



Steel Overhead Sign Truss Standards

•Revised 12-2024; Changed Iowa Department of Transportation Standard Specifications for Highway and Bridge Construction, "Series 2015" to "Series 2023".
 •Revised 06-2025; This sheet reissued, sheet format update.
 •steeloverheadsigntruss.dgn - SOST-01-11 - This sheet issued 09-2011.

Index For Steel Overhead Sign Truss Standards

SOST-01-11	Index and Notes for 50' - 130' Spans
SOST-02-11	Elevation Views for 50' - 75' Spans
SOST-03-11	Elevation Views for 80' - 100' Spans
SOST-04-11	Elevation Views for 105' - 115' Spans
SOST-05-11	Elevation Views for 120' - 130' Spans
SOST-06-11	Support Base and DMS Electrical Access Details for 50' - 100' Spans
SOST-07-11	Support Base and DMS Electrical Access Details for 105' - 130' Spans
SOST-08-11	Gusset Plate Connections
SOST-09-11	Truss Support and Chord Splice Details for 50' - 100' Spans
SOST-10-11	Truss Support and Chord Splice Details for 105' - 130' Spans
SOST-11-11	Sign Attachment Details
SOST-12-11	Dynamic Message Sign (DMS) Runway Details
SOST-13-11	DMS Runway Details
SOST-14-11	DMS Runway Gate Details
SOST-15-11	DMS Ladder Details
SOST-16-11	DMS Ladder Security Door Details
SOST-17-11	Foundation Details - Non-Staged
SOST-18-11	Conduit Location Details
SOST-19-11	Staged Foundation Construction Notes
SOST-20-11	Foundation Details For Staged Construction - Stage 1
SOST-21-11	Foundation Details For Staged Construction - Stage 2

Anchor-Bolt Nut Tightening Procedure:

- This work shall be performed only on days with winds less than 15 mph. All tightening of the nuts is to be done in the presence of the Inspector. Once the tightening procedure is started it must be completed on all of the base plate nuts without pause or delay.
- Properly sized wrenches designed for tightening nuts and/or bolts shall be used to avoid rounding or other damage to the nuts. Adjustable end wrenches or pipe wrenches shall not be used.
- Base plate, anchor bolts and nuts are to be free of any dirt or debris.
- Apply stick wax or bees wax to the threads and bearing surfaces of the anchor bolts, nuts and washers.
- Tighten top nuts so they fully contact the base plate. Tighten leveling nuts to snug-tight condition. Snug tight is defined as the full effort of one person on a wrench with a length equal to 21 inches. Apply force as close to the end of the wrench as possible. Pull firmly by leaning back and using entire body weight on the end of the wrench until the nut stops rotating. Use a minimum of two separate passes of tightening. Sequence the tightening in each pass so that the nut on the opposite side, to the extent possible, will be subsequently tightened until all nuts in that pass have been tightened.
- Tighten top nuts to snug tight as described for the leveling nuts.
- Match-mark the top nuts and base plate using paint, crayon or other approved means to provide a reference for determining the relative rotation of the nut and base plate during tightening. Using a striking or hydraulic wrench, further tighten the top nuts in two passes as listed below. Sequence the tightening in each pass so that the nut on the opposite side, to the extent possible, will be subsequently tightened until all nuts in that pass have been turned. Do not rotate the leveling nut during the top nut tightening.

Anchor-Bolt Size	First Pass	Second Pass	Total Rotation
1½"Ø	¼ Turn	¼ Turn	½ Turn

- Lubricate, place and tighten the jam nuts to snug tight.

Galvanized Steel Notes:

All steel chords, diagonals and struts shall comply with ASTM A53 Grade B, Type E or S; the American Petroleum Institute (API) 5L Grade B; ASTM A500 Grade B; ASTM A500 Grade C; ASTM A1085; API 5L Grade X42; or API 5L Grade X52. These members designated as steel pipe shall have a minimum yield strength of 35 ksi.

All steel posts shall comply with ASTM A500 Grade B, ASTM A500 Grade C, ASTM A1085, API 5L Grade X42 or API 5L Grade X52. These members designated as hollow structural sections (HSS) shall have a minimum yield strength of 42 ksi.

