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INDIANA DEPARTMENT OF TRANSPORTATION

DYNAMIC MESSAGE SIGN STRUCTURE
INDEX

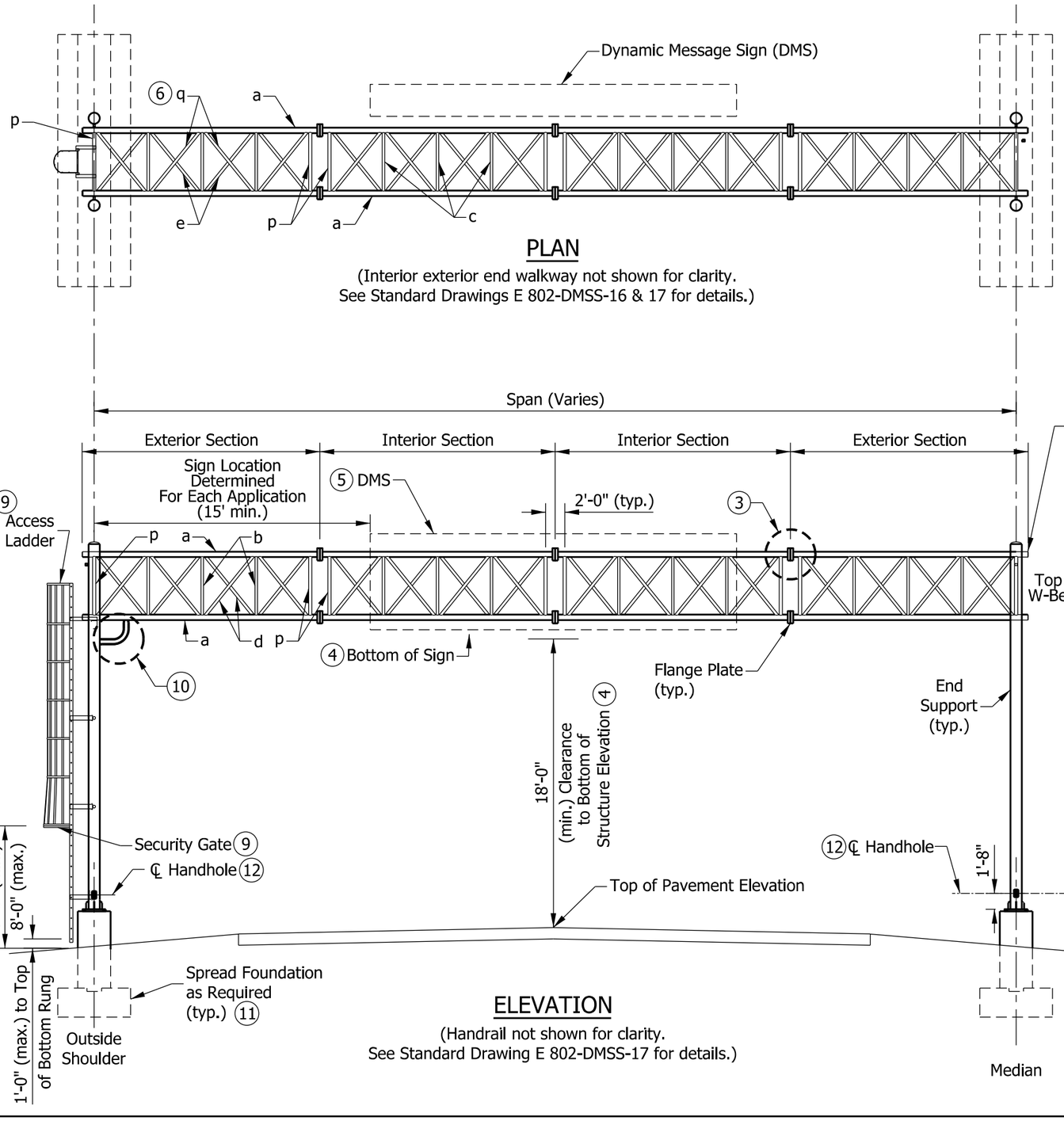
SEPTEMBER 2022

STANDARD DRAWING NO. E 802-DMSS-01

DAVID H. BORUFF
REGISTERED
No.
60900348
STATE OF
INDIANA
PROFESSIONAL ENGINEER

David H Boruff 05/17/22
DESIGN STANDARDS ENGINEER DATE

06/28/2022
CHIEF ENGINEER DATE



PLAN

(Interior exterior end walkway not shown for clarity.
See Standard Drawings E 802-DMSS-16 & 17 for details.)

ELEVATION

(Handrail not shown for clarity.
See Standard Drawing E 802-DMSS-17 for details.)

END SUPPORT
Column (h)

NOTES:

1. See Standard Drawings E 802-DMSS-03 for isometric view and table with member sizes.
2. Max. deviation of any chord from a straight line in any section shall be 1/8 in. Box truss to be max. of 3/8 in. out of a straight line over the entire length of the structure in the vertical plane.

(3) See Standard Drawings E 802-DMSS-06 and 07 for chord connection welds, flange, and chord end plate details.

(4) See Standard Drawing E 802-DMSS-16 for the bottom of structure elevation and grating details.

(5) Maximum sign area is 300 sq. ft.

(6) See Standard Drawing E 802-DMSS-03 for counter diagonals on exterior truss sections.

(7) See Standard Drawing E 802-DMSS-08 for upper chord connections details.

(8) See Standard Drawing E 802-DMSS-09 for lower chord connections details.

(9) See Standard Drawing E 802-DMSS-13, 14, and 15 for access ladder and security gate details.

(10) See Standard Drawing E 802-DMSS-19 for wiring layout and wire-outlet details.

(11) See Standard Drawings E 802-DMSS-20 through 23 for spread foundation details.

(12) See Standard Drawing E 802-DMSS-11 for handhole detail.

TRUSS MEMBERS (ALUMINUM)
- a - Chords
- b - Verticals
- c - Horizontals
- d - Vertical Diagonals
- e - Horizontal Diagonals
- p - End Verticals and Horizontals
- q - Counter Diagonals

END SUPPORT MEMBERS (STEEL)
- f - Horizontals
- g - Diagonals
- h - Columns
- j - W-Beam

INDIANA DEPARTMENT OF TRANSPORTATION

DYNAMIC MESSAGE SIGN STRUCTURE PLAN & ELEVATION

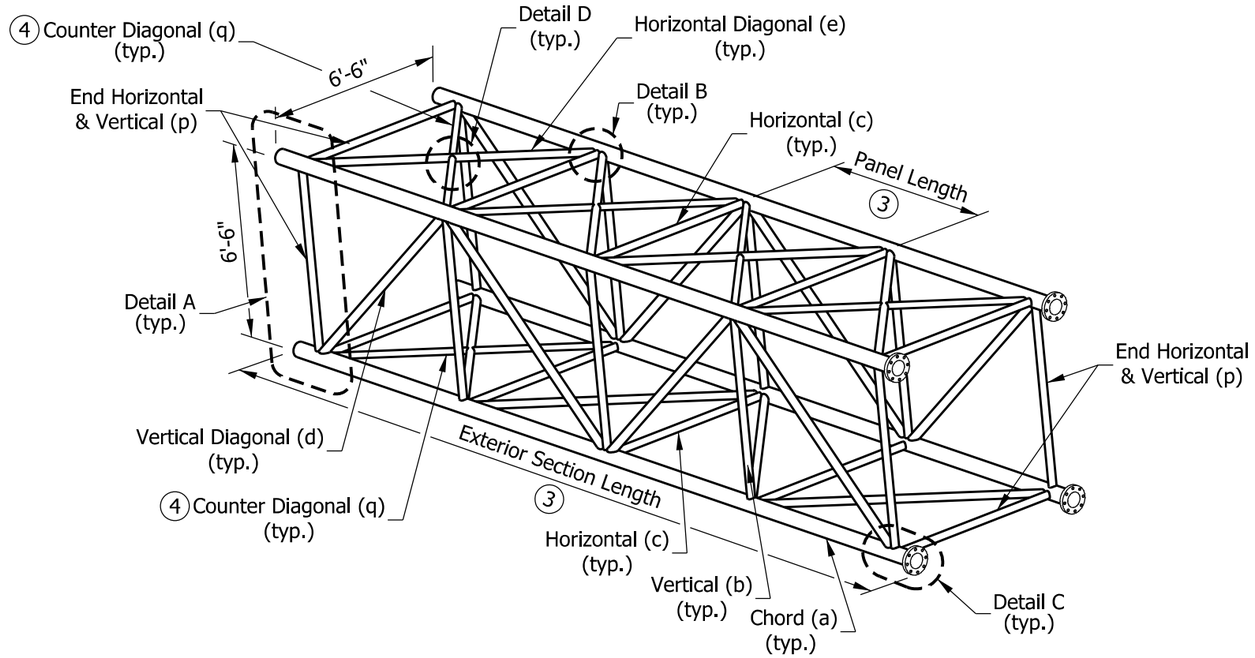
SEPTEMBER 2022

STANDARD DRAWING NO. E 802-DMSS-02

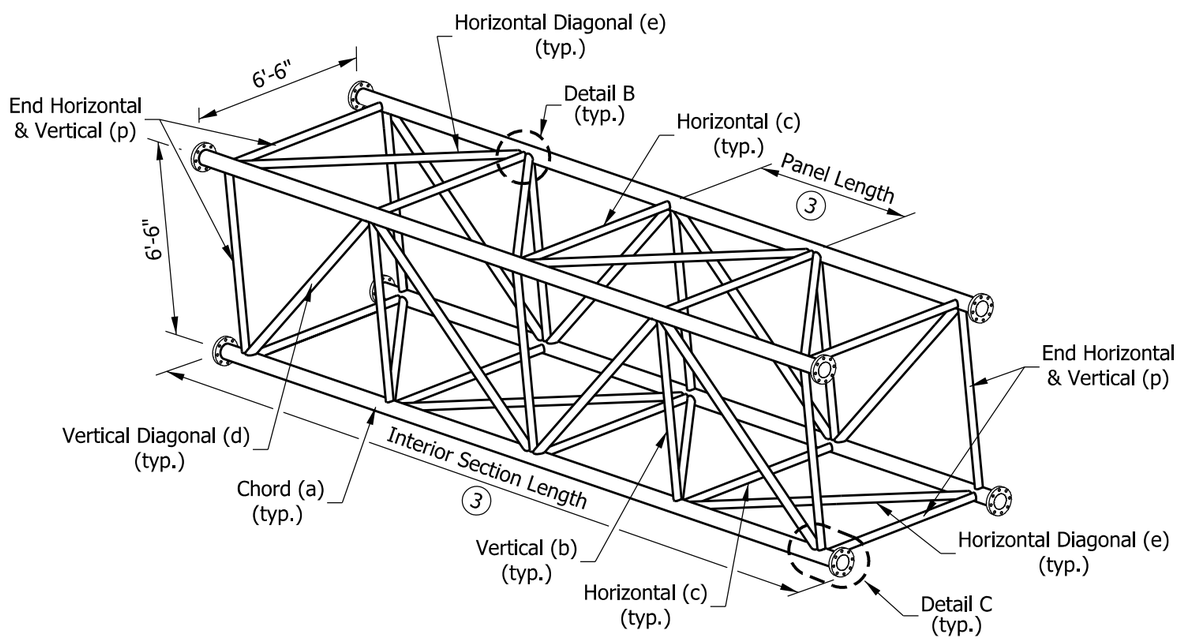
DAVID H. BORUFF REGISTERED No. 60900348 STATE OF INDIANA PROFESSIONAL ENGINEER

DESIGN STANDARDS ENGINEER — DATE 05/17/22

CHIEF ENGINEER — DATE 06/28/2022



TYPICAL EXTERIOR TRUSS SECTION



TYPICAL INTERIOR TRUSS SECTION

NOTES:

1. See Standard Drawing E 802-DMSS-06 for Details A through D.
2. Truss members to be aluminum. End support members to be steel. Steel pipe diameters shown in table are nominal pipe sizes.

(3) Number of panels and sections varies. See Standard Drawing E 802-DMSS-04 and 05 for recommended dimensions.

(4) Counter Diagonal (q) shall be provided in exterior sections at the top of each panel and at the bottom of end panel only as shown. It is not required in interior sections.

5. See Standard Drawing E 802-DMSS-02 for end support members.

MAX. SPAN = 130 ft. MAX. SIGN AREA = 300 sq. ft.
MAX. MOUNTING HEIGHT = 24'-6"

ALUMINUM TRUSS MEMBERS		
MEMBER	MARK	O.D. (IN.) x WALL THK. (IN.)
CHORD	a	7 x 0.500
VERTICAL	b	3.5 x 0.375
HORIZONTAL	c	4 x 0.250
VERTICAL DIAGONAL	d	4.5 x 0.500
HORIZONTAL DIAGONAL	e	5.5 x 0.500
END VERTICAL & HORIZONTAL	p	5.5 x 0.500
COUNTER DIAGONAL (SEE NOTE 4)	q	2.5 x 0.500
STEEL END-SUPPORT MEMBERS		
COLUMN	h	14 x 0.375
HORIZONTAL	f	3.5 x 0.216
DIAGONAL	g	5.563 x 0.375
W-BEAM	j	W10 x 68

INDIANA DEPARTMENT OF TRANSPORTATION

DYNAMIC MESSAGE SIGN STRUCTURE
TRUSS SECTIONS, MEMBER SIZE TABLE

SEPTEMBER 2022

STANDARD DRAWING NO. E 802-DMSS-03

DAVID H. BORUFF
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No. 60900348
STATE OF INDIANA
PROFESSIONAL ENGINEER

David H Boruff 05/17/22
DESIGN STANDARDS ENGINEER DATE

06/28/2022
CHIEF ENGINEER DATE

DIMENSIONS FOR DYNAMIC MESSAGE SIGN STRUCTURES (34' THRU 81')

SPAN	EXTERIOR SECTIONS					INTERIOR SECTIONS			
SPAN-TRUSS LENGTH, (FT)	NO. OF EXT. SECTIONS	NO. OF PANELS PER SECTION	VARIABLE END DIMEN.	PANEL LENGTH	SECTION LENGTH	NO. OF INT. SECTIONS	NO. OF PANELS PER SECTION	PANEL LENGTH	SECTION LENGTH
34	1	6	6"	5'-6"	35'-6"	0			
35	1	6	6"	5'-8"	36'-6"	0			
36	2	3	6"	5'-6"	18'-9"	0			
37	2	3	6"	5'-8"	19'-3"	0			
38	2	3	6"	5'-10"	19'-9"	0			
39	2	3	6"	6'-0"	20'-3"	0			
40	2	3	6"	6'-2"	20'-9"	0			
41	2	3	6"	6'-4"	21'-3"	0			
42	2	3	6"	6'-6"	21'-9"	0			
43	2	4	6"	5'-0"	22'-3"	0			
44	2	4	6"	5'-1 1/2"	22'-9"	0			
45	2	4	6"	5'-3"	23'-3"	0			
46	2	4	6"	5'-4 1/2"	23'-9"	0			
47	2	4	6"	5'-6"	24'-3"	0			
48	2	4	6"	5'-7 1/2"	24'-9"	0			
49	2	4	6"	5'-9"	25'-3"	0			
50	2	4	6"	5'-10 1/2"	25'-9"	0			
51	2	4	6"	6'-0"	26'-3"	0			
52	2	4	6"	6'-1 1/2"	26'-9"	0			
53	2	4	6"	6'-3"	27'-3"	0			
54	2	4	6"	6'-4 1/2"	27'-9"	0			
55	2	4	6"	6'-6"	28'-3"	0			
56	2	5	5 1/4"	5'-3 3/4"	28'-9"	0			
57	2	5	6 1/4"	5'-4 3/4"	29'-3"	0			
58	2	5	6"	5'-6"	29'-9"	0			
59	2	5	5 3/4"	5'-7 1/4"	30'-3"	0			
60	2	5	5 1/2"	5'- 8 1/2"	30'-9"	0			
61	2	5	6 1/2"	5'-9 1/2"	31'-3"	0			
62	2	5	6 1/4"	5'-10 3/4"	31'-9"	0			
63	2	5	6"	6'-0"	32'-3"	0			
64	2	5	5 3/4"	6'-1 1/4"	32'-9"	0			
65	2	5	5 1/2"	6'-2 1/2"	33'-3"	0			
66	2	5	5 1/4"	6'-3 3/4"	33'-9"	0			
67	2	5	5"	6'-5"	34'-3"	0			
68	2	5	6"	6'-6"	34'-9"	0			
69	2	4	6"	5'-4"	23'-7"	1	4	5'-4"	23'-4"
70	2	4	6"	5'-5"	23'-11"	1	4	5'-5"	23'-8"
71	2	4	6"	5'-6"	24'-3"	1	4	5'-6"	24'-0"
72	2	4	6"	5'-7"	24'-7"	1	4	5'-7"	24'-4"
73	2	4	6"	5'-8"	24'-11"	1	4	5'-8"	24'-8"
74	2	4	6"	5"-9"	25'-3"	1	4	5"-9"	25'-0"
75	2	4	6"	5'-10"	25'-7"	1	4	5'-10"	25'-4"
76	2	4	6"	5'-11"	25'-11"	1	4	5'-11"	25'-8"
77	2	4	6"	6'-0"	26'-3"	1	4	6'-0"	26'-0"
78	2	4	6"	6'-1"	26'-7"	1	4	6'-1"	26'-4"
79	2	4	6"	6'-2"	26'-11"	1	4	6'-2"	26'-8"
80	2	4	6"	6'-3"	27'-3"	1	4	6'-3"	27'-0"
81	2	4	6"	6'-4"	27'-7"	1	4	6'-4"	27'-4"

NOTES:

1. The table of dimensions for a dynamic message sign structure is divided and put on two Standard Drawings E 802-DMSS-04 and 05. The table shows dimensions with all sections requirements accounted for.
2. All panels on a truss shall be the same length. The minimum panel length for all trusses is 5 ft - 0 in. and the maximum is 6 ft - 6 in.
3. A single interior section in a truss shall have an even number of panels to maintain the pattern of the vertical diagonals.
4. Use minimum number of sections for each truss, keeping the maximum section length at 35 ft - 6 in.
5. See Standard Drawing E 802-DMSS-05 for required camber.

