5-297.800			
TEMPORARY TRAFFIC CONTROL, PAVEMENT MARKING, LIGHTING, AND SIGNALS			
5-297.801	Interim Pavement Markings and Signing	10-10-19	
5-297.805 (1 of 5)	Temporary Overhead Sign Structures – General Elevation and Notes	03-06-20	
5-297.805 (2 of 5)	Temporary Overhead Sign Structures – Foundation Details	03-06-20	
5-297.805 (3 of 5)	Temporary Overhead Sign Structures – Post and Baseplate Details	03-06-20	
5-297.805 (4 of 5)	Temporary Overhead Sign Structures – Beam Details	06-28-21	
5-297.805 (5 of 5)	Temporary Overhead Sign Structures – Sign Panel and Panel Mounting Post Details	03-06-20	
5-297.811 (1 of 2)	Alternate Pedestrian Route (APR) Layouts	03-18-21	
5-297.811 (2 of 2)	Alternate Pedestrian Route (APR) Layouts	03-18-21	
5-297.813 (1 of 2)	Temporary Pedestrian Access Route (TPAR) Devices – Channelizers, Sidewalk Barricades, and Portable Stands	03-18-21	
5-297.813 (2 of 2)	Temporary Pedestrian Access Route (TPAR) Devices – Temporary Curb Ramps and Walkway Surfaces	03-18-21	
5-297.820 (1 of 3)	T-100 Light Tower Pile Foundation Design	11-05-19	
5-297.820 (2 of 3)	T-120 Light Tower Pile Foundation Design	11-05-19	
5-297.820 (3 of 3)	T-140 Light Tower Pile Foundation Design	11-05-19	

<u>PLAN NO.</u>	<u>SUBJECT</u>	<u>APPROVAL</u> <u>DATE</u>	<u>REVISION</u> <u>DATE</u>
5-297.821 (1 of 3)	T-100 Light Tower Mat Foundation Design	11-05-19	
5-297.821 (2 of 3)	T-120 Light Tower Mat Foundation Design	11-05-19	
5-297.821 (3 of 3)	T-140 Light Tower Mat Foundation Design	11-05-19	
5-297.869	350 ATCC and SSB Cabinet Equipment Pad – Cast in Place	02-22-22	
5-297.870	352 ATCC and SSB Cabinet Equipment Pad – Cast in Place	02-22-22	



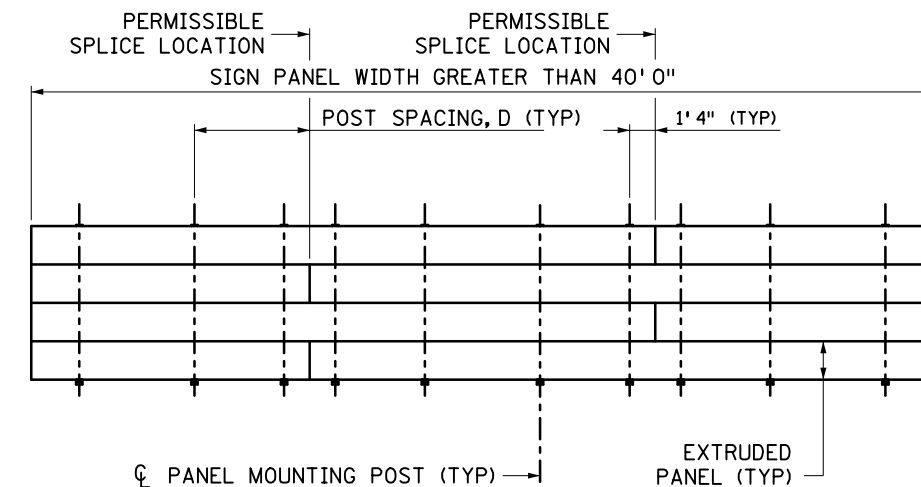
I-BEAM MOUNTED EXTRUDED PANEL ELEVATION ②