All steel angles, bars and plates shall comply with ASTM A36, ASTM A572 Grade 50, ASTM A709 Grade 36 or ASTM A709 Grade 50. All steel W-sections shall comply with ASTM A992, ASTM A36, ASTM A572 Grade 50, ASTM A709 Grade 36, ASTM A709 Grade 50, or ASTM A709 Grade 50S. All steel bar grating sections including bearing bars, cross bars and banding bars shall comply with ASTM A1011 Type 2.

Steel welding shall be in accordance with the current edition of the AWS Specifications D1.1, Structural Welding Code—Steel.

Ultrasonic testing shall be performed on the post-to-base-plate complete-joint-penetration groove welds.

All steel sections shall be hot-dipped galvanized after fabrication in accordance with ASTM A123. Provide vent holes for galvanizing. Show location and size of vent holes on shop drawings.

Galvanized Steel Fastener Notes:

Galvanized steel fasteners shall be in accordance with Article 2408.03, S and Article 4187.01, C, 2 of the Standard Specifications. Regular nuts and jam nuts shall be ASTM A563 Grade DH heavy hex. Regular nuts may be substituted for jam nuts. Lock washers shall not be substituted for jam nuts. ASTM A449 Type 1 bolts or ASTM F3125 Grade A325-T Type 1 bolts may be substituted for ASTM F3125 Grade A325 Type 1 bolts where necessary to assure proper bolt length and thread length. Unless otherwise noted on the plans, galvanized steel fasteners shall be tensioned by turn-of-nut method.

U-Bolt Notes:

U-bolts may be made of galvanized steel or stainless steel and shall be in accordance with Article 4187.01, C, 2 of the Standard Specifications. Washers, regular nuts and jam nuts shall use the same alloy properties as those of the U-bolts specified. Regular nuts may be substituted for jam nuts. Lock washers shall not be substituted for jam nuts.

Anchor Bolt Notes:

All anchor bolt materials and galvanizing shall be in accordance with Article 4187.01, C, 3 of the Standard Specifications.

Bending or welding of anchor bolts shall not be allowed.

Specifications:

Design:
AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals, Series of 2013 with interims.

Construction:
Iowa Department of Transportation Standard Specifications for Highway and Bridge Construction, Series 2023, plus applicable General Supplemental Specifications, Developmental Specifications, Supplemental Specifications and Special Provisions shall apply to construction work on this project.

Design Stresses:

Design stresses for materials are in accordance with AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals, Series of 2013 with interims.

Reinforcing steel in accordance with AASHTO Standard Specifications for Highway Bridges, Series of 2002, Section 8, Grade 60.
Concrete in accordance with AASHTO Standard Specifications for Highway Bridges, Series of 2002, Section 8, f'c = 4.0 ksi.

General Notes:

All steel overhead bridge-type sign trusses are designed for 30 lb/ft² wind pressure on support members, 30 lb/ft² on signs and 40 lb/ft² on dynamic message signs (DMS). Each DMS is limited to a weight of 5000 lbs., a width of 32'-0", a height of 10'-0", and a depth of 4'-0". A maximum of one DMS shall be mounted to each overhead truss. A DMS shall not be mounted to any truss with a span exceeding 100 feet without prior review and approval by the Iowa D.O.T. Bridges and Structures Bureau. No additional signs shall be mounted to a truss supporting a DMS.

Shop drawings shall be submitted by the Contractor in accordance with Article 1105.03 of the Standard Specifications.

Shop drawings shall indicate left and right truss supports.

Clear distance from face of concrete to the nearest reinforcing bar shall be 2" unless otherwise shown.

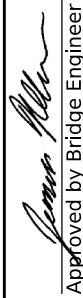

Keyway dimensions shown on the plans are based on nominal dimensions unless stated otherwise. In addition, the bevel used on the keyway shall be limited to a maximum of 10 degrees from vertical.

Steel overhead sign trusses shall not be used on bridges without the approval of the Bridges and Structures Bureau.