INDIANA DEPARTMENT OF TRANSPORTATION

DYNAMIC MESSAGE SIGN STRUCTURE
TABLE OF DIMENSIONS
SPANS 34' THRU 81'
SEPTEMBER 2022

STANDARD DRAWING NO. E 802-DMSS-04

DAVID H. BORUFF REGISTERED No. 60900348 STATE OF INDIANA PROFESSIONAL ENGINEER

05/17/22
DESIGN STANDARDS ENGINEER DATE

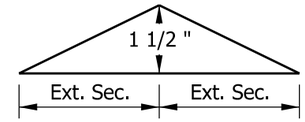
06/28/2022
CHIEF ENGINEER DATE

DIMENSIONS FOR DYNAMIC MESSAGE SIGN STRUCTURES (82' THRU 130')

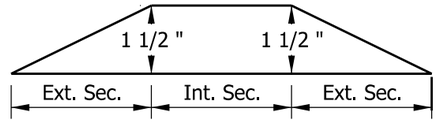
SPAN	EXTERIOR SECTIONS					INTERIOR SECTIONS			
SPAN-TRUSS LENGTH, (FT)	NO. OF EXT. SECTIONS	NO. OF PANELS PER SECTION	VARIABLE END DIMEN.	PANEL LENGTH	SECTION LENGTH	NO. OF INT. SECTIONS	NO. OF PANELS PER SECTION	PANEL LENGTH	SECTION LENGTH
82	2	4	6"	6'-5"	27'-11"	1	4	6'-5"	27'-8"
83	2	4	6"	6'-6"	28'-3"	1	4	6'-6"	28'-0"
84	2	5	5 3/4"	5'-7 3/4"	30'-5 1/2"	1	4	5'-7 3/4"	24'-7"
85	2	5	6 1/2"	5'-8 1/2"	30'-10"	1	4	5'-8 1/2"	24'-10"
86	2	5	5 1/2"	5'-9 1/2"	31'-2"	1	4	5'-9 1/2"	25'-2"
87	2	5	6 1/4"	5'-10 1/4"	31'-6 1/2"	1	4	5'-10 1/4"	25'-5"
88	2	5	7"	5'-11"	31'-11"	1	4	5'-11"	25'-8"
89	2	5	6"	6'-0"	32'-3"	1	4	6'-0"	26'-0"
90	2	5	5"	6'-1"	32'-7"	1	4	6'-1"	26'-4"
91	2	5	5 3/4"	6'-1 3/4"	32'-11 1/2"	1	4	6'-1 3/4"	26'-7"
92	2	5	6 1/2"	6'-2 1/2"	33'-4"	1	4	6'-2 1/2"	26'-10"
93	2	5	5 1/2"	6'-3 1/2"	33'-8"	1	4	6'-3 1/2"	27'-2"
94	2	5	6 1/4"	6'-4 1/4"	34'-0 1/2"	1	4	6'-4 1/4"	27'-5"
95	2	5	5 1/4"	6'-5 1/4"	34'-4 1/2"	1	4	6'-5 1/4"	27'-9"
96	2	5	6"	6'-6"	34'-9"	1	4	6'-6"	28'-0"
97	2	4	6"	5'-7 1/2"	24'-9"	2	4	5'-7 1/2"	24'-6"
98	2	4	6"	5'-8 1/4"	25'-0"	2	4	5'-8 1/4"	24'-9"
99	2	4	6"	5'-9"	25'-3"	2	4	5'-9"	25'-0"
100	2	4	6"	5'-9 3/4"	25'-6"	2	4	5'-9 3/4"	25'-3"
101	2	4	6"	5'-10 1/2"	25'-9"	2	4	5'-10 1/2"	25'-6"
102	2	4	6"	5'-11 1/4"	26'-0"	2	4	5'-11 1/4"	25'-9"
103	2	4	6"	6'-0"	26'-3"	2	4	6'-0"	26'-0"
104	2	4	6"	6'-0 3/4"	26'-6"	2	4	6'-0 3/4"	26'-3"
105	2	4	6"	6'-1 1/2"	26'-9"	2	4	6'-1 1/2"	26'-6"
106	2	4	6"	6'-2 1/4"	27'-0"	2	4	6'-2 1/4"	26'-9"
107	2	4	6"	6'-3"	27'-3"	2	4	6'-3"	27'-0"
108	2	4	6"	6'-3 3/4"	27'-6"	2	4	6'-3 3/4"	27'-3"
109	2	4	6"	6'-4 1/2"	27'-9"	2	4	6'-4 1/2"	27'-6"
110	2	4	6"	6'-5 1/4"	28'-0"	2	4	6'-5 1/4"	27'-9"
111	2	4	6"	6'-6"	28'-3"	2	4	6'-6"	28'-0"
112	2	5	6"	5'-3"	28'-6"	2	5	5'-3"	28'-3"
113	2	5	7"	5'-3 1/2"	28'-9 1/2"	2	5	5'-3 1/2"	28'-5 1/2"
114	2	5	5 1/2"	5'-4 1/4"	28'-11 3/4"	2	5	5'-4 1/4"	28'-9 1/4"
115	2	5	6 1/2"	5'-4 3/4"	29'-3 1/4"	2	5	5'-4 3/4"	28'-11 3/4"
116	2	5	5"	5'-5 1/2"	29'-5 1/2"	2	5	5'-5 1/2"	29'-3 1/2"
117	2	5	6"	5'-6"	29'-9"	2	5	5'-6"	29'-6"
118	2	5	5"	5'-6 1/2"	29'-10 1/2"	2	5	5'-6 1/2"	29'-8 1/2"
119	2	5	5 1/2"	5'-7 1/4"	30'-2 3/4"	2	5	5'-7 1/4"	30'-0 1/4"
120	2	5	6 1/2"	5'-7 3/4"	30'-6 1/4"	2	5	5'-7 3/4"	30'-2 3/4"
121	2	5	5"	5'-8 1/2"	30'-8 1/2"	2	5	5'-8 1/2"	30'-6 1/2"
122	2	5	6"	5'-9"	31'-0"	2	5	5'-9"	30'-9"
123	2	5	7"	5'-9 1/2"	31'-3 1/2"	2	5	5'-9 1/2"	30'-11 1/2"
124	2	5	5 1/2"	5'-10 1/4"	31'-5 3/4"	2	5	5'-10 1/4"	31'-3 1/4"
125	2	5	6 1/2"	5'-10 3/4"	31'-9 1/4"	2	5	5'-10 3/4"	31'-5 3/4"
126	2	5	5"	5'-11 1/2"	31' -11 1/2"	2	5	5'-11 1/2"	31'-9 1/2"
127	2	5	6"	6'-0"	32'-3"	2	5	6'-0"	32'-0"
128	2	5	7"	6'-0 1/2"	32'-6 1/2"	2	5	6'-0 1/2"	32'-2 1/2"
129	2	5	5 1/2"	6'-1 1/4"	32'-8 3/4"	2	5	6'-1 1/4"	32'-6 1/4"
130	2	5	6 1/2"	6'-1 3/4"	33'-0 1/4"	2	5	6'-1 3/4"	32'-8 3/4"

NOTES:

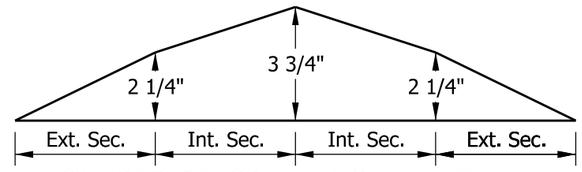
1. Camber diagrams to build truss structures with 2 to 4 sections are shown. Cambers shown are for fabrication only and are measured with trusses fully supported at no-load conditions. Allowable camber tolerance for truss is 25% of specific camber value.
2. See Standard Drawing E 805-DMSS-04 for additional notes.



CAMBER DIAGRAM (2-Section Truss)



CAMBER DIAGRAM (3-Section Truss)

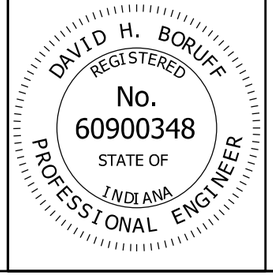


CAMBER DIAGRAM (4-Section Truss)

INDIANA DEPARTMENT OF TRANSPORTATION

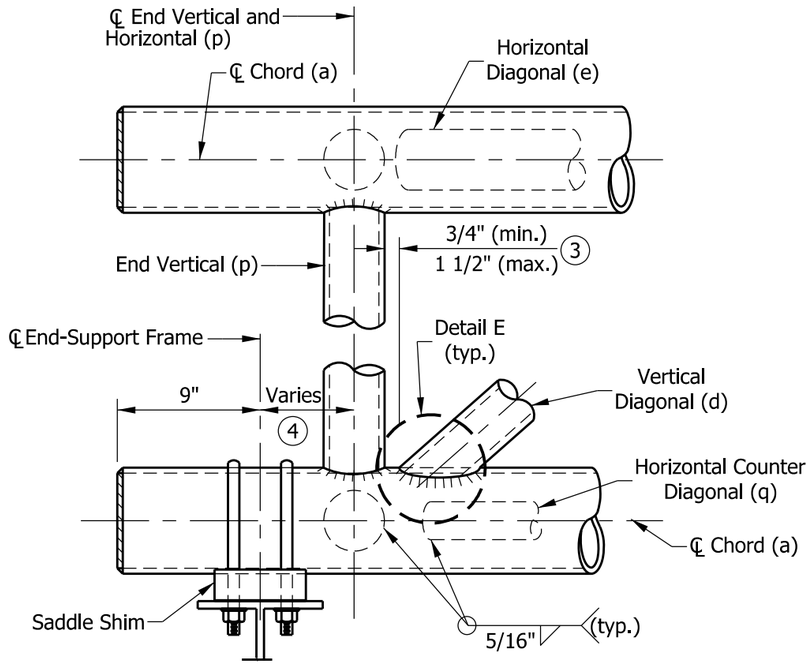
DYNAMIC MESSAGE SIGN STRUCTURE
TABLE OF DIMENSIONS
SPANS 82' THRU 130' & CAMBER
SEPTEMBER 2022

STANDARD DRAWING NO. E 802-DMSS-05

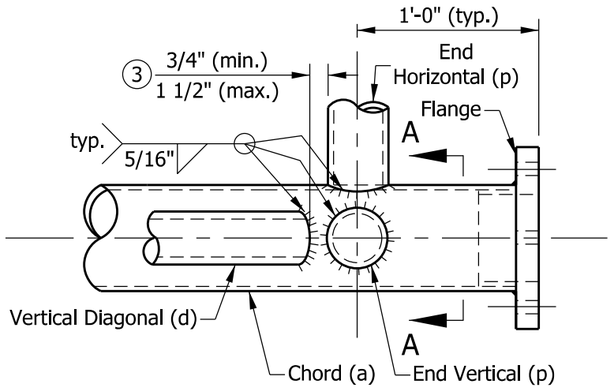


05/17/22
DESIGN STANDARDS ENGINEER DATE

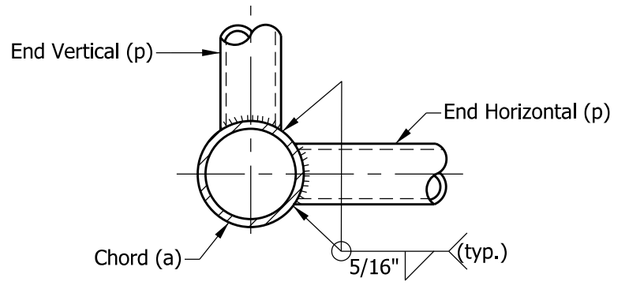
06/28/2022
CHIEF ENGINEER DATE



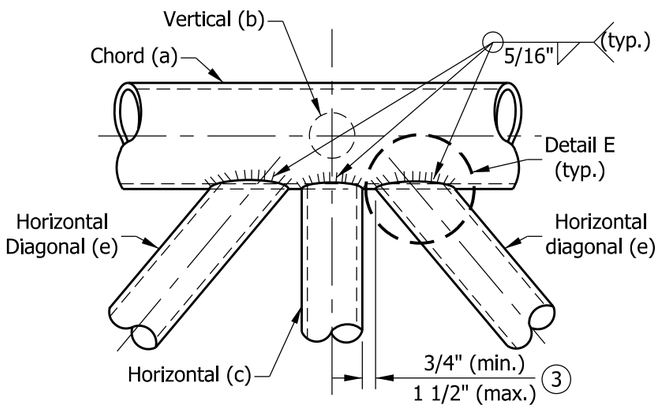
DETAIL A
EXTERIOR SECTION AT END-SUPPORT



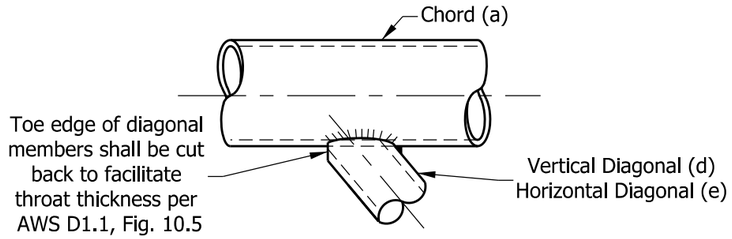
DETAIL C
CHORD AT FLANGE CONNECTION
PLAN VIEW



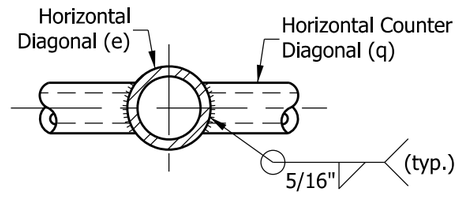
SECTION A-A
TYPICAL JOIN DETAILS



DETAIL B
TYPICAL PANEL CONNECTION
PLAN VIEW



DETAIL E



DETAIL D

NOTES:

1. All bracing members shall be machined to provide a snug fit to the chord along the entire edge of bracing members before welding.
2. See Standard Drawing E 802-DMSS-03 for member locations and sizes.

(3) Vertical and horizontal diagonals shall be detailed for minimum offset from the panel point based on the following: offset shall be such as to provide a ¾ in. minimum to 1½ in. maximum clearance between any diagonal and any horizontal or vertical member; and provide clearance for U-bolt connection for signs.

(4) For variable end dimension, Standard Drawings E 802-DMSS-04 and 05.

INDIANA DEPARTMENT OF TRANSPORTATION

DYNAMIC MESSAGE SIGN STRUCTURE
CHORD CONNECTIONS AND WELD DETAILS

SEPTEMBER 2022

STANDARD DRAWING NO. E 802-DMSS-06

DAVID H. BORUFF
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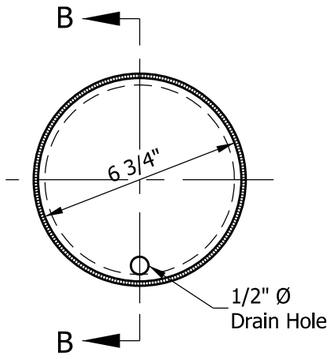
No. 60900348
STATE OF INDIANA
PROFESSIONAL ENGINEER

David H Boruff 05/17/22
DESIGN STANDARDS ENGINEER DATE

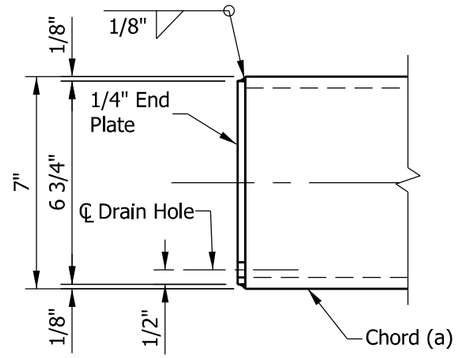
06/28/2022
CHIEF ENGINEER DATE

NOTE:

1. See Standard Drawing E 802-DMSS-02 for chord flange locations.

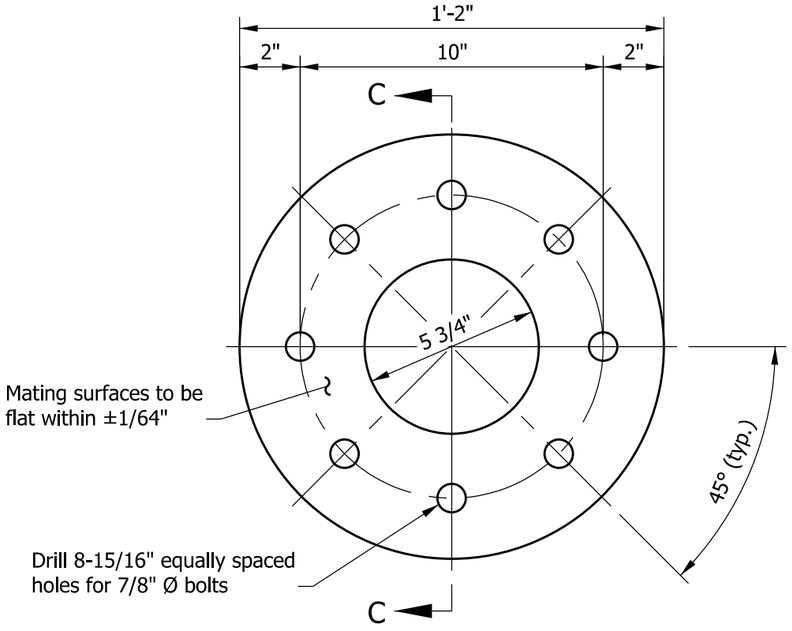


END VIEW

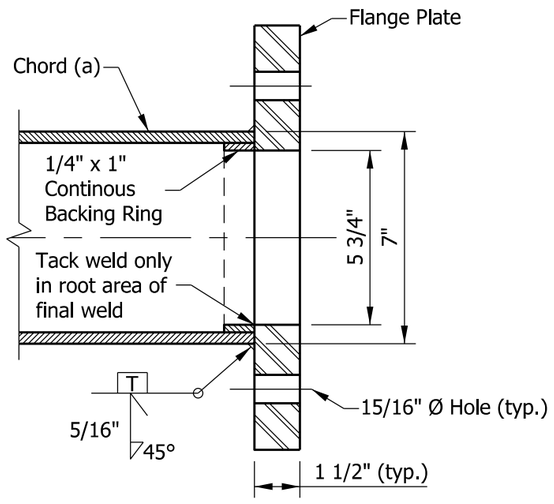


SECTION B-B

CHORD END PLATE DETAILS



END VIEW



SECTION C-C

FLANGE PLATE DETAILS

INDIANA DEPARTMENT OF TRANSPORTATION

DYNAMIC MESSAGE SIGN STRUCTURE
FLANGE & CHORD END PLATE DETAILS

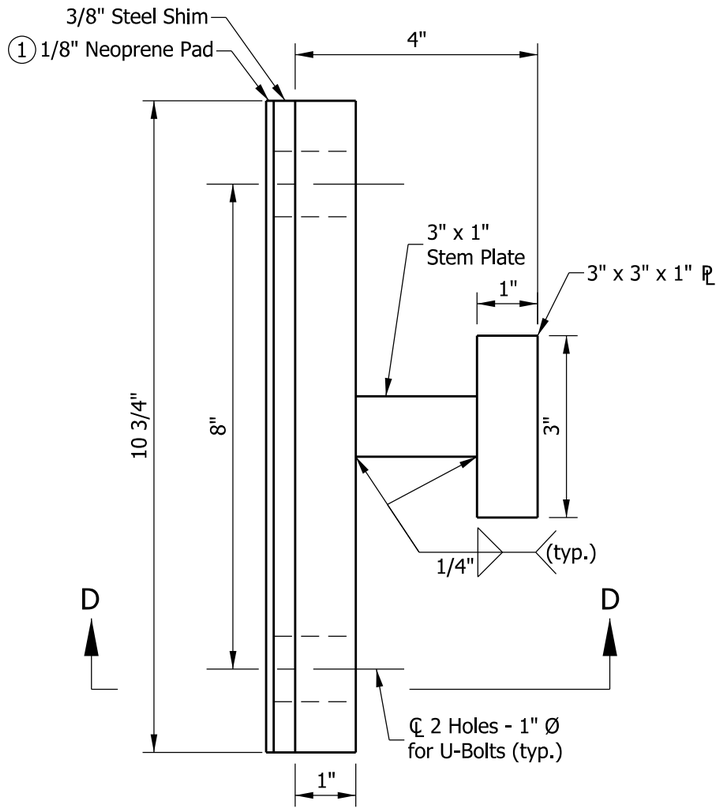
SEPTEMBER 2022

STANDARD DRAWING NO. E 802-DMSS-07

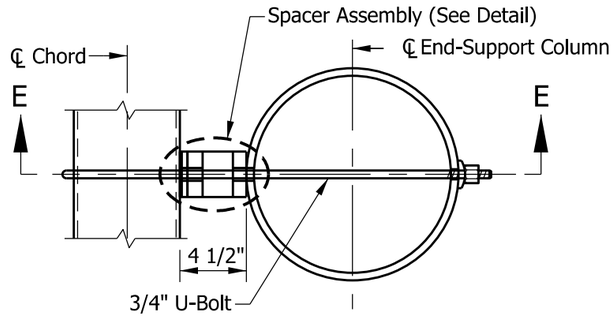
DAVID H. BORUFF
REGISTERED
No.
60900348
STATE OF
INDIANA
PROFESSIONAL ENGINEER

David H Boruff 05/17/22
DESIGN STANDARDS ENGINEER DATE

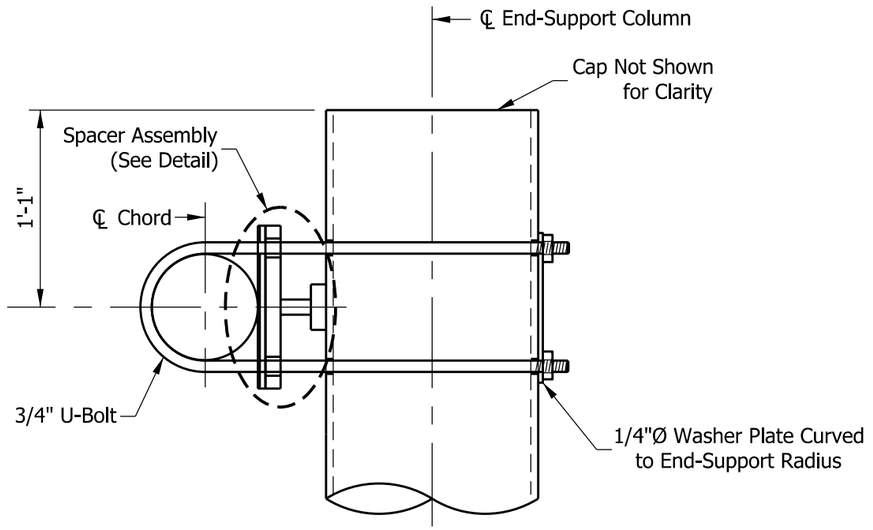
06/28/2022
CHIEF ENGINEER DATE



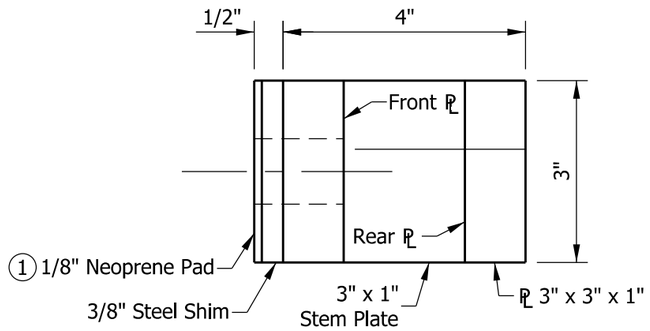
ELEVATION
END-SUPPORT SPACER ASSEMBLY DETAIL



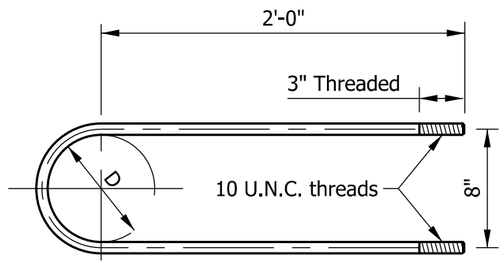
PLAN



SECTION E-E
UPPER CHORD CONNECTION DETAILS



SECTION D-D



3/4" DIA. STAINLESS STEEL U-BOLT DETAIL

NOTES:

1. Provide isolation from steel-dissimilar metal as required.
2. All spacer assembly material shall be steel.

INDIANA DEPARTMENT OF TRANSPORTATION

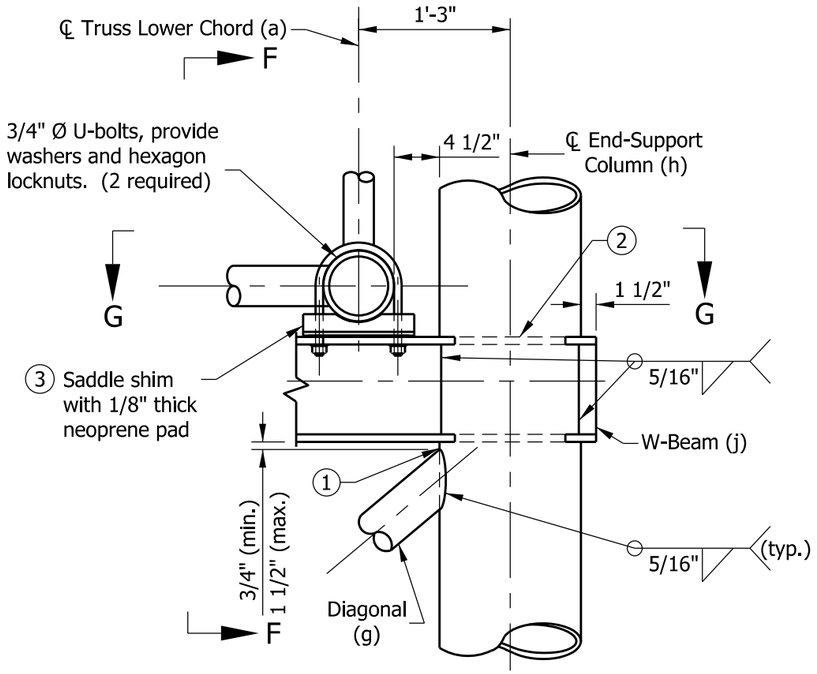
DYNAMIC MESSAGE SIGN STRUCTURE
END SUPPORT
UPPER CHORD CONNECTION DETAILS
SEPTEMBER 2022

STANDARD DRAWING NO. E 802-DMSS-08

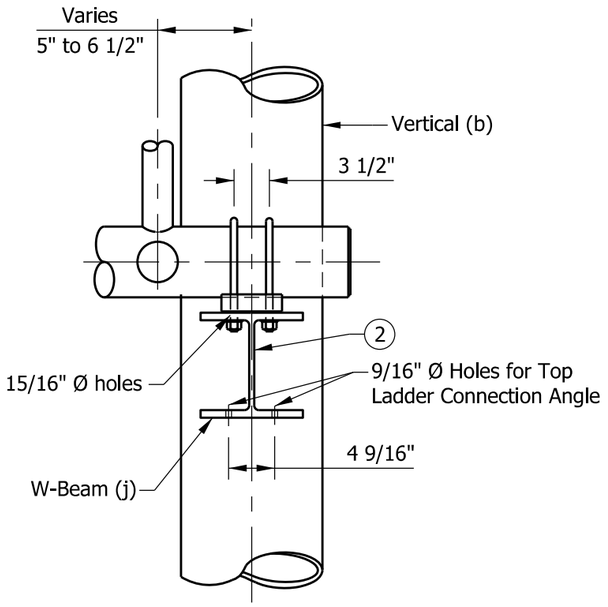
DAVID H. BORUFF REGISTERED No. 60900348 STATE OF INDIANA PROFESSIONAL ENGINEER

David H. Boruff 05/17/22
DESIGN STANDARDS ENGINEER DATE

06/28/2022
CHIEF ENGINEER DATE



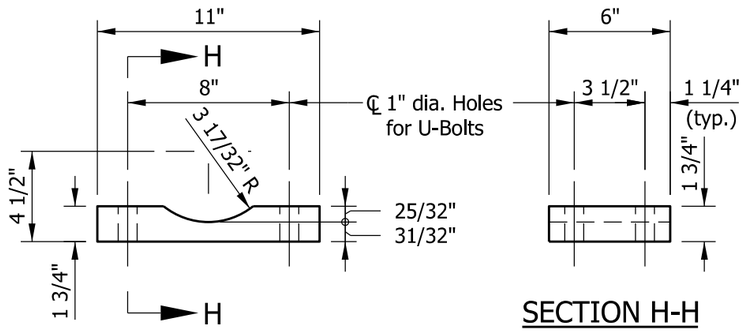
LOWER CHORD CONNECTION DETAIL



SECTION F-F

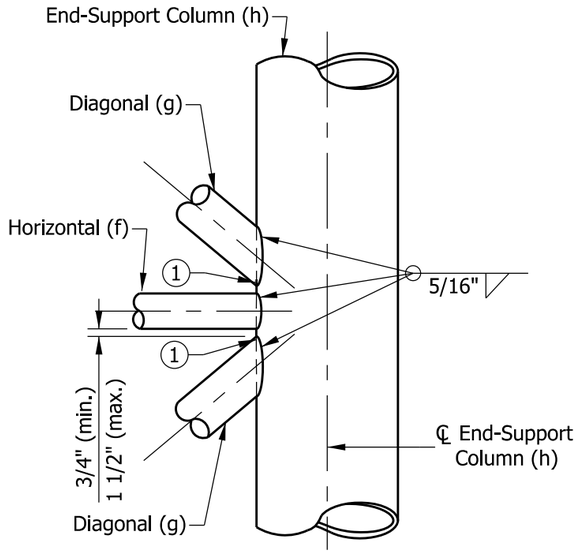
NOTES:

1. Toe edge of diagonal member shall be cut back to facilitate throat thickness. See Standard Drawing E 802-DMSS-06 for toe-edge Detail E.
2. Cut holes in end support columns for W-beams to pass through. Holes shall have ⅛ in. maximum clearance to W-beam. Holes in opposite sides of column shall be checked for proper alignment prior to cutting.
3. Neoprene pads shall be provided at all chord-to-W-beam bearing surfaces.
4. See Standard Drawing E 802-DMSS-03 for end-support member sizes.

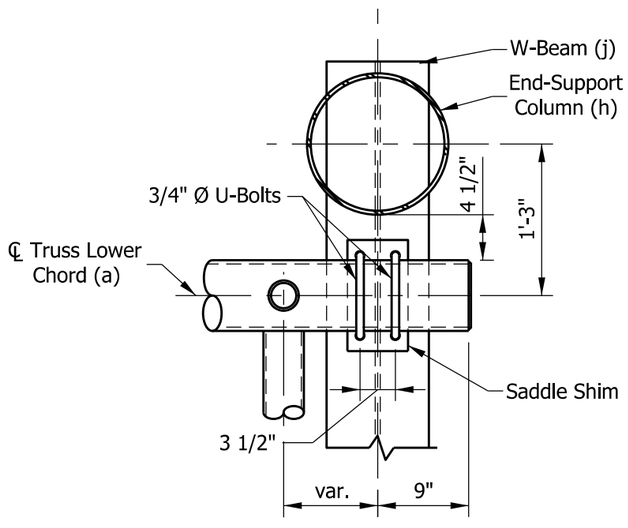


SECTION H-H

SADDLE SHIM DETAIL



ELEVATION (END SUPPORT)
TYPICAL BRACING MEMBERS CONNECTION



SECTION G-G

INDIANA DEPARTMENT OF TRANSPORTATION

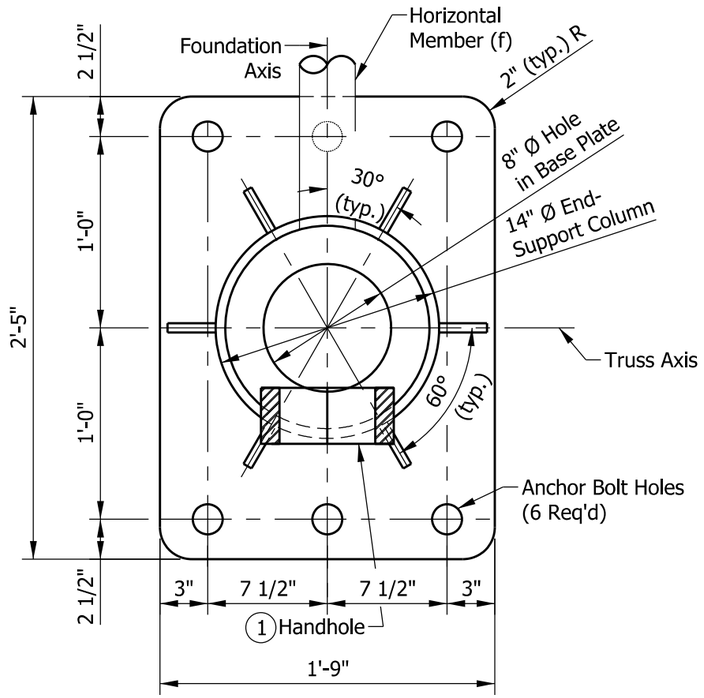
DYNAMIC MESSAGE SIGN STRUCTURE
END-SUPPORT
LOWER CHORD CONNECTION DETAILS
SEPTEMBER 2022

STANDARD DRAWING NO. E 802-DMSS-09

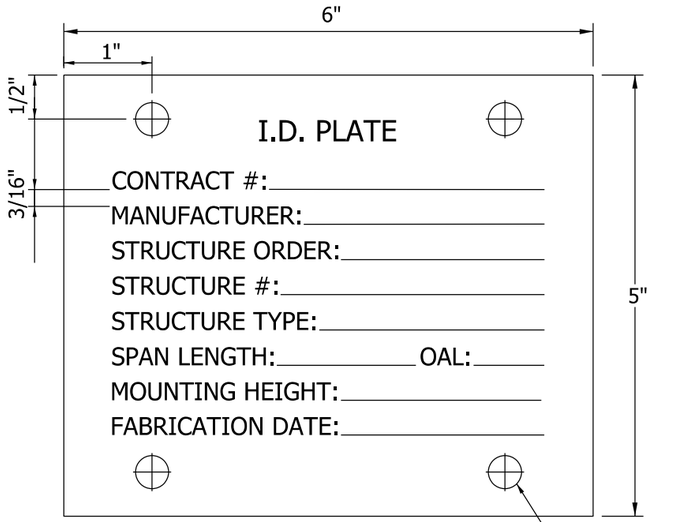
DAVID H. BORUFF REGISTERED No. 60900348 STATE OF INDIANA PROFESSIONAL ENGINEER

05/17/22
DESIGN STANDARDS ENGINEER DATE

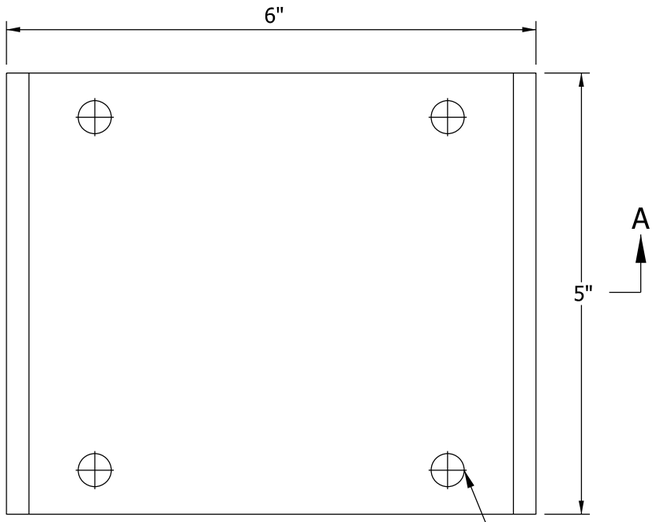
06/28/2022
CHIEF ENGINEER DATE



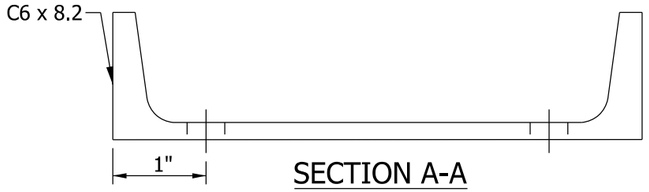
TYPE B-14 BASE PLATE



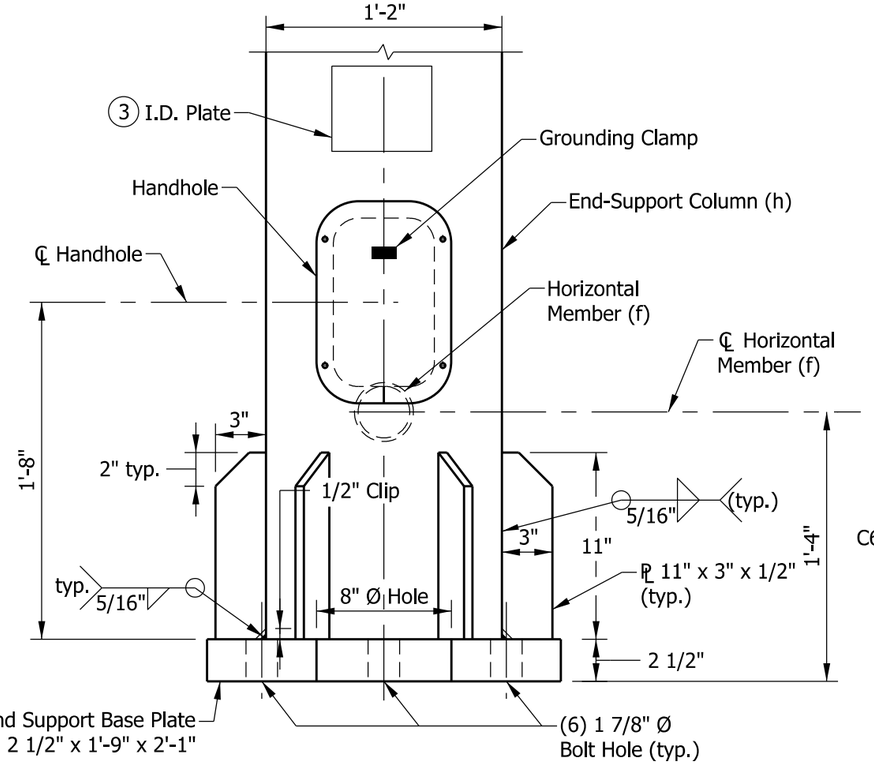
I.D. PLATE



I.D. PLATE CHANNEL



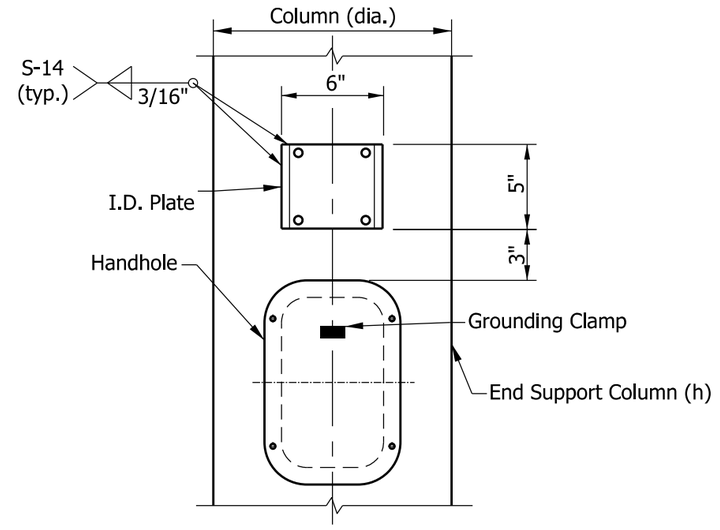
SECTION A-A



ELEVATION

NOTES:

1. See Standard Drawing E 802-DMSS-11 for handhole details.
2. See Standard Drawing E 802-DMSS-12 for anchor bolts and metal skirt details.
3. I.D. plate is a ⅛ in. thick plate stainless steel plate with the information stamped in 3⁄16 in. black letters:
4. Each end support requires one I.D. plate.