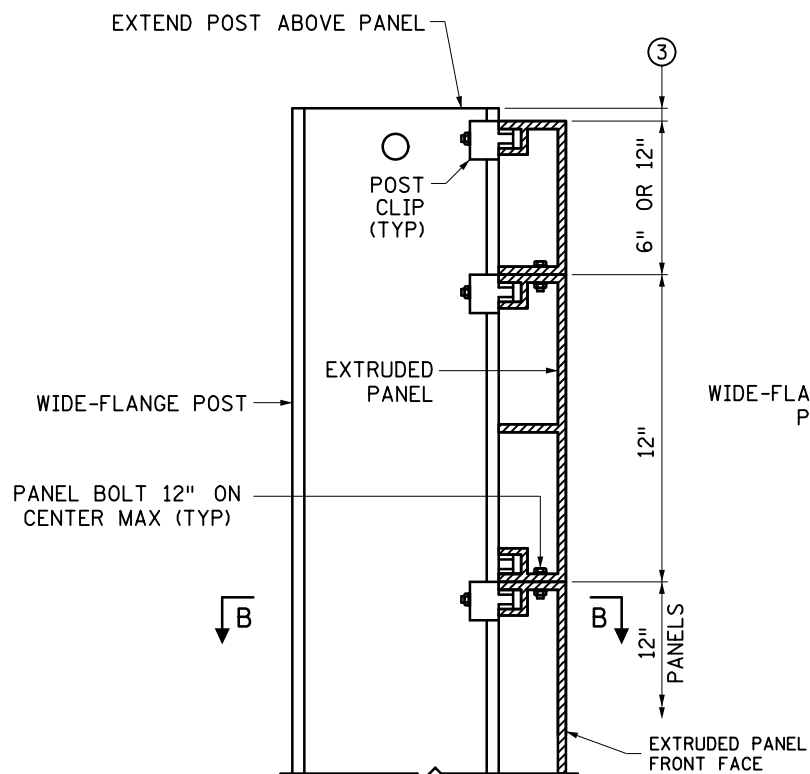
OVERHEAD SIGN STRUCTURE EXTRUDED PANEL ELEVATION

PANEL MOUNTING POST			
NO. OF POSTS	P	C	D
2	12' 0" OR LESS	0.207P	0.586P
3	12' 6" THRU 17' 0"	0.145P	0.355P
4	17' 6" THRU 23' 0"	0.107P	0.262P
5	23' 6" THRU 29' 0"	0.084P	0.208P
6	29' 6" THRU 35' 0"	0.070P	0.172P
7	35' 6" THRU 40' 0"	0.059P	0.147P
9	40' 6" THRU 41' 6"	0.059P	0.147P
10	41' 6" THRU 47' 0"	0.052P	0.128P
11	47' 6" THRU 53' 0"	0.048P	0.113P
12	53' 6" THRU 59' 0"	0.041P	0.102P
13	59' 6" THRU 65' 0"	0.040P	0.092P

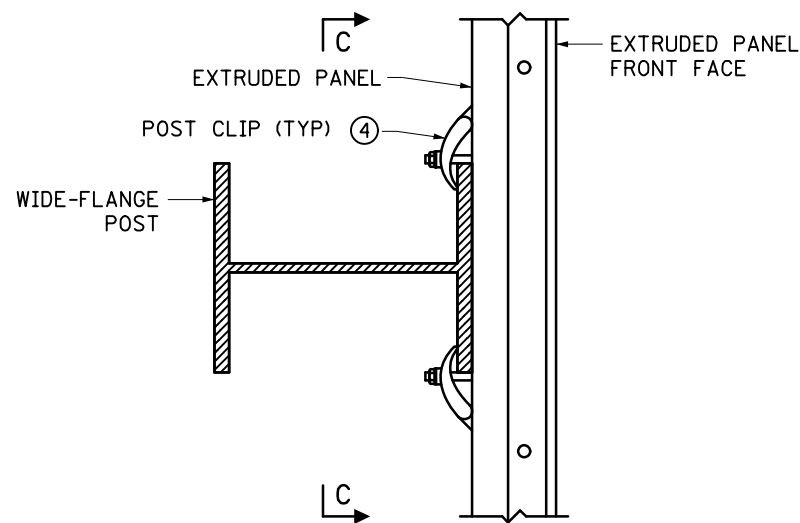
POST SPACING MAY BE ADJUSTED ±12" AS REQUIRED IF CONFLICT WITH TRUSS MEMBERS IS ENCOUNTERED.



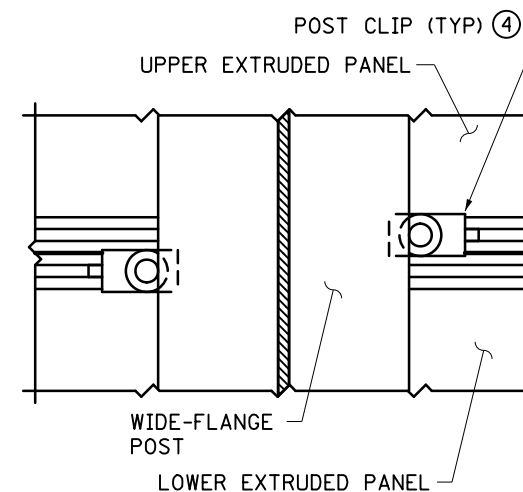
EXTRUDED PANEL SPLICE STAGGER DIAGRAM
EXTRUDED PANEL WIDTH EXAGGERATED FOR CLARITY



SECTION A-A



SECTION B-B



VIEW C-C

DESIGN CRITERIA:

THE DETAILS SHOWN ON THESE STANDARD PLANS ARE BASED ON THE AASHTO "LRFD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES, AND TRAFFIC SIGNALS", FIRST EDITION, 2015 AND THE 2017, 2018, 2019, AND 2020 INTERIM REVISIONS.