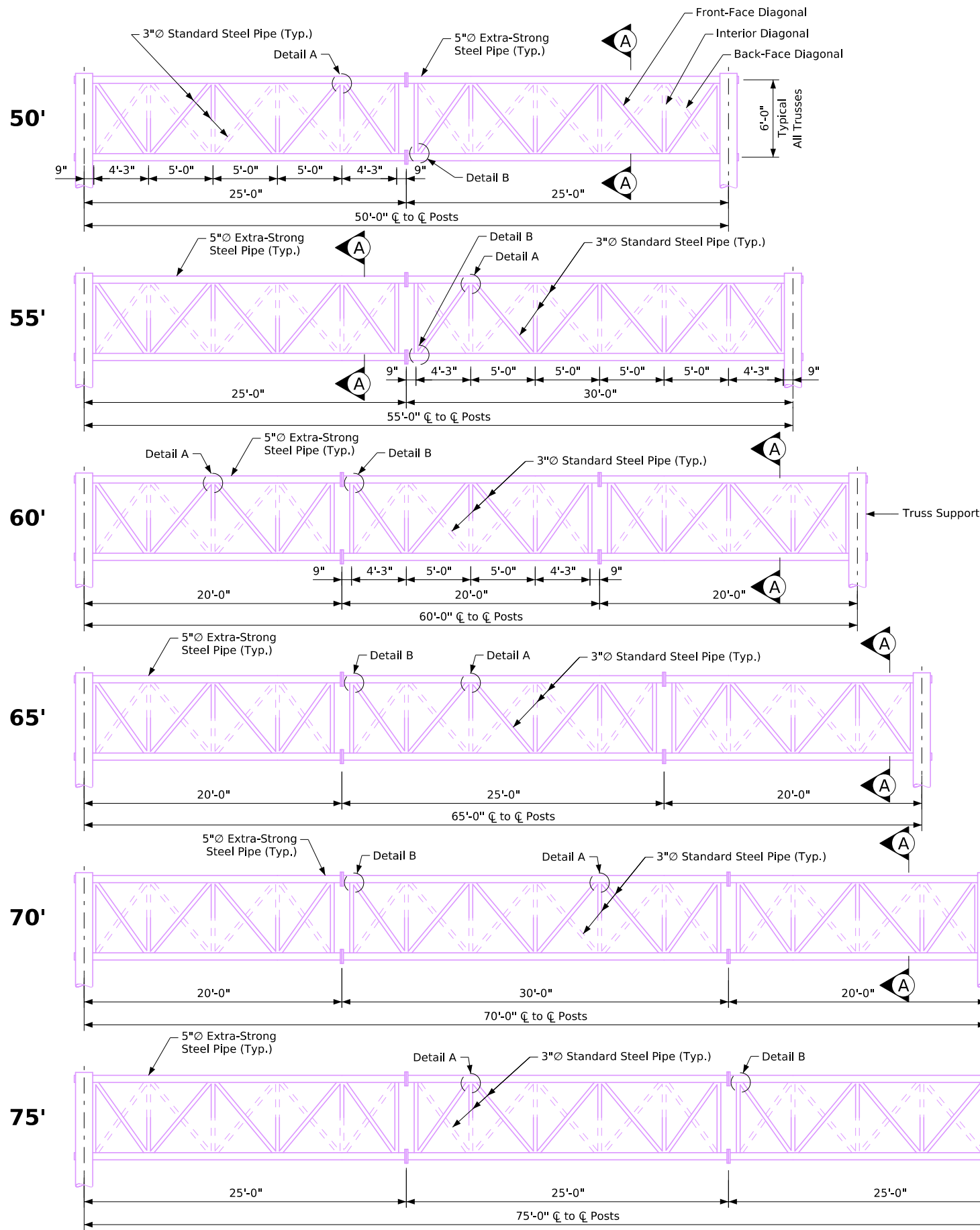
Structural Alignment/Tolerance Notes:

The precise installation and alignment of all components of the overhead sign truss and its supports shall be considered essential. The Contractor shall submit documentation to the Engineer showing that the various components have been measured and are located within the tolerances listed below.