I.D. PLATE LOCATION

INDIANA DEPARTMENT OF TRANSPORTATION

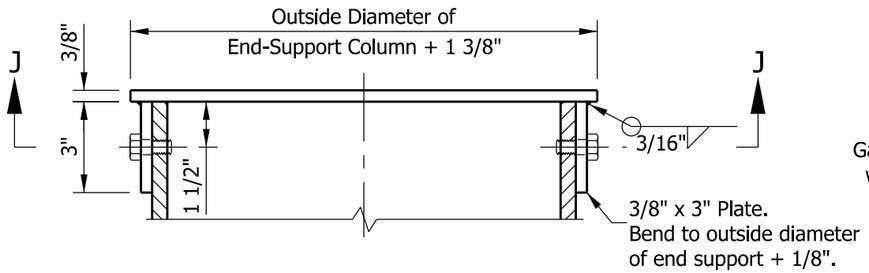
DYNAMIC MESSAGE SIGN STRUCTURE
END SUPPORT
BASE PLATE AND I.D. PLATE DETAILS
SEPTEMBER 2022

STANDARD DRAWING NO. E 802-DMSS-10

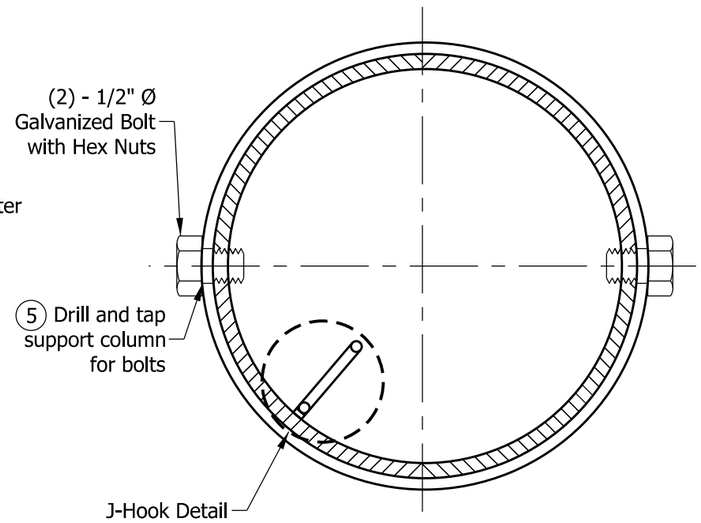
DAVID H. BORUFF REGISTERED No. 60900348 STATE OF INDIANA PROFESSIONAL ENGINEER

David H Boruff 05/17/22
DESIGN STANDARDS ENGINEER DATE

06/28/2022
CHIEF ENGINEER DATE



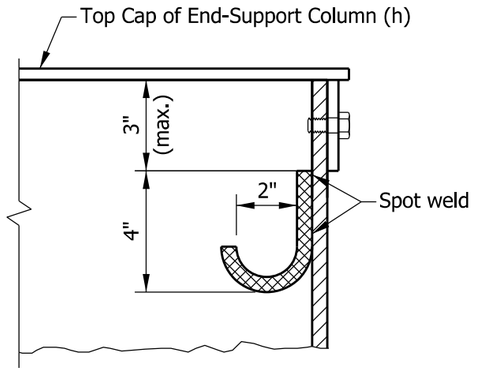
TOP CAP
ELEVATION VIEW



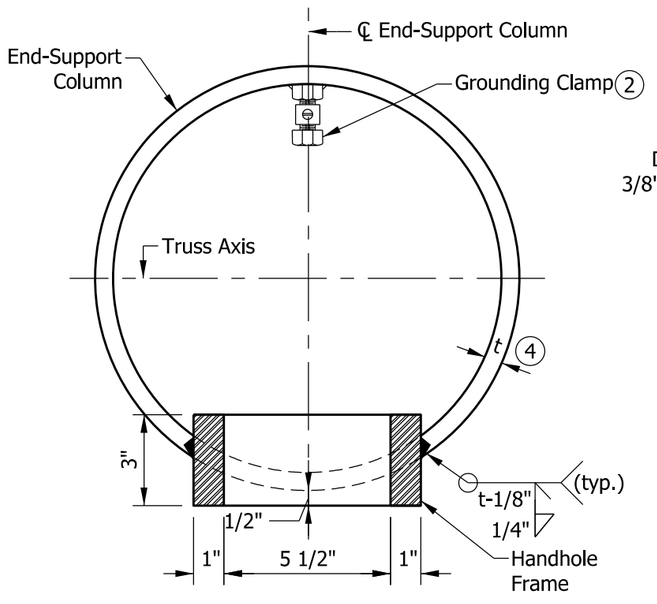
SECTION J-J

NOTES:

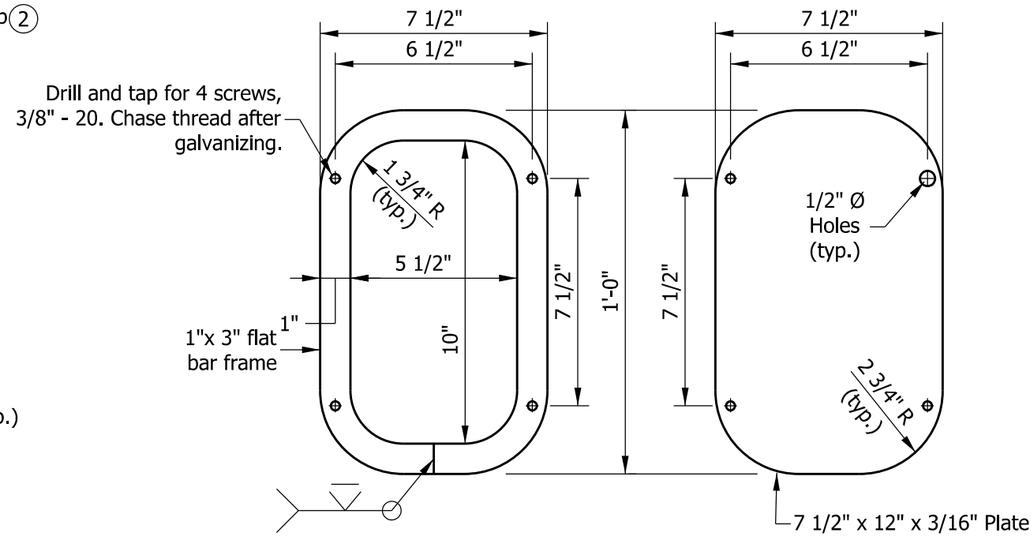
1. In lieu of fabricated handhole frame as shown, frame may be cut from 3 in. plate (rolling direction vertical).
2. See Standard Drawing E 802-SNWR-03 for grounding post details. Grounding post to be placed on far side of support directly opposite center of handhole.
3. See Standard Drawing E 802-DMSS-10 for handhole locations.
4. See Standard Drawing E 802-DMSS-03 for thicknesses of end-support column.
5. Bolts shall be located to miss J-hook.
6. One handhole required on each end support.



J-HOOK DETAIL



HANDHOLE
SECTION ACROSS COLUMN



HANDHOLE FRAME DETAIL

HANDHOLE COVER

INDIANA DEPARTMENT OF TRANSPORTATION

DYNAMIC MESSAGE SIGN STRUCTURE
END SUPPORT HANDHOLE, TOP CAP,
AND J-HOOK DETAILS

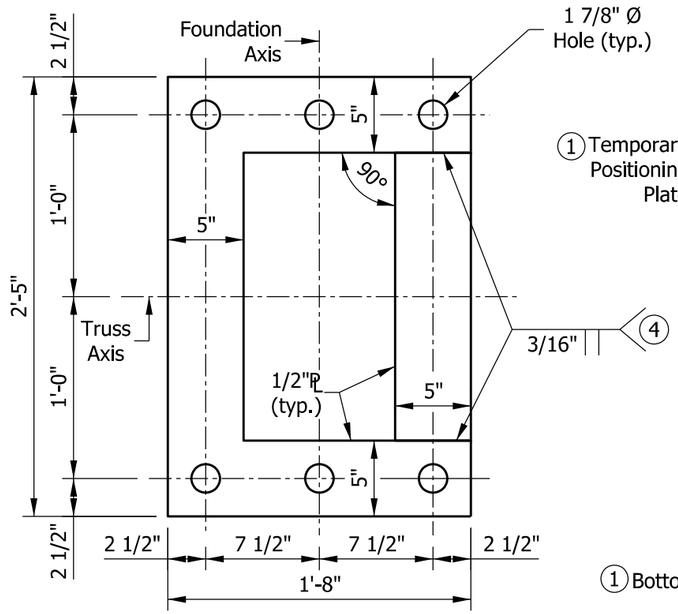
SEPTEMBER 2022

STANDARD DRAWING NO. E 802-DMSS-11

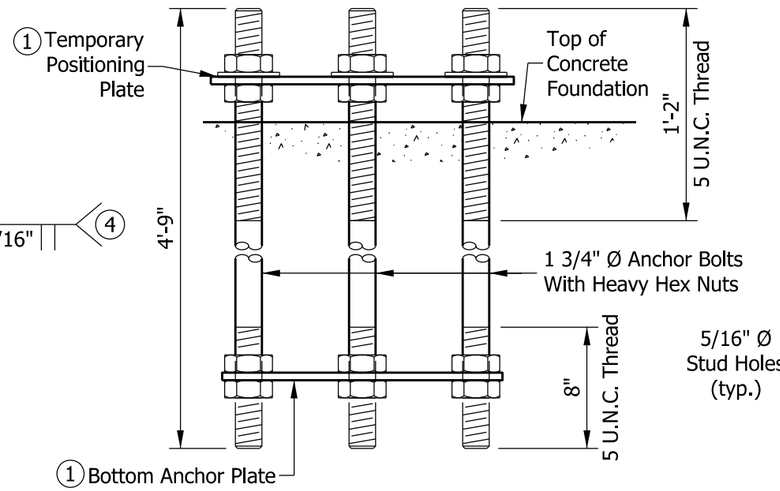
DAVID H. BORUFF
REGISTERED
No. 60900348
STATE OF INDIANA
PROFESSIONAL ENGINEER

David H Boruff 05/17/22
DESIGN STANDARDS ENGINEER DATE

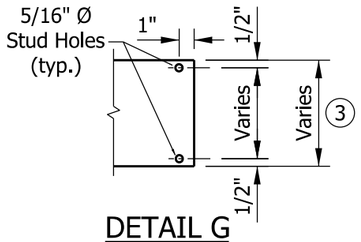
06/28/2022
CHIEF ENGINEER DATE



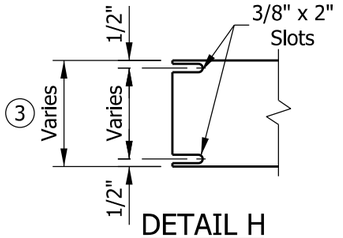
TEMPORARY POSITIONING PLATE



ANCHOR BOLT DETAILS BEFORE CONCRETE PLACEMENT



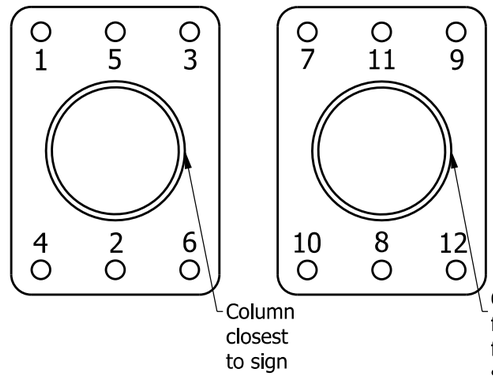
DETAIL G



DETAIL H

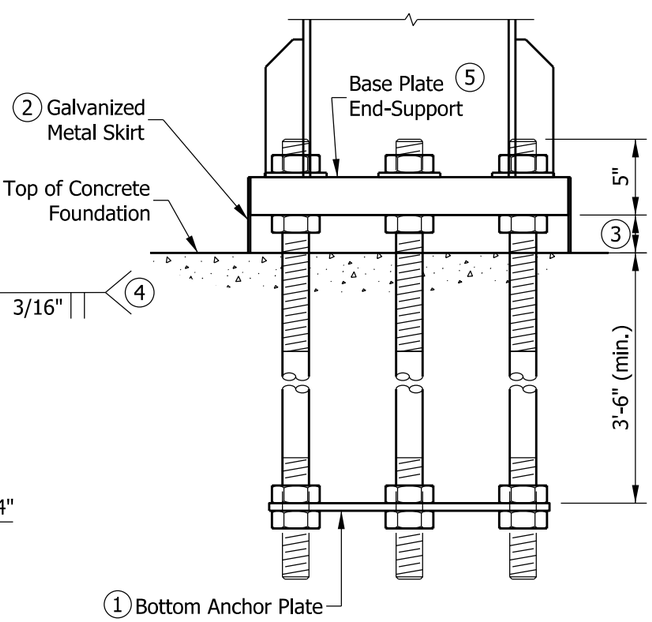
NOTES:

1. Temporary positioning plate and bottom anchor plate shall be used for all foundations. Temporary positioning plate shall be removed after placing concrete.
2. The galvanized metal skirt shall be secured to base plate after erection as shown in skirt detail.
3. Minimum base plate gap is 2½ in. and can be increased up to 5½ in. Metal skirt width shall be at least 1½ in. more than the actual gap.
4. Contractor has the option to use four separate bars. Weld to maintain angles and shapes as shown.
5. For base plate of end-support, see Standard Drawing E 802-DMSS-10.
6. Anchor bolts shall be tightened as shown in the Star Pattern Tightening Sequence. Lubricant shall be from the Department's QPL.

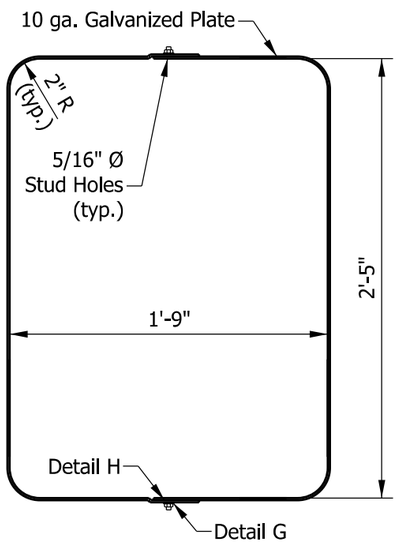


6 STAR PATTERN TIGHTENING SEQUENCE

BOTTOM ANCHOR PLATE



ANCHOR BOLT DETAILS AFTER CONCRETE PLACEMENT



METAL SKIRT DETAIL

INDIANA DEPARTMENT OF TRANSPORTATION

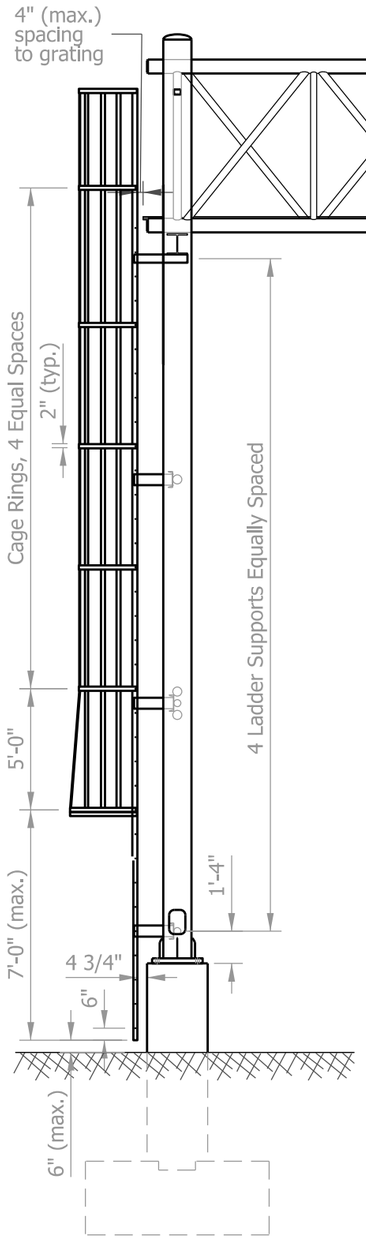
DYNAMIC MESSAGE SIGN STRUCTURE
ANCHOR PLATES, ANCHOR BOLTS,
AND METAL SKIRT DETAILS
SEPTEMBER 2022