STRENGTH LIMIT WIND LOADING OF 120 MPH
SERVICE LIMIT WIND LOADING OF 76 MPH

GENERAL NOTES:

FOR POST CLIP DETAILS, SEE SHEET 3 OF 4.

SAW CUT ALL POST CUTS. PLATES MAY BE SHEARED OR FLAME CUT USING A MECHANICALLY GUIDED CUTTING TORCH. PREPARE EDGES IN ACCORDANCE WITH SPEC. 2471.3.C.4 AND SPEC. 2471.3.D.4.

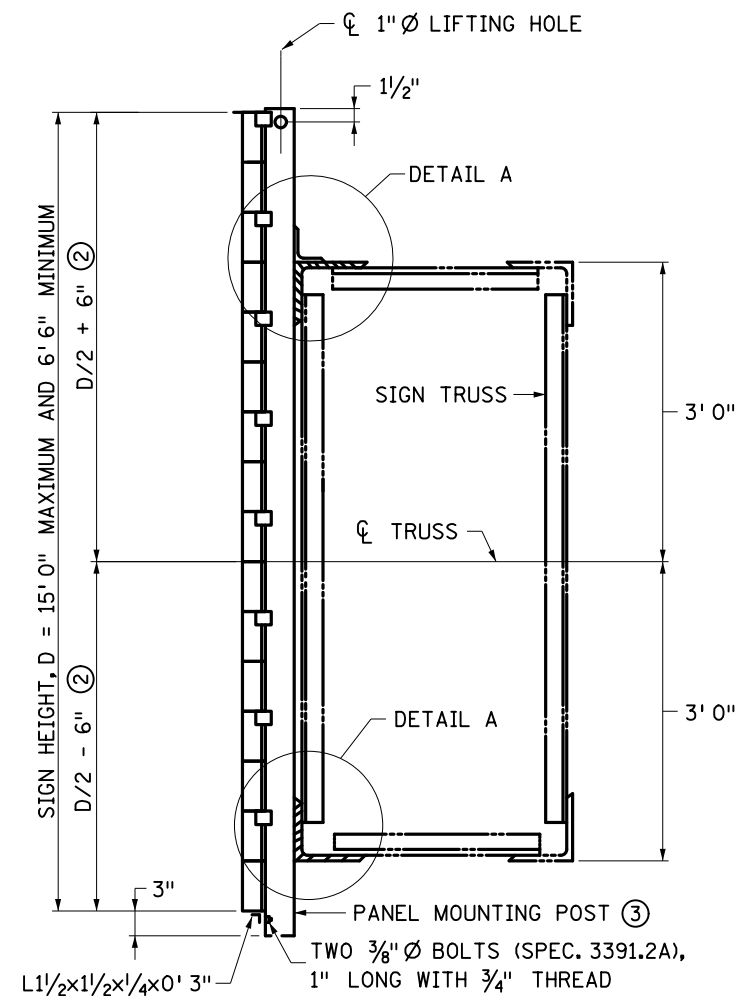
- ① ROUND TO THE NEAREST EVEN INCH FOR DIMENSION D.
- ② SEE I-BEAM-SUPPORTED SIGN STRUCTURAL ELEVATION FOR PANEL WIDTH, POST SPACING, AND OVERHANG LENGTHS.
- ③ 1/2" - OVERHEAD SIGN STRUCTURE SUPPORTED
1/2" MIN.; 1" MAX. - I-BEAM SUPPORTED
- ④ PLACE ONE POST CLIP ON THE UPPER EXTRUDED PANEL AND THE ADJACENT POST CLIP ON THE LOWER EXTRUDED PANEL ON THE OPPOSITE SIDE OF THE WIDE FLANGE POST.
- ⑤ EXTRUDED PANELS FOR INDIVIDUAL SIGN WIDTHS GREATER THAN 40' 0" MAY BE SPLICED.
USE NO MORE THAN ONE SPLICE PER EXTRUDED PANEL.
LOCATE SPLICES AS SHOWN. USE AN ADDITIONAL PANEL MOUNTING POST AT EACH SPLICE LOCATION.
SPLICED EXTRUDED PANEL SEGMENTS MUST SPAN A MINIMUM OF THREE POSTS. STAGGER SPLICE LOCATIONS.