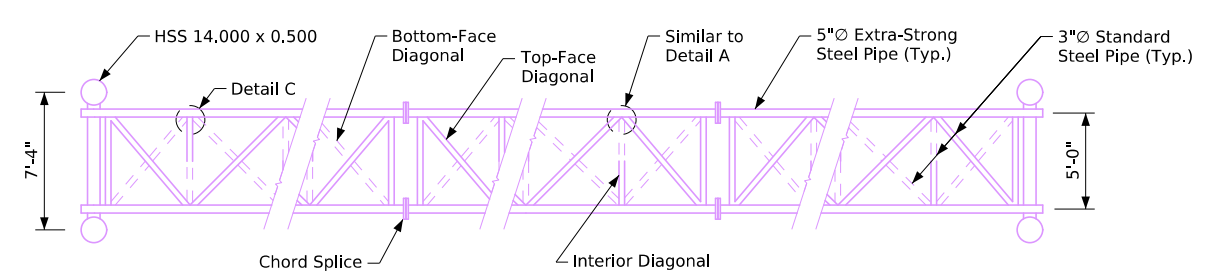
- Each foundation shall be accurately located, with the center of the two anchor bolt groups not more than 1 inch from the plan location in direction parallel with the truss and not more than 1 inch from the plan location in the direction perpendicular to the truss.
- The two foundations shall be parallel. The distance (along the overhead truss) between the centers of front anchor bolt groups and the distance (along the overhead truss) between centers of rear anchor bolt groups shall not differ by more than 1 inch.
- Anchor bolt groups shall be located accurately with centers of adjacent groups in each foundation within ⅜ inch of the plan distance apart.
- Anchor bolts shall be plumb within ¼ inch per foot from vertical.
- Anchor bolts shall project above top of foundation within ¼ inch of the plan dimension.
- Each truss support post shall be plumb within ¼ inch per foot of vertical in two perpendicular directions.
- Stick-out of each truss lower chord shall be within 3 and 5½ inches measured from outer U-bolt to inside of chord stop ring.
- The overhead truss shall be square within support posts. the horizontal lines between chords shall be level within ¼ inch per foot of horizontal, and the vertical lines between chords shall be plumb within ¼ inch per foot of vertical.

06-2025 Latest Revision Date  Approved by Bridge Engineer	 Standard Design	
	<h2 style="margin: 0;">Steel Overhead Sign Truss</h2> September, 2011	
	Index and Notes 50'-130' Spans	SOST-01-11

• Revised 03-2019: Replaced note identifier asterisk with encircled number to improve readability. Updated Bridge Engineer signature.
 • Revised 06-2025: This sheet reissued, sheet format update.
 • steeloverheadsigntruss.dgn - SOST-02-11 - This sheet issued 09-2011.



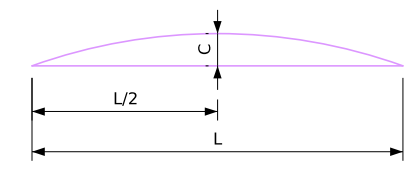
Part Elevation Views
Gusset plates not shown



Part Top View

Interior diagonals have same orientation at chord splice locations

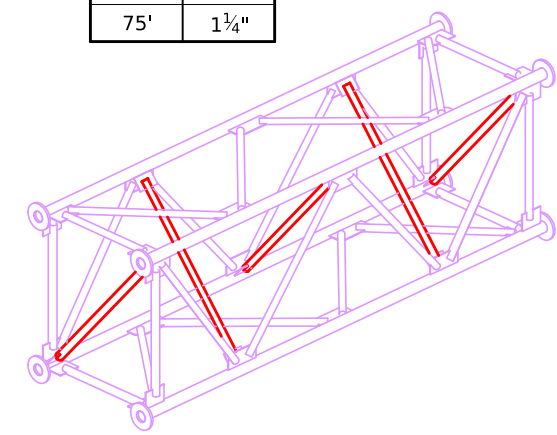
Back-face diagonals and bottom-face diagonals are shown with dashed lines. Interior diagonals are shown solid near the front face and top face. Interior diagonals are shown dashed towards the back face and bottom face.



Camber Diagram

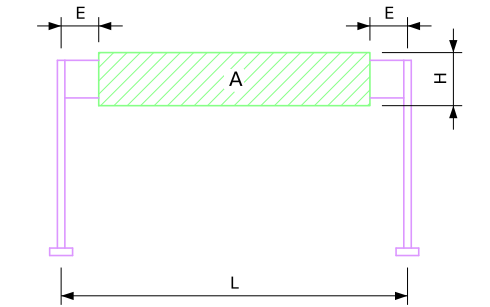
Span L	Camber C
50'	3/4"
55'	3/4"
60'	7/8"
65'	1"
70'	1 1/8"
75'	1 1/4"

① Signs that are horizontally offset from center of truss are permitted if same maximum sign height and maximum sign area parameters are used and end distances are greater than or equal to minimum end distance 'E' shown in table.