STANDARD DRAWING NO. E 802-DMSS-12

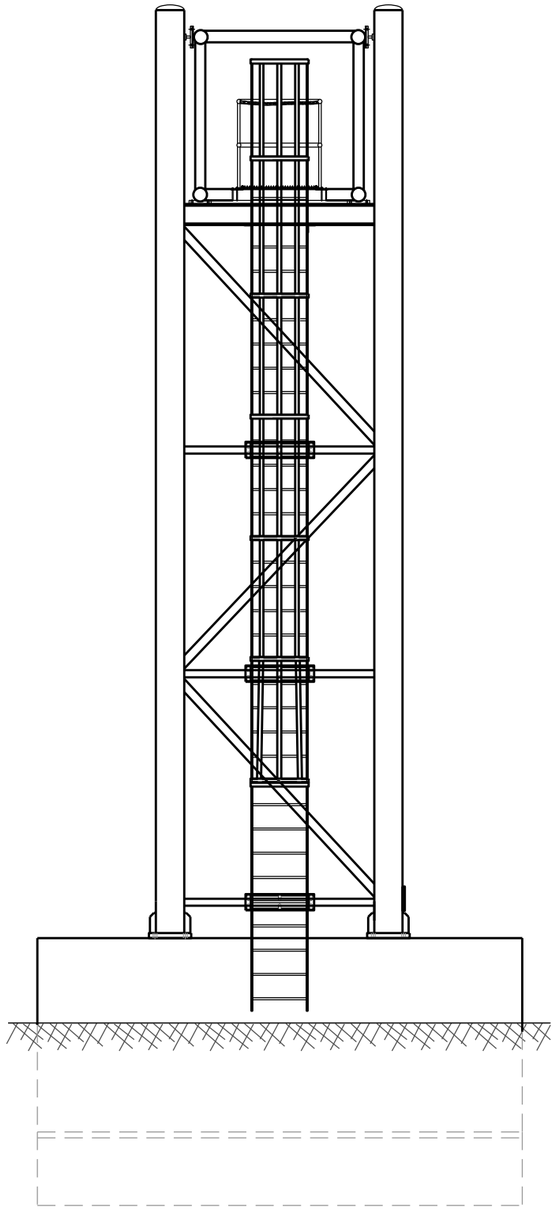
DAVID H. BORUFF REGISTERED No. 60900348 STATE OF INDIANA PROFESSIONAL ENGINEER

David H Boruff 05/17/22
DESIGN STANDARDS ENGINEER DATE

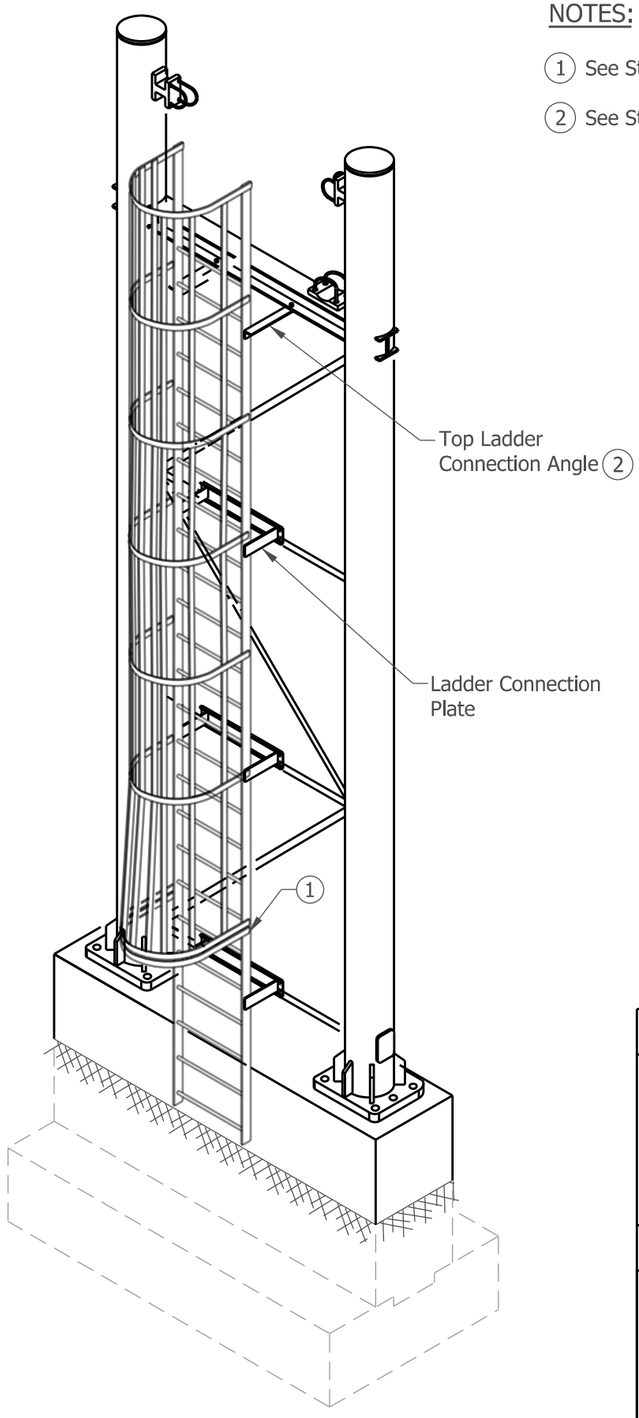
06/28/2022
CHIEF ENGINEER DATE



SIDE VIEW



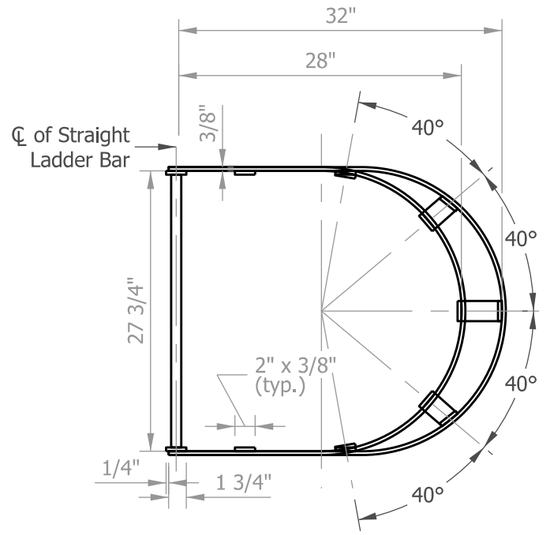
FRONT VIEW
LADDER AND CAGE



ISOMETRIC VIEW

NOTES:

1. See Standard Drawing E 802-DMSS-15 for security gate details.
2. See Standard Drawing E 802-DMSS-14 for ladder details.



TOP VIEW OF
LADDER AND CAGE

INDIANA DEPARTMENT OF TRANSPORTATION

DYNAMIC MESSAGE SIGN STRUCTURE
LADDER DETAILS

SEPTEMBER 2022

STANDARD DRAWING NO. E 802-DMSS-13

DAVID H. BORUFF
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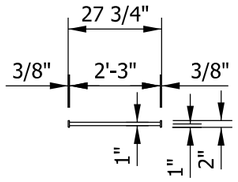
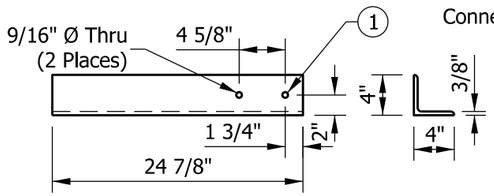
No.
60900348
STATE OF
INDIANA
PROFESSIONAL ENGINEER

David H Boruff 05/17/22
DESIGN STANDARDS ENGINEER DATE

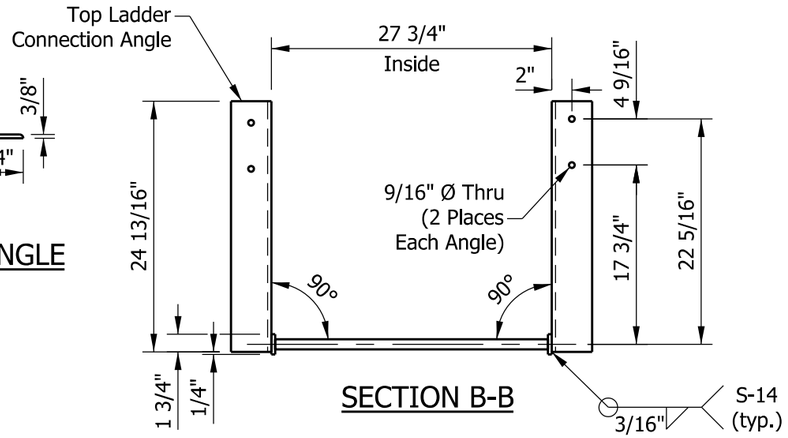
06/28/2022
CHIEF ENGINEER DATE



TOP VIEW OF LADDER



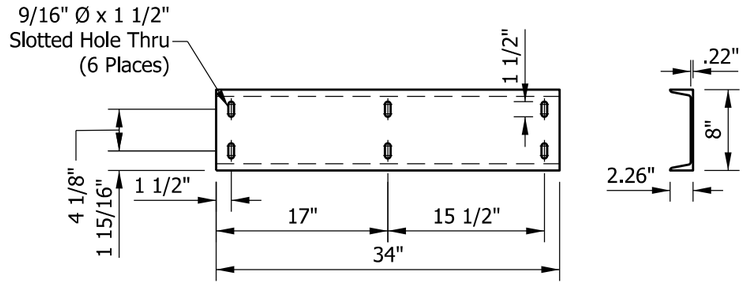
TOP LADDER CONNECTION ANGLE



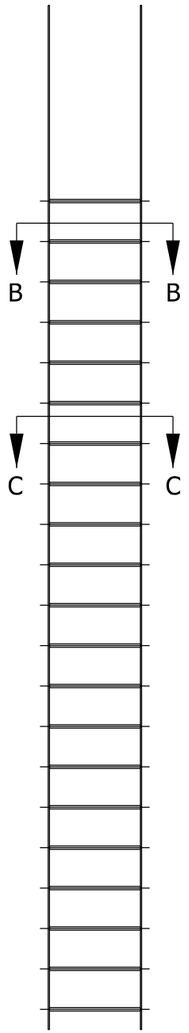
SECTION B-B

NOTE:

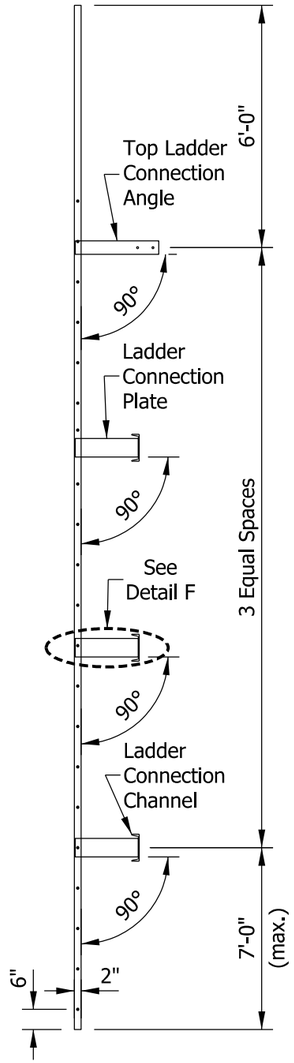
1 (1) A-325 bolts ½ in. x 2 in. on each side of the W-beam with (1) flat washer and (1) lock nut.



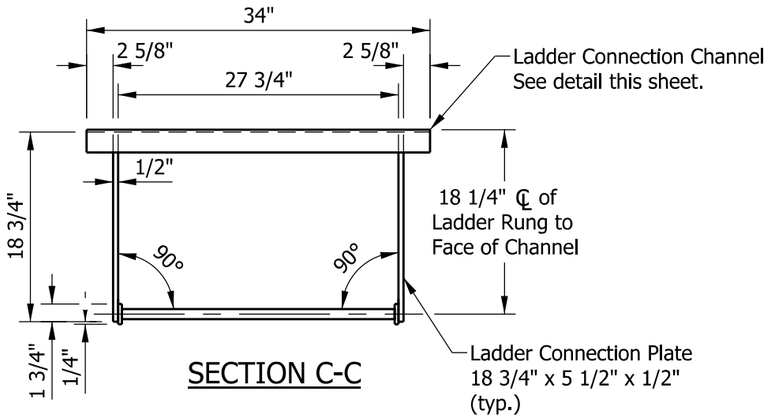
LADDER CONNECTION CHANNEL



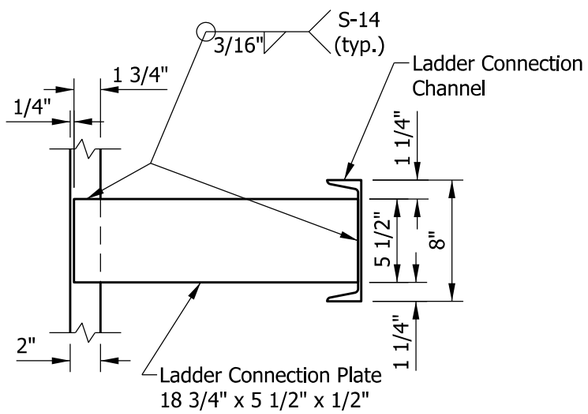
FRONT VIEW OF LADDER



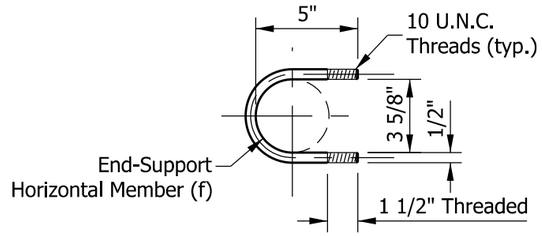
SIDE VIEW OF LADDER AND CAGE



SECTION C-C



DETAIL F



1/2" DIA. STAINLESS STEEL U-BOLT DETAIL
(Used for ladder connection channel)

INDIANA DEPARTMENT OF TRANSPORTATION

DYNAMIC MESSAGE SIGN STRUCTURE
LADDER DETAILS

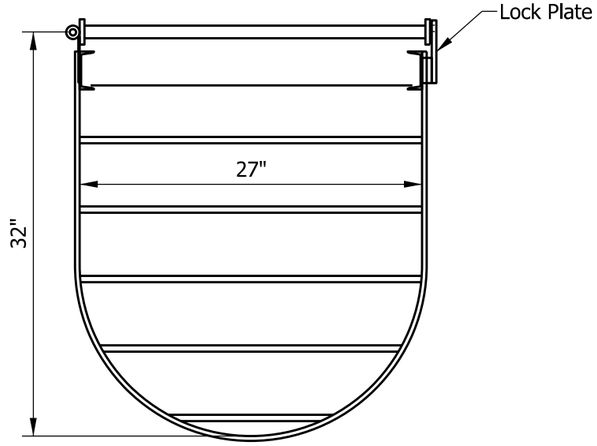
SEPTEMBER 2022

STANDARD DRAWING NO. E 802-DMSS-14

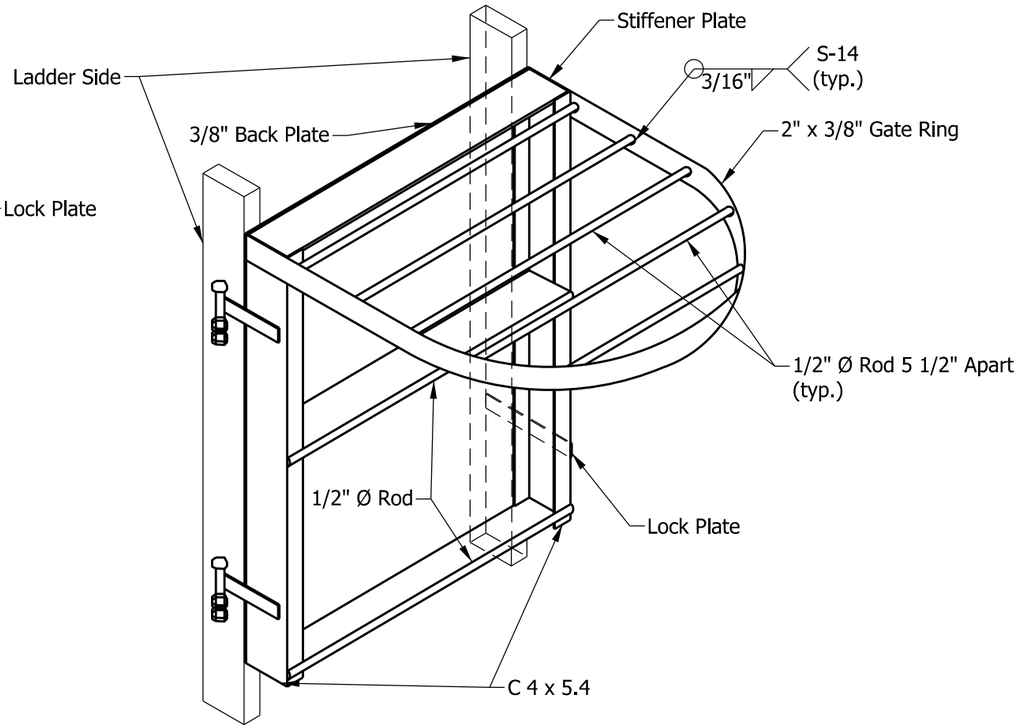
DAVID H. BORUFF
REGISTERED
No. 60900348
STATE OF INDIANA
PROFESSIONAL ENGINEER

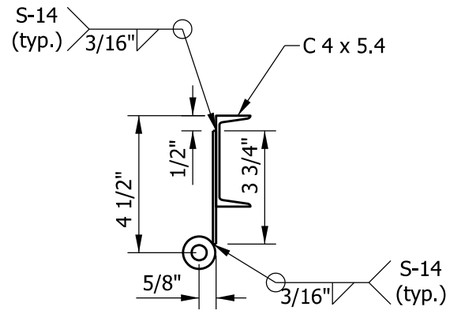
David H Boruff 05/17/22
DESIGN STANDARDS ENGINEER DATE