REVISION:
APPROVED: 12-16-2021
Kevin Western
KEVIN WESTERN
STATE BRIDGE ENGINEER

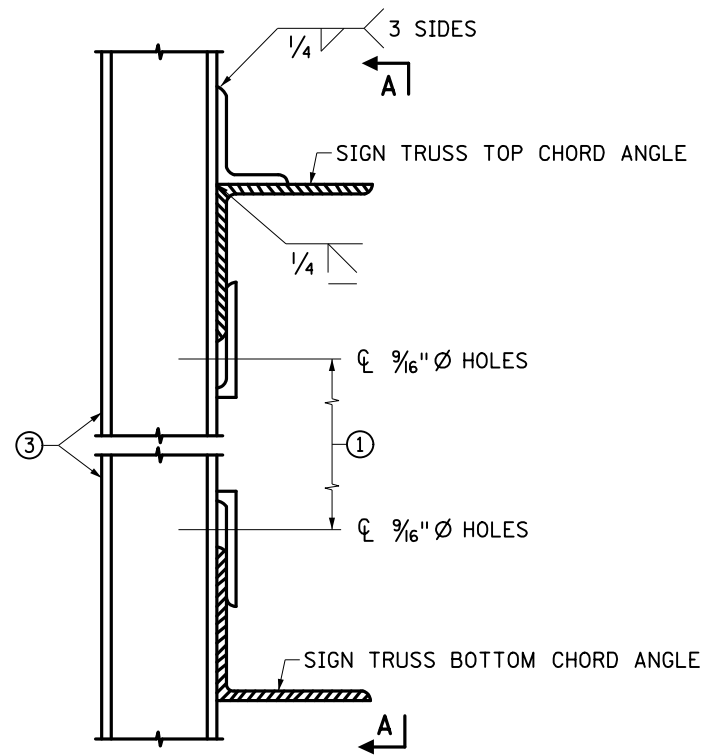
m MINNESOTA
DEPARTMENT OF TRANSPORTATION
STANDARD PLAN 5-297.710 1 OF 4
Tom Styrbicki
THOMAS STYRBICKI
STATE DESIGN ENGINEER
APPROVED: 12-16-2021
REVISED:
STATE PROJ. NO. (TH) SHEET NO. OF SHEETS

EXTRUDED PANEL MOUNTING DETAILS

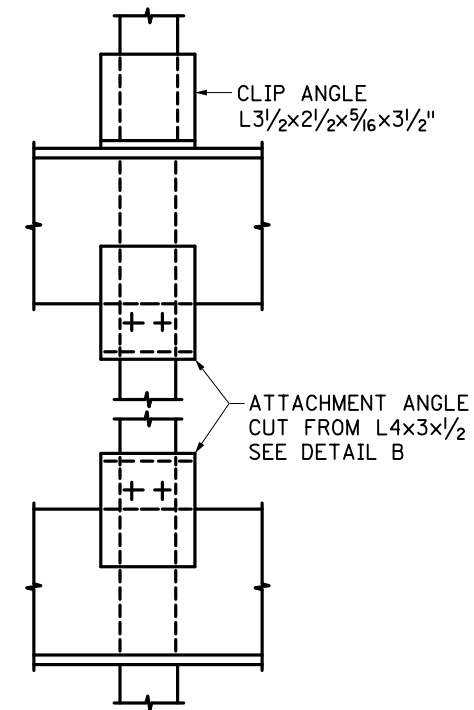
DESIGN D PANEL MOUNTING POST QUANTITIES INCLUDES MOUNTING ANGLES	
PANEL HEIGHT	WEIGHT PER POST (LBS.)
6' 6" (78")	70
7' 0" (84")	74
7' 6" (90")	78
8' 0" (96")	82
8' 6" (102")	86
9' 0" (108")	90
9' 6" (114")	93
10' 0" (120")	97
10' 6" (126")	101
11' 0" (132")	105
11' 6" (138")	160
12' 0" (144")	166
12' 6" (150")	172
13' 0" (156")	178
13' 6" (162")	184
14' 0" (168")	190
14' 6" (174")	196
15' 0" (180")	202