Isometric View Typical Truss Unit

Interior diagonals shown in red for clarity



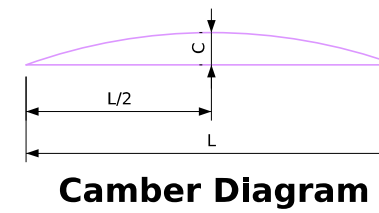
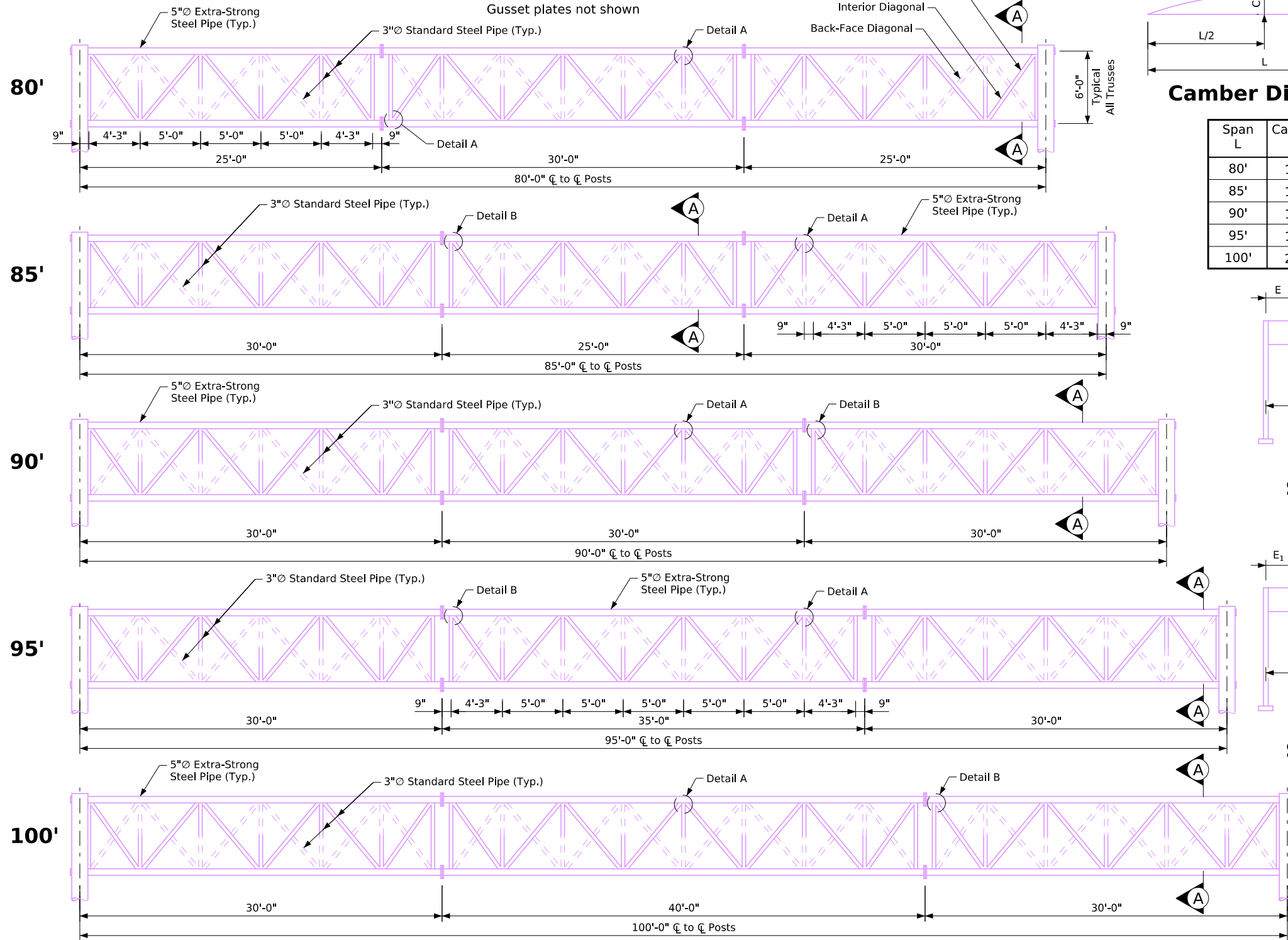
Sign Area for Steel Overhead Sign Truss
Centered ①

Allowable Sign Area				
Centered ①				
Span L	Max. Sign Height H	Min. End Dist. E		Max. Sign Area A
50'	19'-0"	5'-0"		760 S.F.
55'	19'-0"	5'-0"		855 S.F.
60'	19'-0"	5'-0"		950 S.F.
65'	19'-0"	7'-6"		950 S.F.
70'	19'-0"	10'-0"		950 S.F.
75'	19'-0"	12'-6"		950 S.F.
65'	14'-9"	5'-0"		811 S.F.
70'	14'-9"	5'-0"		885 S.F.
75'	14'-9"	5'-6"		944 S.F.