06/28/2022
CHIEF ENGINEER DATE

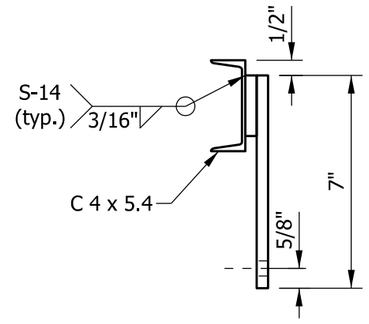


TOP

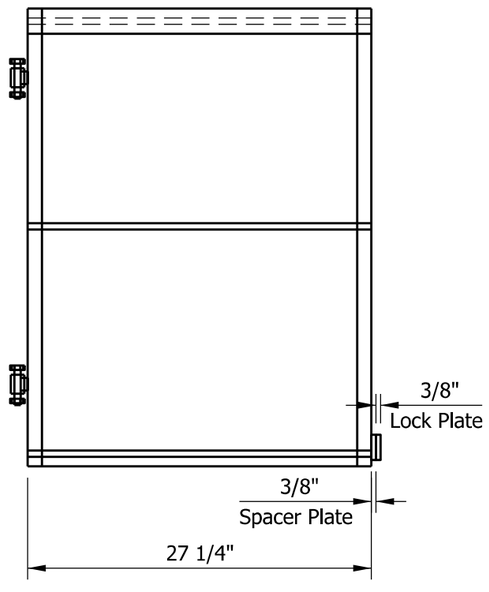




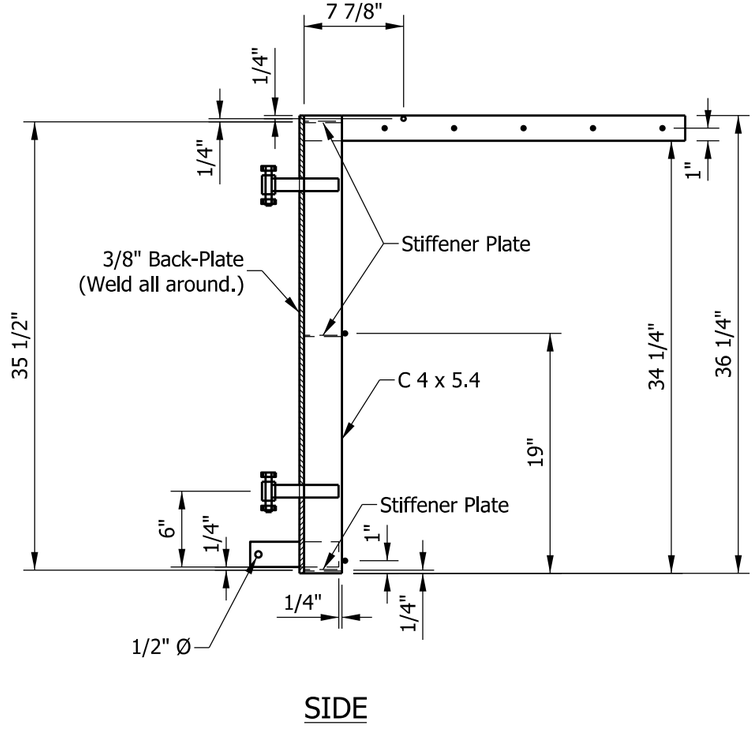
HINGE



GATE LOCK



FRONT



SIDE

INDIANA DEPARTMENT OF TRANSPORTATION

DYNAMIC MESSAGE SIGN STRUCTURE
SECURITY GATE DETAILS

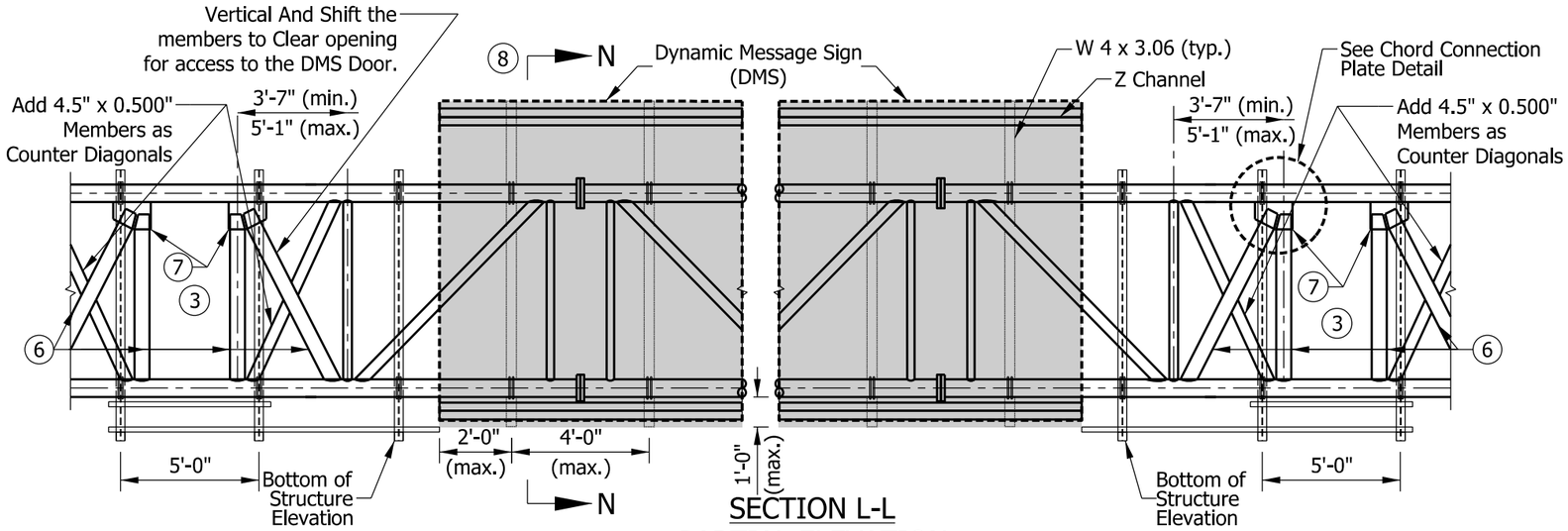
SEPTEMBER 2022

STANDARD DRAWING NO. E 802-DMSS-15

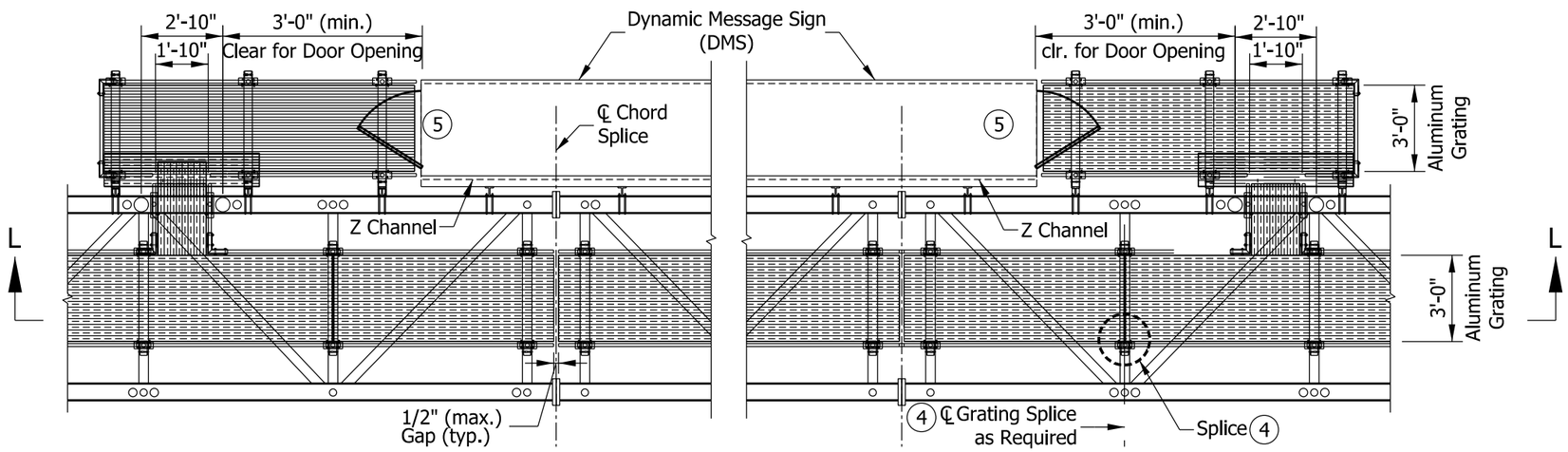
DAVID H. BORUFF
REGISTERED
No. 60900348
STATE OF INDIANA
PROFESSIONAL ENGINEER

David H Boruff 05/17/22
DESIGN STANDARDS ENGINEER DATE

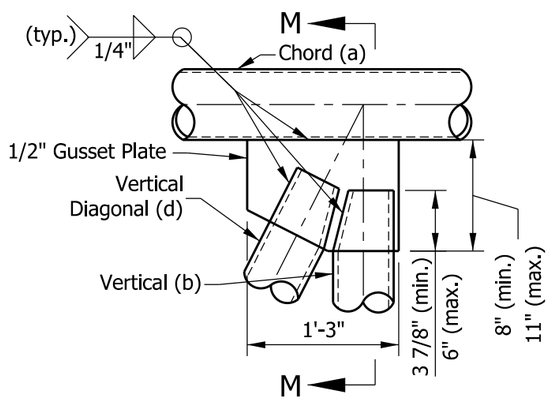
06/28/2022
CHIEF ENGINEER DATE



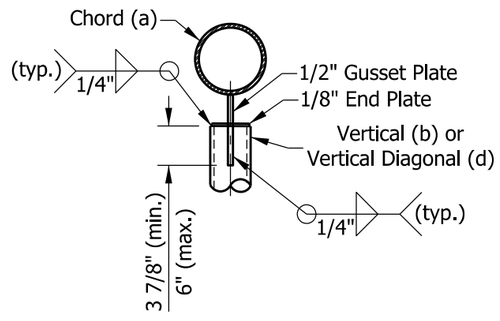
SECTION L-L
PARTIAL ELEVATION
(Handrail omitted for clarity)



WALKWAY GRATING PLAN



CHORD CONNECTION PLATE DETAIL (9)



SECTION M-M

NOTES:

1. Interior walkway gratings are extruded I-bars 2 in. x ¼ in. at 1 3/16 in. center-to-center. Crossbar shall have a maximum gap of 4 in. Moment of inertia I_x = 1.382 in^4. A different grating of equal strength may be used upon approval.
2. Interior walkway grating shall run the full length center to center of end support truss members plus 9 in. at each end.
3. The contractor shall coordinate with the fabricator to determine which truss panel is to be modified to allow opening for access to the DMS door.
4. Interior walkway gratings can be spliced on center of any horizontal truss members as needed. See Standard Drawing E 802-DMSS-18 for typical grating splice detail.
5. The contractor shall coordinate with sign manufacturer so floor inside DMS is one comfortable step to the exterior grating.
6. Truss vertical and diagonal members on each side of the DMS access door shall be aluminum with 6.0 in. diameter and a minimum wall thickness 0.500 in. Counter diagonals shall be aluminum with 4.5 in. dia. and a minimum wall thickness of 0.500 in.
7. Gusset plates shall be installed at vertical and diagonal intersection on each side of the opening for access to DMS door.
8. See Standard Drawing E 802-DMSS-17 for Section N-N.
9. Vertical and horizontal members shall be clipped to maintain centerline intersection with chord. 1 in. clearance between vertical and diagonal members shall be provided.

INDIANA DEPARTMENT OF TRANSPORTATION

DYNAMIC MESSAGE SIGN STRUCTURE
WALKWAY GRATING DETAILS

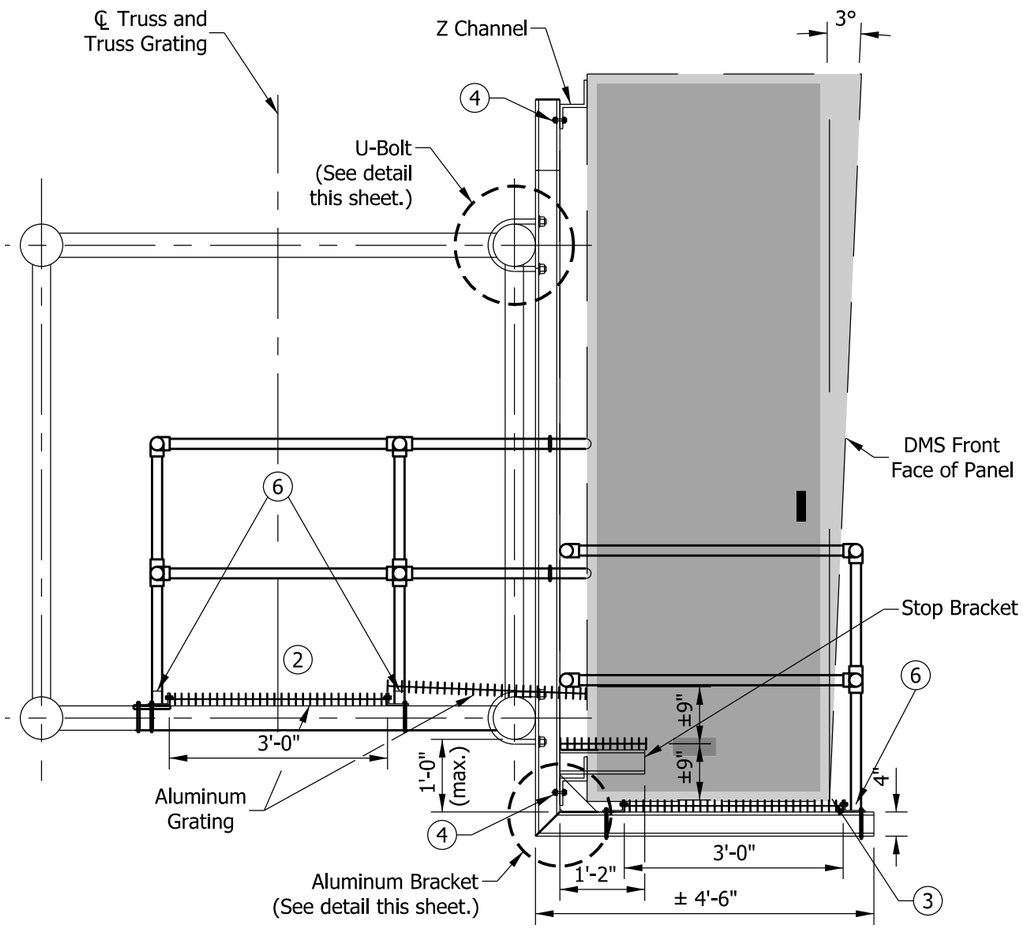
SEPTEMBER 2022

STANDARD DRAWING NO. E 802-DMSS-16

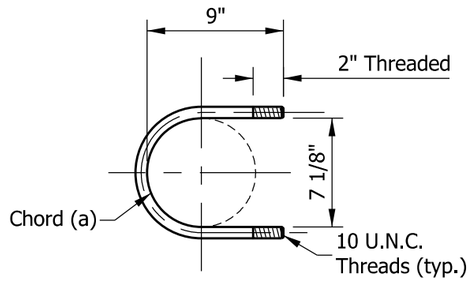
DAVID H. BORUFF REGISTERED No. 60900348 STATE OF INDIANA PROFESSIONAL ENGINEER

David H Boruff 05/17/22
DESIGN STANDARDS ENGINEER DATE

06/28/2022
CHIEF ENGINEER DATE



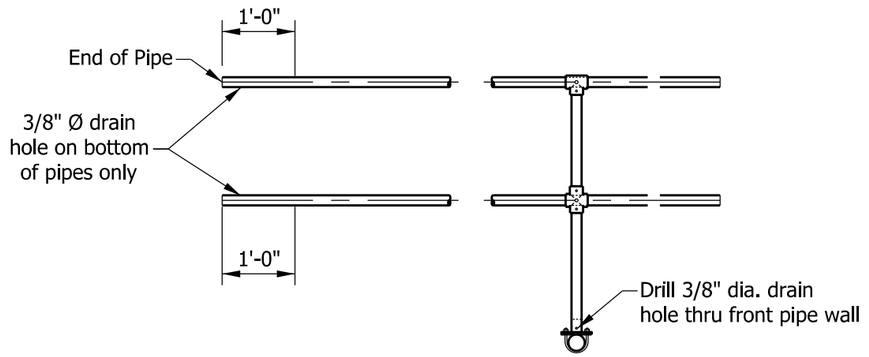
SECTION N-N



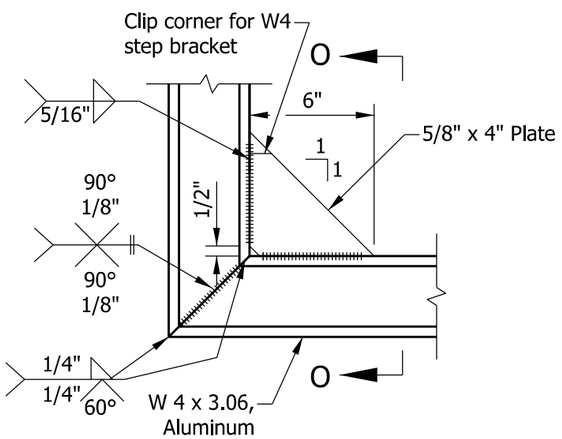
1/2" DIA. STAINLESS STEEL
U-BOLT DETAIL

NOTES:

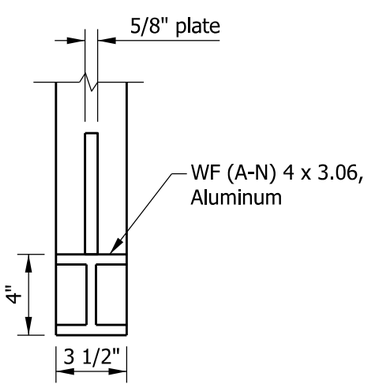
1. The front face of the DMS shall be tilted at 3° toward approaching traffic. If the DMS is not built with the front face tilted appropriately, a block shall be placed on the top of the back face to obtain the 3° tilt.
2. The walkway grating width is nominal and may vary ±1/2 in. based on available standard widths.
3. The bottom of the DMS door shall open without obstruction from the grating.
4. (1) A-325 bolt ½ in. x 2 in. on each side of the WF (A-N) 4 x 3.06 aluminum bracket web with (1) flat washer and (1) lock nut.
5. (2) flat washers, (2) lock washers, and (2) lock nuts per U-bolt; 4 required per bracket.
6. See Typical Drain hole detail.



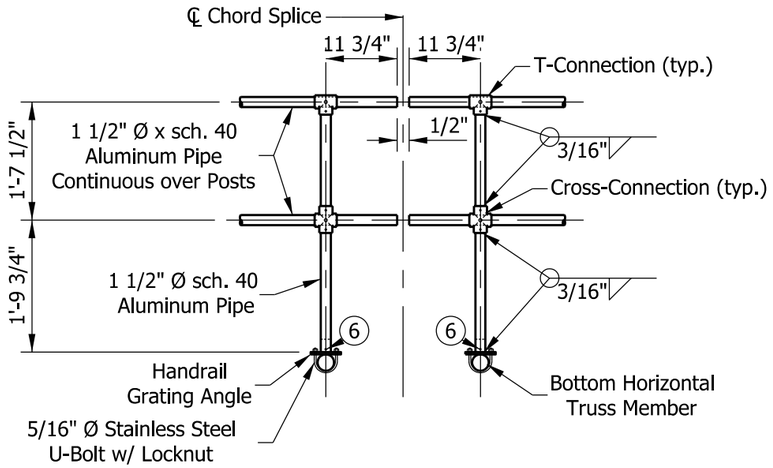
TYPICAL DRAIN HOLE DETAIL



ALUMINUM BRACKET DETAIL



SECTION O-O



TYPICAL HANDRAIL DETAIL

INDIANA DEPARTMENT OF TRANSPORTATION

DYNAMIC MESSAGE SIGN STRUCTURE
WALKWAY GRATING DETAILS

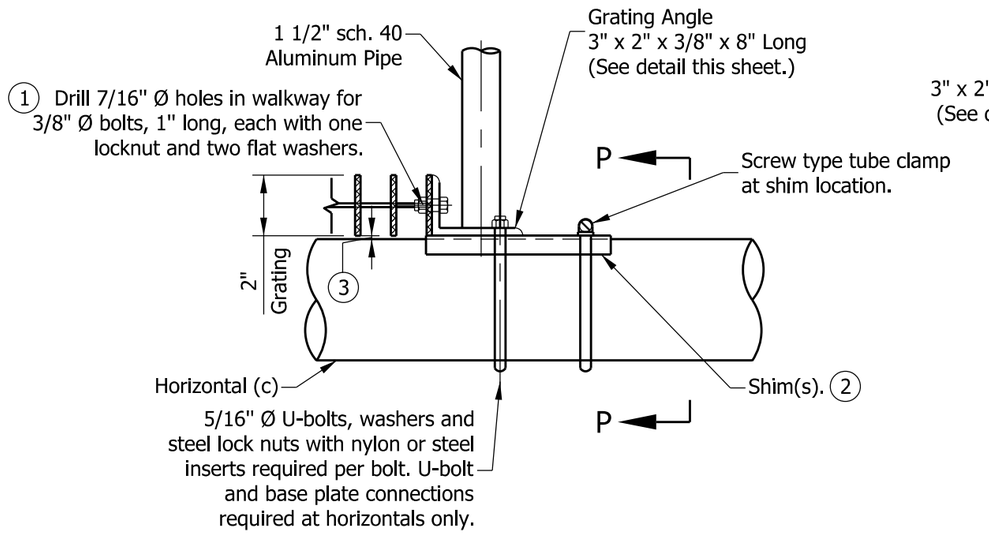
SEPTEMBER 2022

STANDARD DRAWING NO. E 802-DMSS-17

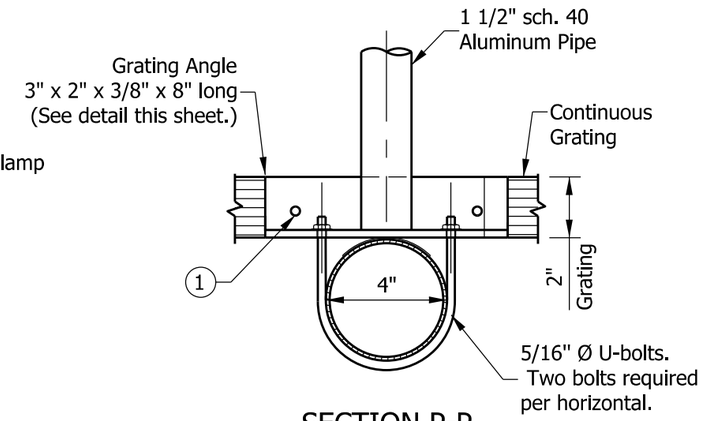
DAVID H. BORUFF
REGISTERED
No. 60900348
STATE OF INDIANA
PROFESSIONAL ENGINEER

David H Boruff 05/17/22
DESIGN STANDARDS ENGINEER DATE

06/28/2022
CHIEF ENGINEER DATE



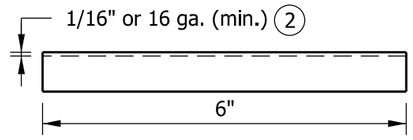
GRATING SUPPORT DETAIL



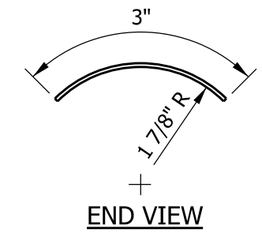
SECTION P-P

NOTES:

1. Drilling of holes in grating may be done in shop or field, based on Contractor's preference and subject to accurate alignment.
2. Shims may be placed as shown if needed to compensate for alignment variations between horizontal and diagonal pipes beyond adjustment provided by angles. Thicker shims may be used subject to shims performing properly.
3. Tube-to-grating gap may vary from 0 in. to ½ in. max. to align walkway and to allow for camber.