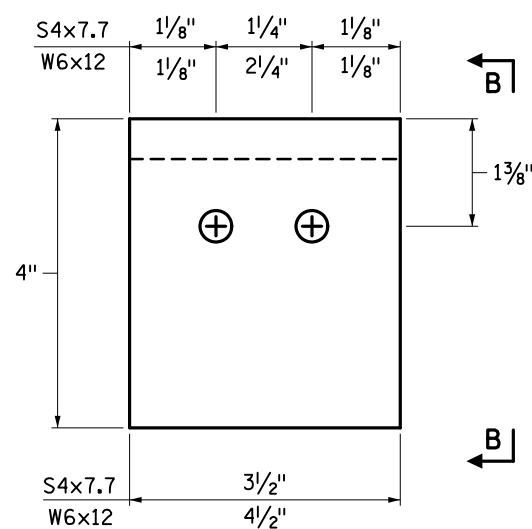
TYPICAL SECTION
DESIGN D TRUSS SHOWN



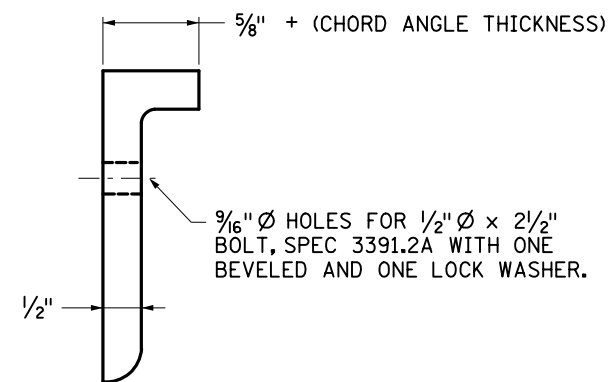
DETAIL A



VIEW A-A



DETAIL B



VIEW B-B

NOTES:

PROVIDE STRUCTURAL STEEL IN ACCORDANCE WITH SPEC 3308. GALVANIZE STRUCTURAL STEEL IN ACCORDANCE WITH SPEC. 3394 AND HARDWARE IN ACCORDANCE WITH SPEC. 3392. FURNISH HIGH-STRENGTH BOLTS IN ACCORDANCE WITH SPEC. 3391. PLACE HIGH-STRENGTH BOLTS IN ACCORDANCE WITH SPEC. 2402.

- ① (TRUSS DEPTH) - (TOP & BOTTOM CHORD ANGLE LEGS) - 1/4".
- ② SEE NOTE ① ON STANDARD PLAN 5-297.761 WHEN STANDARD PANELS AND DMS ARE MOUNTED ON THE SAME SPAN.
- ③ S4x7.7 FOR SIGN HEIGHTS LESS THAN OR EQUAL TO 11' 0". W6x12 FOR SIGN HEIGHTS OVER 11' 0".