See Standard Sheet SOST-08-11 for Section A-A and Details A, B and C.

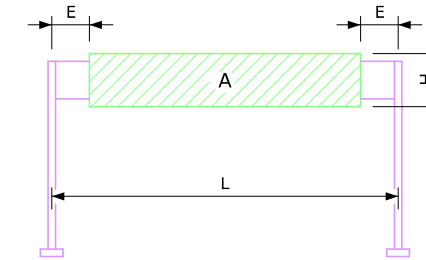
06-2025 Latest Revision Date Approved by Bridge Engineer	 Standard Design	
	Steel Overhead Sign Truss September, 2011	
	Elevation Views for Truss Spans 50'-75' Spans	SOST-02-11

Part Elevation Views

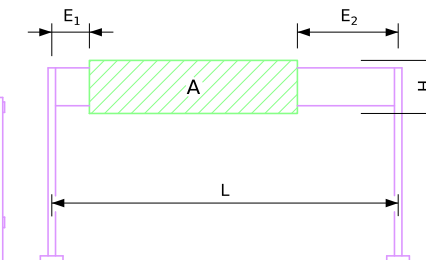


Span L	Camber C
80'	1 3/8"
85'	1 1/2"
90'	1 3/4"
95'	1 7/8"
100'	2 1/8"

Back-face diagonals and bottom-face diagonals are shown with dashed lines. Interior diagonals are shown solid near the front face and top face. Interior diagonals are shown dashed towards the back face and bottom face.



Sign Area for Steel Overhead Sign Truss
Centered



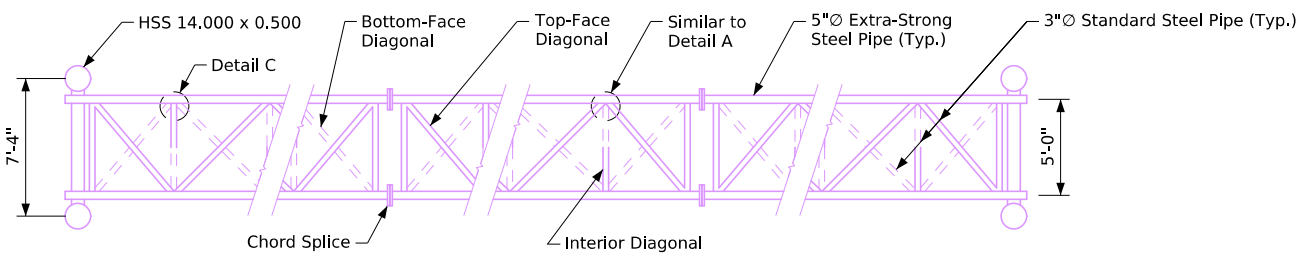
Sign Area for Steel Overhead Sign Truss
Offset

Offset Sign offset may be mirrored (E₁ and E₂ values reversed).