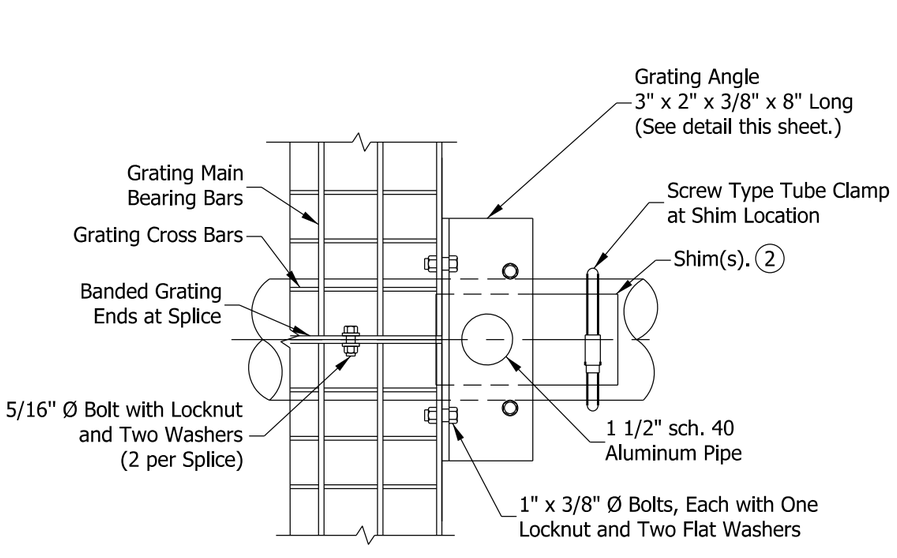


ELEVATION

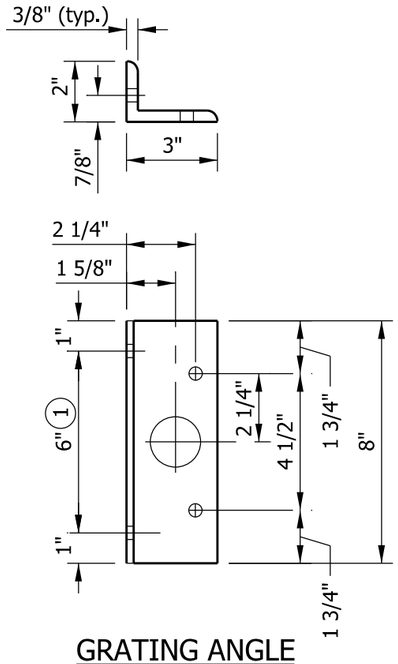


END VIEW

SHIM DETAIL



GRATING SPLICE DETAIL



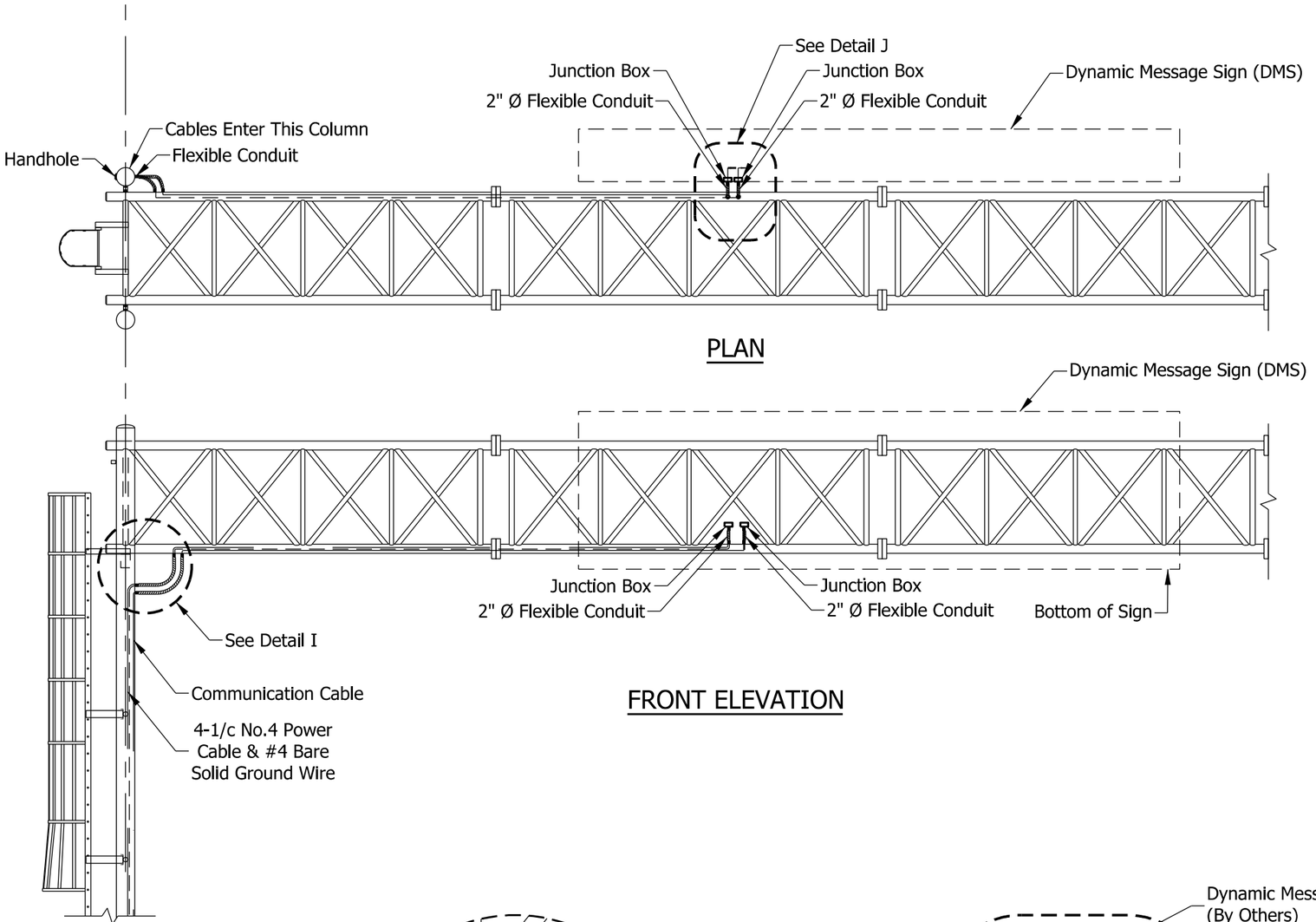
GRATING ANGLE

INDIANA DEPARTMENT OF TRANSPORTATION
DYNAMIC MESSAGE SIGN STRUCTURE WALKWAY GRATING DETAILS SEPTEMBER 2022
STANDARD DRAWING NO. E 802-DMSS-18

DAVID H. BORUFF
REGISTERED
No. 60900348
STATE OF INDIANA
PROFESSIONAL ENGINEER

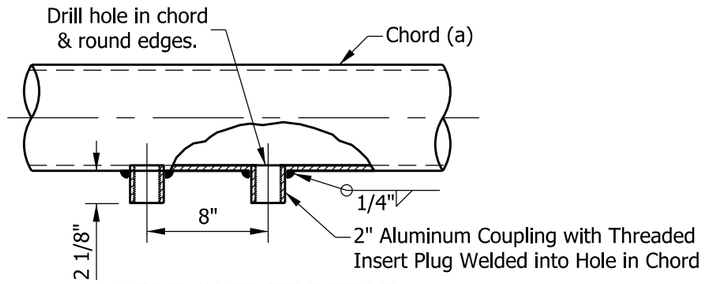
David H. Boruff — 05/17/22
DESIGN STANDARDS ENGINEER — DATE

06/28/2022
CHIEF ENGINEER — DATE

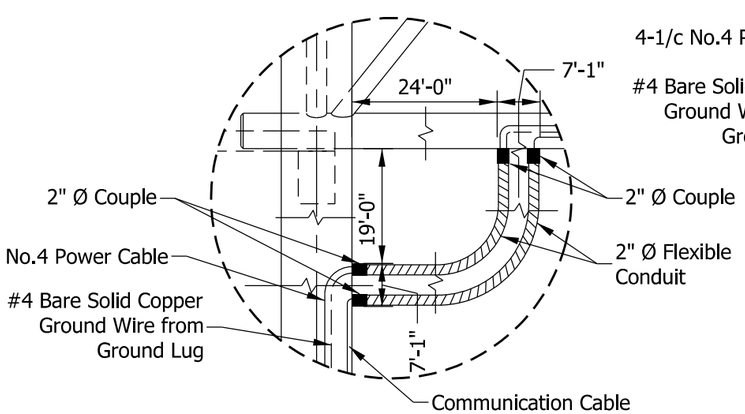


NOTES:

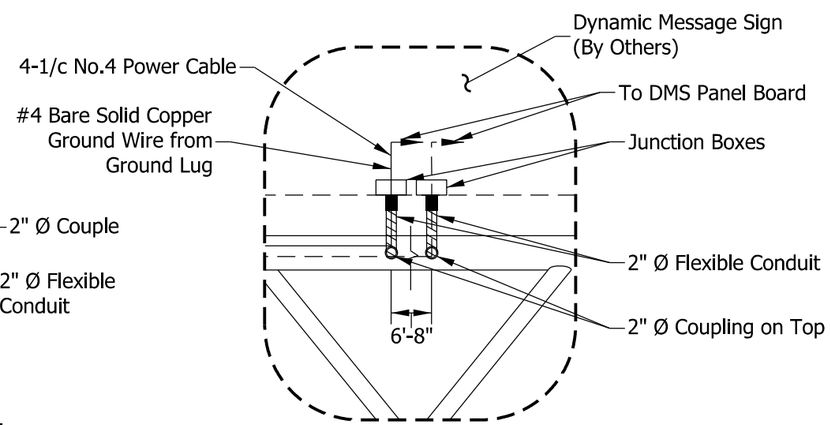
1. Cables shall be laid out as shown or as otherwise directed.
2. It is the Contractor's responsibility to coordinate locations of cable access with manufacturers.
3. Wire outlets shall be composed of aluminum on the chord and steel on the end support and shall have threaded-insert plug.



WIRE OUTLET DETAIL
PLAN VIEW



DETAIL I



DETAIL J

INDIANA DEPARTMENT OF TRANSPORTATION

DYNAMIC MESSAGE SIGN STRUCTURE
WIRING LAYOUT DETAILS

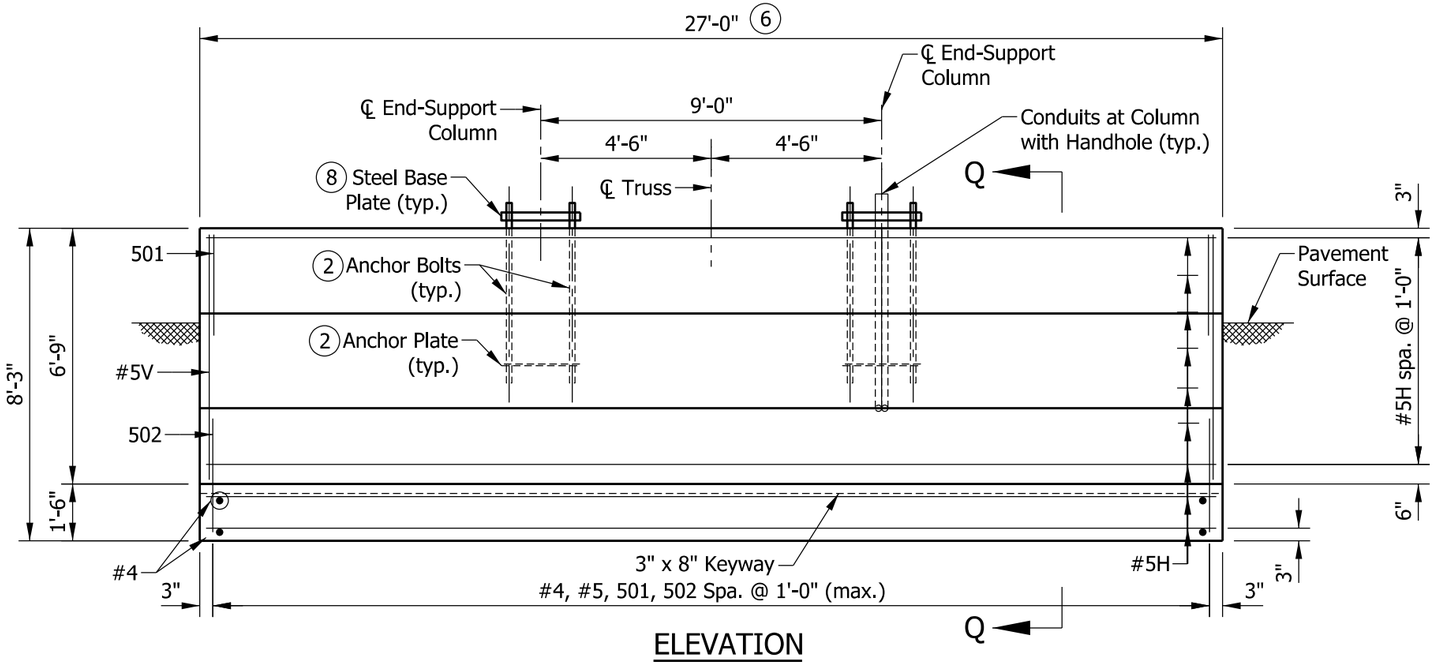
SEPTEMBER 2022

STANDARD DRAWING NO. E 802-DMSS-19

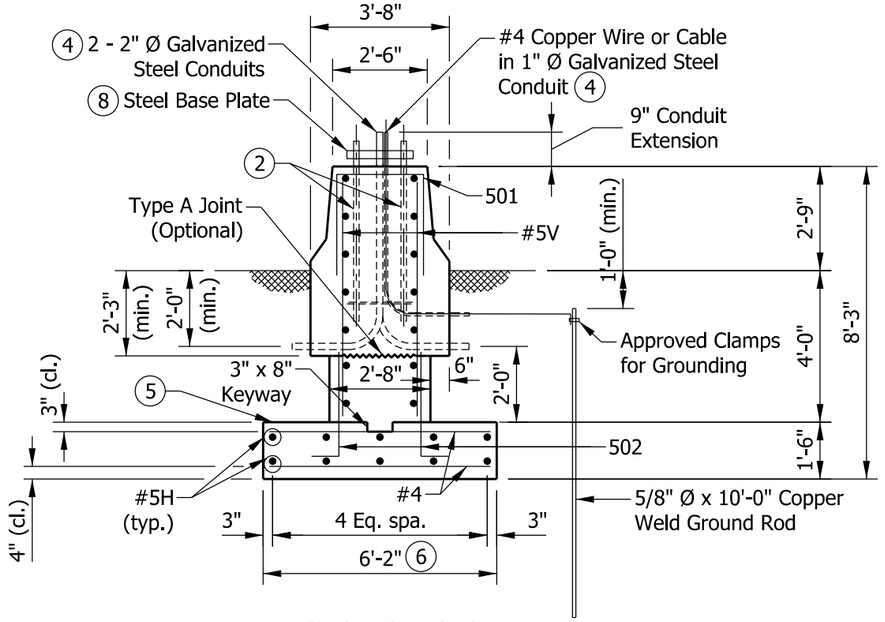
DAVID H. BORUFF
REGISTERED
No. 60900348
STATE OF INDIANA
PROFESSIONAL ENGINEER

David H Boruff 05/17/22
DESIGN STANDARDS ENGINEER DATE

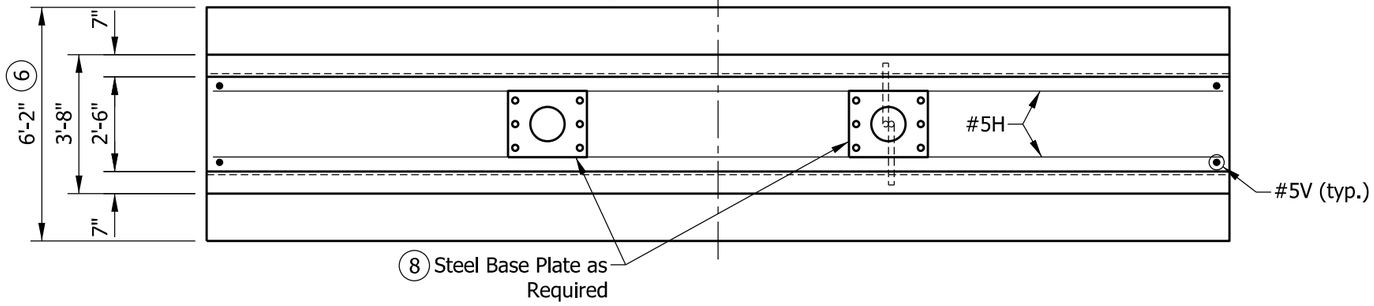
06/28/2022
CHIEF ENGINEER DATE



ELEVATION



SECTION Q-Q



PLAN

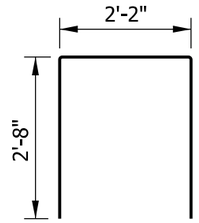
LEGEND:

H = Horizontal

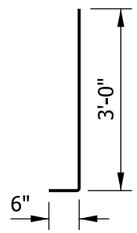
V = Vertical

NOTES:

1. See Standard Drawing E 602-CCMB-03 for barrier wall width transition.
2. See Standard Drawing E 802-DMSS-12 for anchor bolt and anchor plate details.
3. Surface seal top and sides of barrier railing to the pavement surface.
4. Thread and cap both ends of steel conduit.
5. Top of foundation shall be level.
6. For reinforcing schedule and estimated quantities, see Standard Drawing E 802-DMSS-23.
7. Top of the footing shall be a minimum of 4 ft - 0 in. below the pavement or ground surface.
8. See Standard Drawing E 802-DMSS-10 for base plate details.