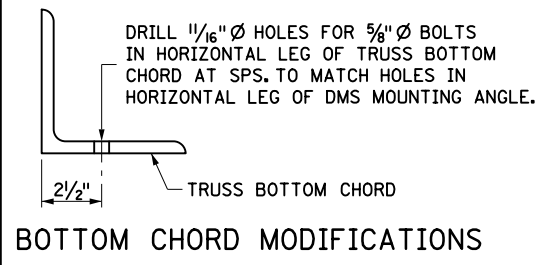
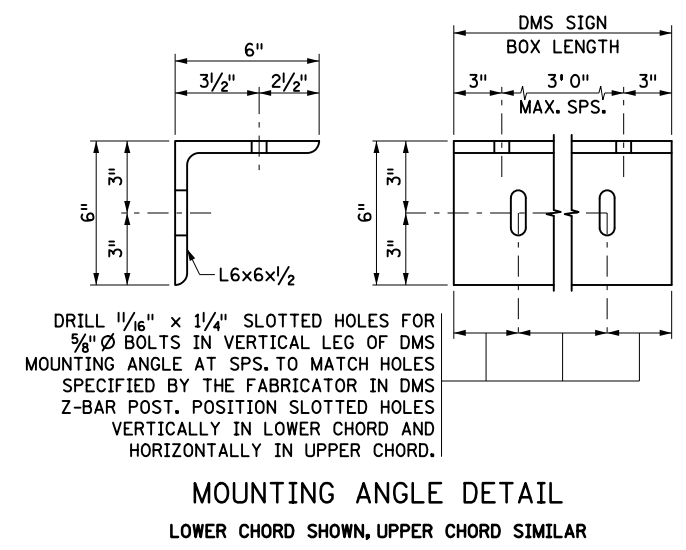
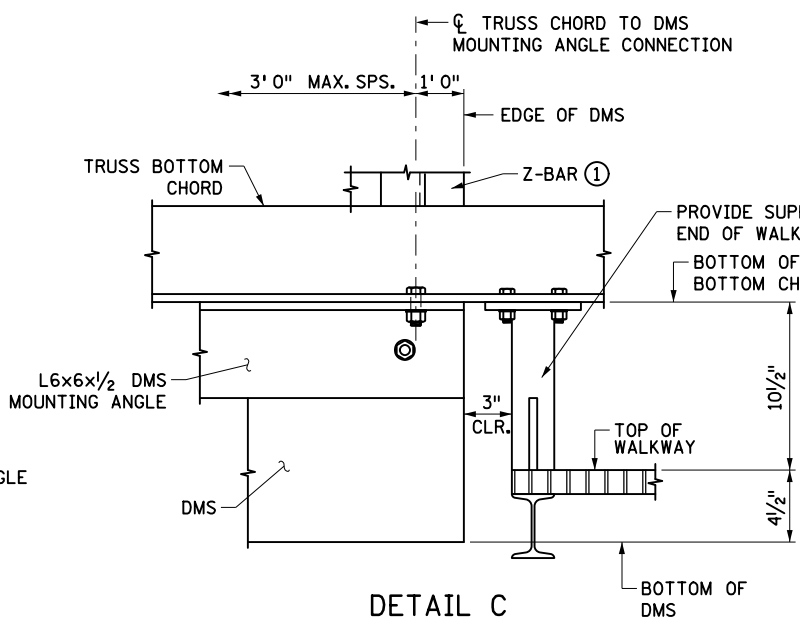
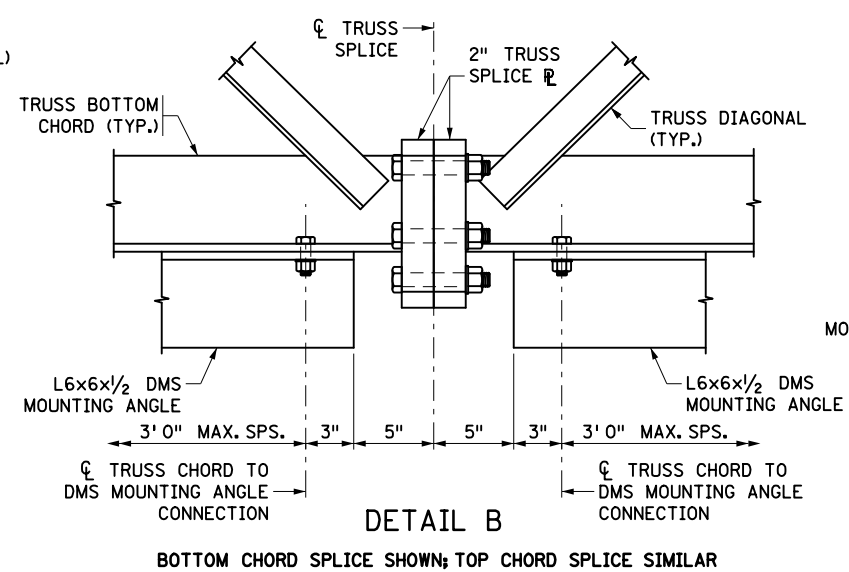
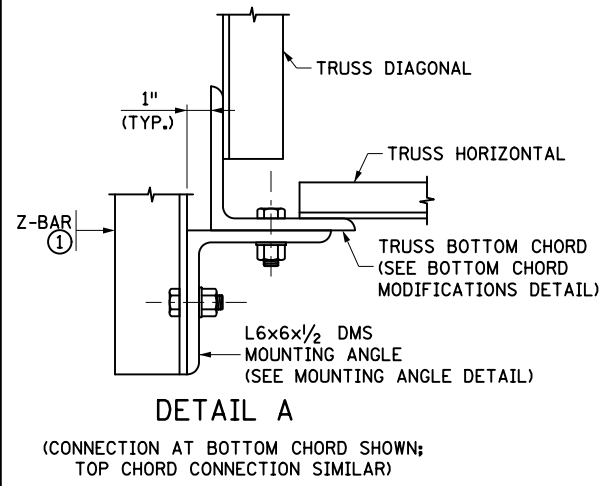