Allowable Sign Area

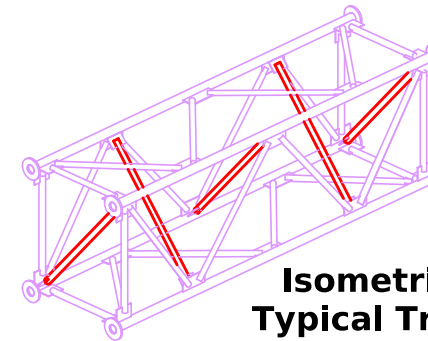
Centered				
Span	Max. Sign Height	Min. End Dist.		Max. Sign Area
L	H	E		A
80'	19'-0"	15'-0"		950 S.F.
85'	19'-0"	17'-6"		950 S.F.
90'	19'-0"	20'-0"		950 S.F.
95'	19'-0"	22'-6"		950 S.F.
100'	19'-0"	25'-0"		950 S.F.
Offset				
Span	Max. Sign Height	Min. Left End Dist.	Min. Right End Dist.	Max. Sign Area
L	H	E ₁	E ₂	A
80'	14'-9"	8'-0"		944 S.F.
85'	14'-9"	10'-6"		944 S.F.
90'	14'-9"	13'-0"		944 S.F.
95'	14'-9"	15'-6"		944 S.F.
100'	14'-9"	18'-0"		944 S.F.
85'	12'-0"	5'-0"		900 S.F.
90'	12'-0"	5'-6"		948 S.F.
95'	12'-0"	8'-0"		948 S.F.
100'	12'-0"	10'-6"		948 S.F.
Offset				
Span	Max. Sign Height	Min. Left End Dist.	Min. Right End Dist.	Max. Sign Area
L	H	E ₁	E ₂	A
80'	19'-0"	10'-0"	30'-0"	760 S.F.
85'	19'-0"	10'-0"	38'-0"	703 S.F.
90'	19'-0"	10'-0"	44'-0"	684 S.F.
95'	19'-0"	10'-0"	50'-0"	665 S.F.
100'	19'-0"	10'-0"	56'-0"	646 S.F.
85'	14'-9"	10'-0"	13'-0"	915 S.F.
90'	14'-9"	10'-0"	25'-0"	811 S.F.
95'	14'-9"	10'-0"	34'-0"	752 S.F.
100'	14'-9"	10'-0"	41'-0"	723 S.F.
100'	12'-0"	10'-0"	14'-0"	912 S.F.

See Standard Sheet SOST-08-11 for Section A-A and Details A, B and C.



Part Top View

Interior diagonals have same orientation at chord splice locations



Isometric View Typical Truss Unit

Interior diagonals shown in red for clarity

Sign offset may be mirrored (E₁ and E₂ values reversed).