501 x 7'-6"



502 x 3'-6"

INDIANA DEPARTMENT OF TRANSPORTATION

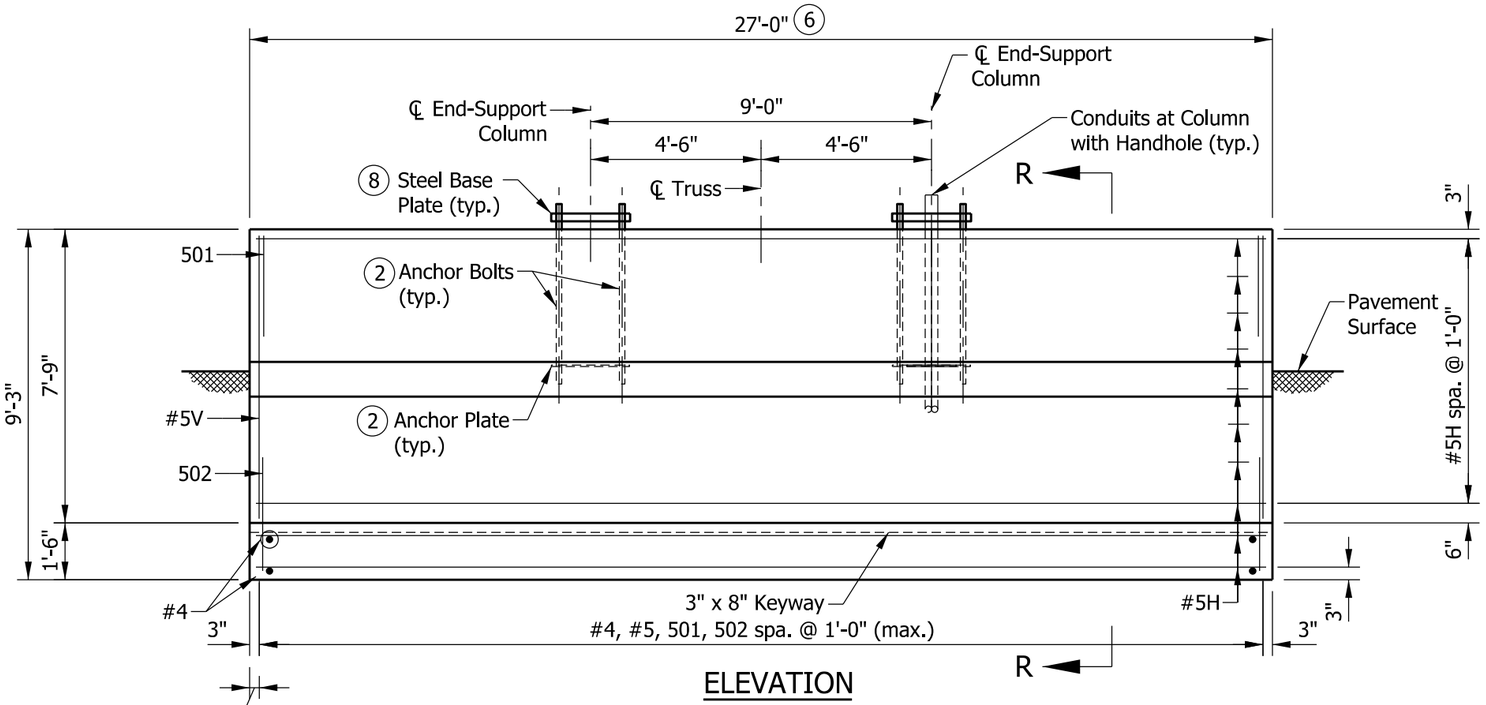
DYNAMIC MESSAGE SIGN STRUCTURE
SPREAD FOUNDATION
AT 33" CONCRETE BARRIER WALL
SEPTEMBER 2022

STANDARD DRAWING NO. E 802-DMSS-20

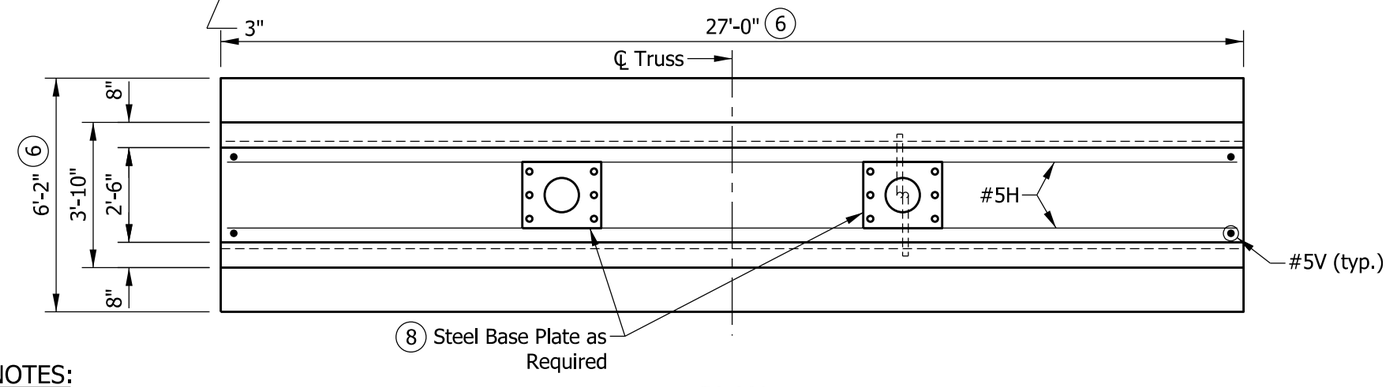
DAVID H. BORUFF REGISTERED No. 60900348 STATE OF INDIANA PROFESSIONAL ENGINEER

David H Boruff 05/17/22
DESIGN STANDARDS ENGINEER DATE

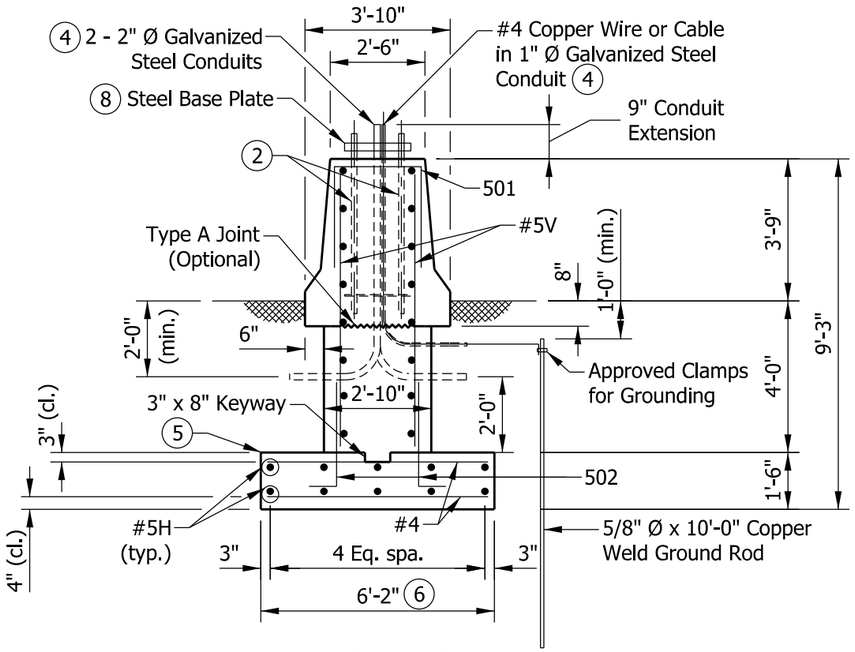
06/28/2022
CHIEF ENGINEER DATE



ELEVATION



PLAN



SECTION R-R

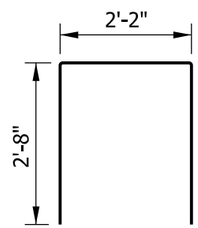
LEGEND:

H = Horizontal

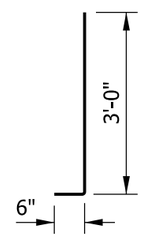
V = Vertical

NOTES:

1. See Standard Drawing E 602-CCMB-03 for barrier wall width transition.
2. See Standard Drawing E 802-DMSS-12 for anchor bolt and anchor plate details.
3. Surface seal top and sides of barrier railing to the pavement surface.
4. Thread and cap both ends of steel conduit.
5. Top of foundation shall be level.
6. For reinforcing schedule and estimated quantities, see Standard Drawing E 802-DMSS-23.
7. Top of the footing shall be a minimum of 4 ft - 0 in. below the pavement or ground surface.
8. See Standard Drawing E 802-DMSS-10 for base plate details.



501 x 7'-6"



502 x 3'-6"

INDIANA DEPARTMENT OF TRANSPORTATION

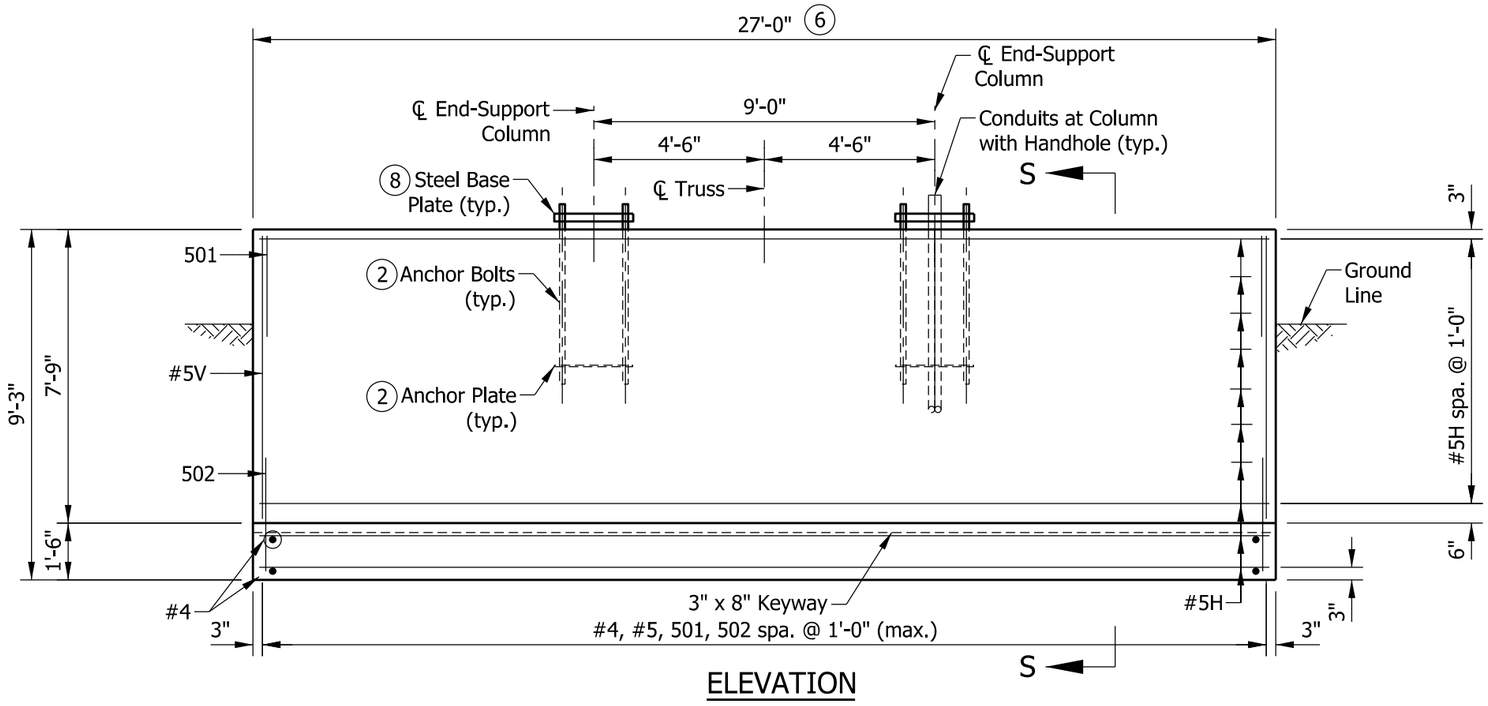
DYNAMIC MESSAGE SIGN STRUCTURE
SPREAD FOUNDATION
AT 45" CONCRETE BARRIER WALL
SEPTEMBER 2022

STANDARD DRAWING NO. E 802-DMSS-21

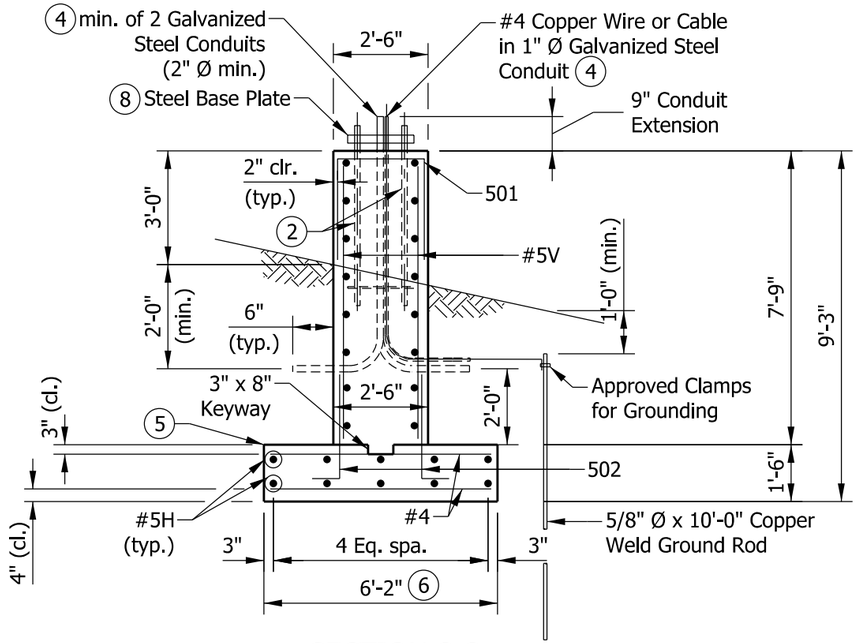
DAVID H. BORUFF REGISTERED No. 60900348 STATE OF INDIANA PROFESSIONAL ENGINEER

David H. Boruff 05/17/22
DESIGN STANDARDS ENGINEER DATE

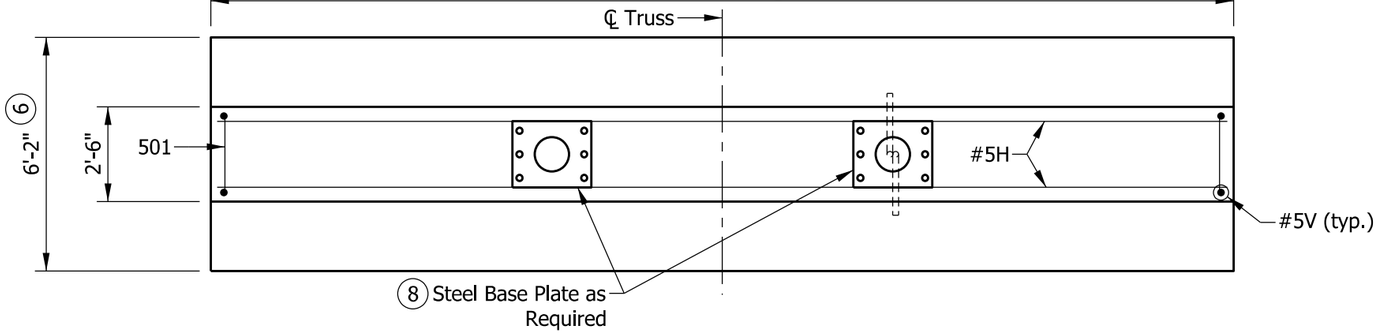
06/28/2022
CHIEF ENGINEER DATE



ELEVATION



SECTION S-S



PLAN

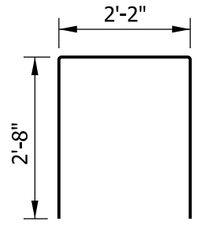
LEGEND:

H = Horizontal

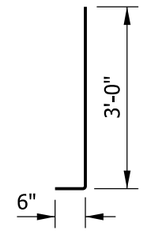
V = Vertical

NOTES:

1. See Standard Drawing E 602-CCMB-03 for barrier wall width transition.
(2) See Standard Drawing E 802-DMSS-12 for anchor bolt and anchor plate details.
3. Surface seal top and sides of barrier railing to the pavement surface.
(4) Thread and cap both ends of steel conduit.
(5) Top of foundation shall be level.
(6) For reinforcing schedule and estimated quantities, see Standard Drawing E 802-DMSS-23.
7. Top of the footing shall be a minimum of 4 ft - 0 in. below the pavement or ground surface.
(8) See Standard Drawing E 802-DMSS-10 for base plate details.



501 x 7'-6"



502 x 3'-6"

INDIANA DEPARTMENT OF TRANSPORTATION

DYNAMIC MESSAGE SIGN STRUCTURE
SPREAD FOUNDATION
AT MEDIAN OR SHOULDER, 36" HEIGHT
SEPTEMBER 2022

STANDARD DRAWING NO. E 802-DMSS-22

DAVID H. BORUFF REGISTERED No. 60900348 STATE OF INDIANA PROFESSIONAL ENGINEER

David H Boruff 05/17/22
DESIGN STANDARDS ENGINEER DATE

06/28/2022
CHIEF ENGINEER DATE

SPREAD FOUNDATIONS BILL OF MATERIALS

TYPE OF BARRIER	#4		#5H		#5V		501		502		TOTAL EPOXY COATED REINFORCING BARS (LBS)	CONCRETE CLASS A (CYS)	SURFACE SEAL (SYS)
	NO. BARS	LENGTH	NO. BARS	LENGTH	NO. BARS	LENGTH	NO. BARS	LENGTH	NO. BARS	LENGTH			
33" Concrete Barrier	56	5'-8"	24	26'-8"	56	6'-6"	28	7'-6"	56	3'-6"	1685	30.1	24.8
45" Concrete Barrier	56	5'-8"	26	26'-8"	56	7'-6"	28	7'-6"	56	3'-6"	1799	32.3	30.9
36" Median or Shoulder Barrier	56	5'-8"	26	26'-8"	56	7'-6"	28	7'-6"	56	3'-6"	1799	28.7	25.5

NOTES:

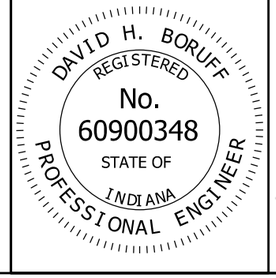
1. If Allowable Gross Soil Bearing Pressure is less than 1500 psf, a drilled shaft or other special foundation shall be used.
2. See Standard Drawings E 802-DMSS-20 through 22 for locations of dimensions and reinforcing bars.

INDIANA DEPARTMENT OF TRANSPORTATION

DYNAMIC MESSAGE SIGN STRUCTURE
SPREAD FOUNDATIONS QUANTITIES

SEPTEMBER 2022

STANDARD DRAWING NO. E 802-DMSS-23



David H Boruff 05/17/22
DESIGN STANDARDS ENGINEER DATE

06/28/2022
CHIEF ENGINEER DATE