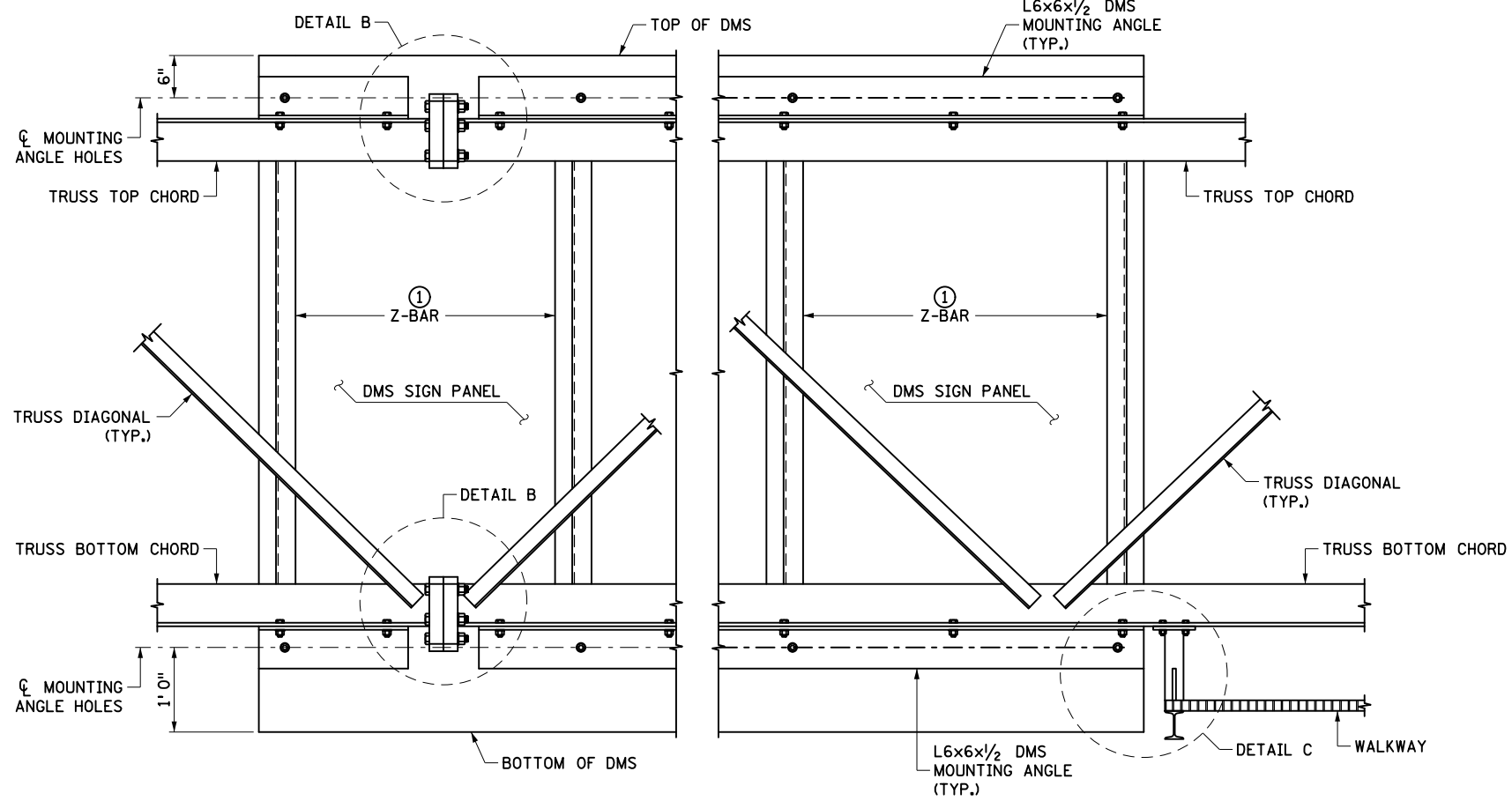
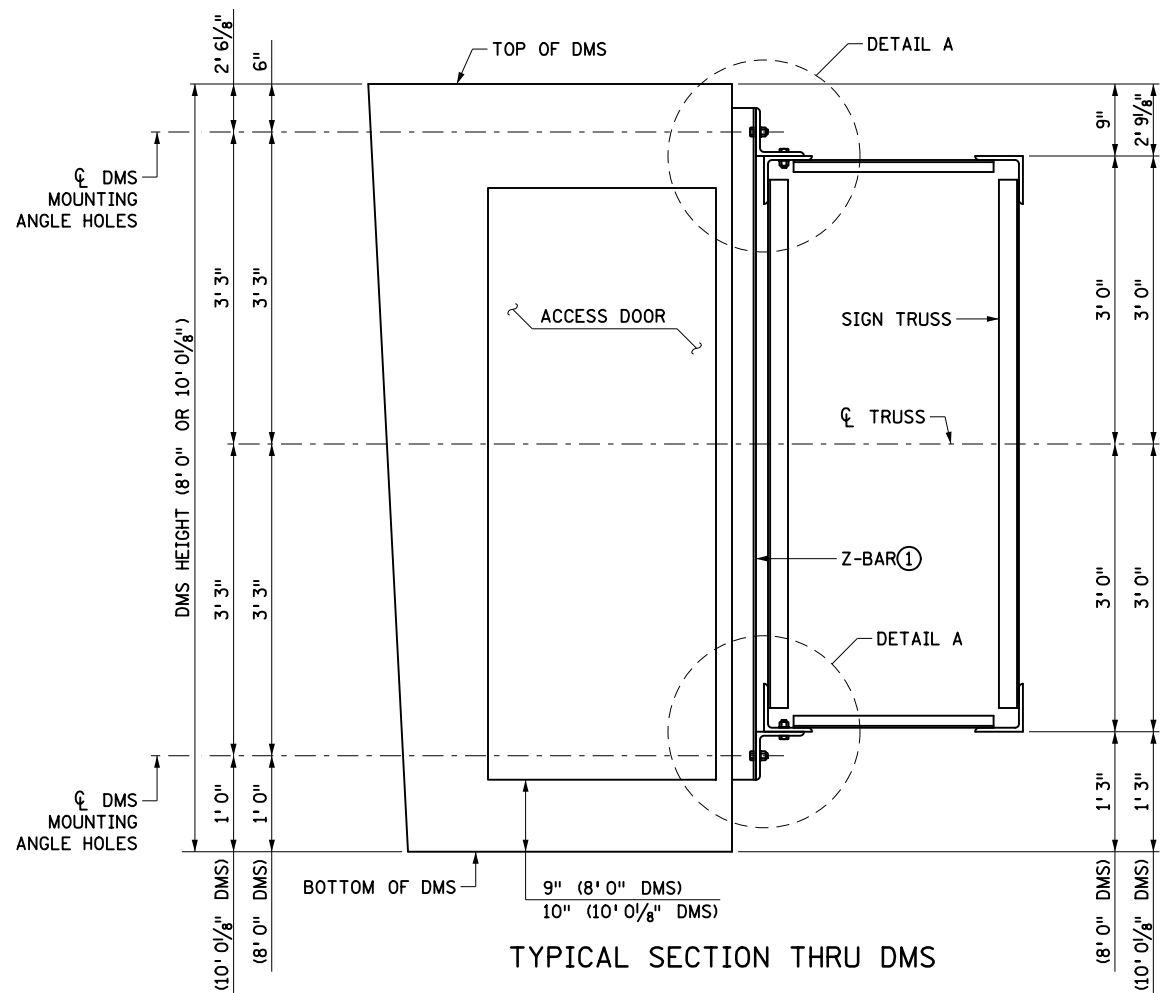
REVISION:
 APPROVED: 03-23-2022
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 NICOLE A. BARTELT
 STATE BRIDGE ENGINEER

MINNESOTA
 DEPARTMENT
 OF
 TRANSPORTATION

STANDARD PLAN 5-297.710 2 OF 4

 THOMAS STYRBICKI
 STATE DESIGN ENGINEER
 APPROVED: 03-23-2022
 REVISED:
 STATE PROJ. NO. (TH) SHEET NO. OF SHEETS

EXTRUDED PANEL MOUNTING DETAILS
 PANEL MOUNTING POST DETAILS



GENERAL NOTES:

- USE STRUCTURAL STEEL CONFORMING TO SPEC. 3306.
- USE 5/8" Ø A325 BOLTS WITH ONE NUT AND TWO WASHERS.
- VERIFY THE COMPATIBILITY OF DMS SHOP DRAWINGS WITH STANDARD DETAILS BEFORE FABRICATION.
- ① Z-BAR MOUNTING POST TO BE PROVIDED BY FABRICATOR OF DMS SIGN.

REVISION:
APPROVED: 03-23-2022
Nicole A. Bartelt
NICOLE A. BARTELT
STATE BRIDGE ENGINEER

m MINNESOTA
DEPARTMENT OF TRANSPORTATION

STANDARD PLAN 5-297.772 1 OF 1

APPROVED: 03-23-2022
REVISED:
Tom Styrbicki
THOMAS STYRBICKI
STATE DESIGN ENGINEER

STATE PROJ. NO. (TH) SHEET NO. OF SHEETS

STANDARD OVERHEAD SIGN STRUCTURES - DESIGN D
DMS MOUNTING DETAILS

STATE PROJ. NO. (TH) SHEET NO. OF SHEETS

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