06-2025
Latest Revision Date

Approved by Bridge Engineer



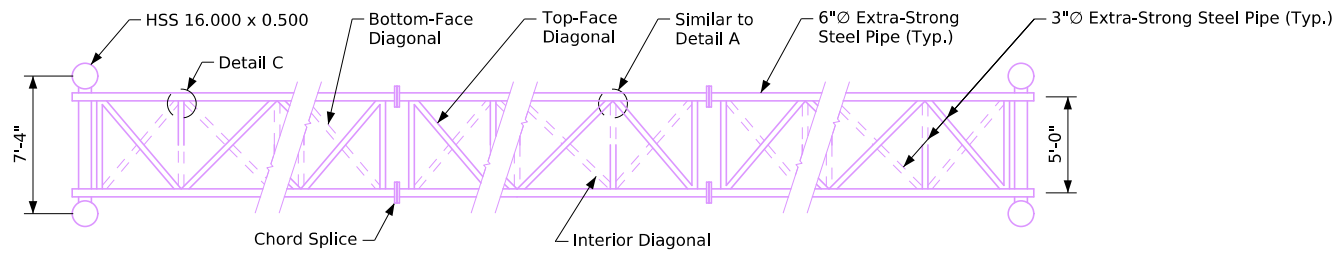
Standard Design

Steel Overhead Sign Truss

September, 2011

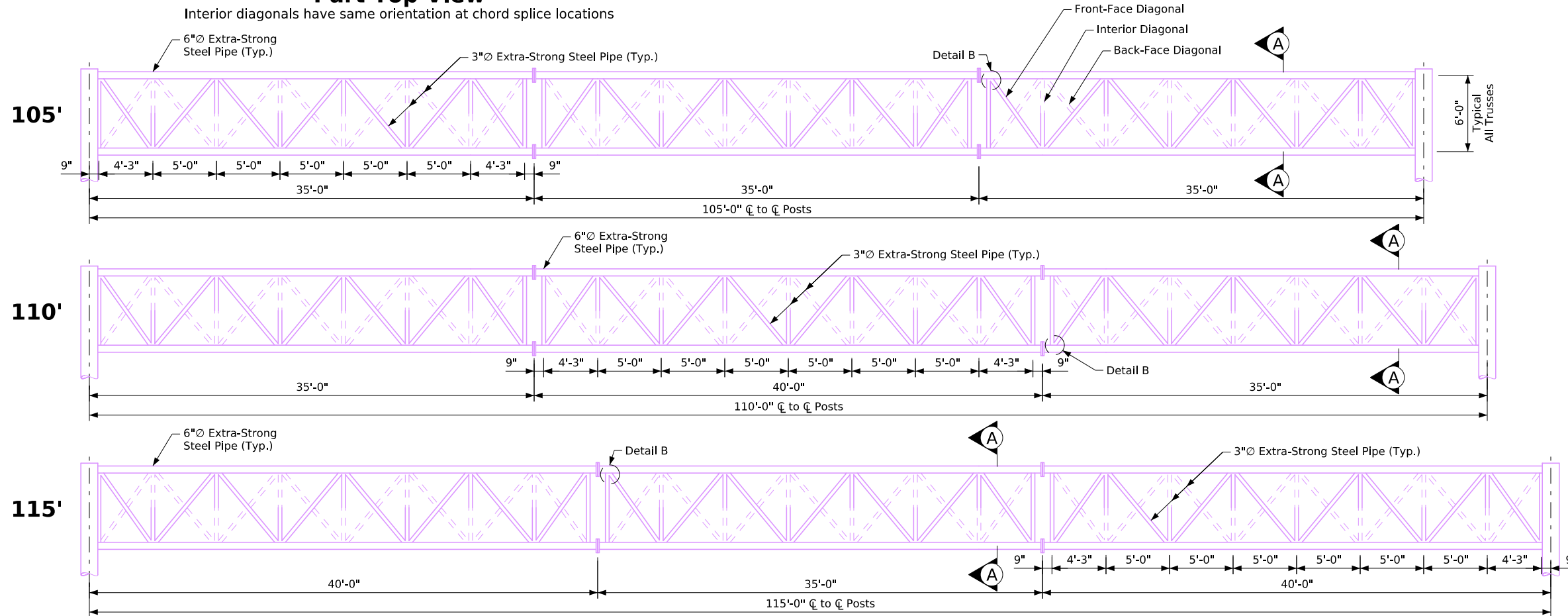
Elevation Views for Truss Spans 80'-100' Spans

SOST-03-11



Part Top View

Interior diagonals have same orientation at chord splice locations

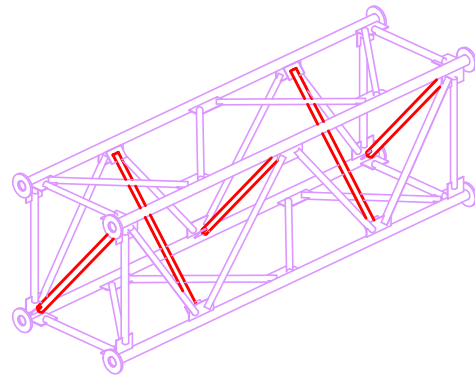


Part Elevation Views

Gusset plates not shown

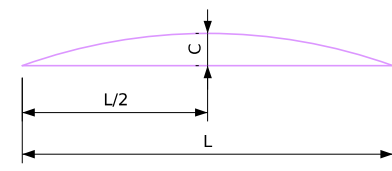
Back-face diagonals and bottom-face diagonals are shown with dashed lines. Interior diagonals are shown solid near the front face and top face. Interior diagonals are shown dashed towards the back face and bottom face.

Allowable Sign Area				
Centered				
Span	Max. Sign Height	Min. End Dist.		Max. Sign Area
L	H	E		A
105'	19'-0"	27'-6"		950 S.F.
110'	19'-0"	30'-0"		950 S.F.
115'	19'-0"	32'-6"		950 S.F.
105'	14'-9"	20'-6"		944 S.F.
110'	14'-9"	23'-0"		944 S.F.
115'	14'-9"	25'-6"		944 S.F.
105'	12'-0"	13'-0"		948 S.F.
110'	12'-0"	15'-6"		948 S.F.
115'	12'-0"	18'-0"		948 S.F.
Offset				
Span	Max. Sign Height	Min. Left End Dist.	Min. Right End Dist.	Max. Sign Area
L	H	E ₁	E ₂	A
105'	19'-0"	10'-0"	62'-0"	627 S.F.
105'	19'-0"	15'-0"	54'-0"	684 S.F.
110'	19'-0"	10'-0"	68'-0"	608 S.F.
110'	19'-0"	15'-0"	60'-0"	665 S.F.
115'	19'-0"	10'-0"	73'-0"	608 S.F.
115'	19'-0"	15'-0"	66'-0"	646 S.F.
105'	14'-9"	10'-0"	48'-0"	693 S.F.
105'	14'-9"	15'-0"	37'-0"	782 S.F.
110'	14'-9"	10'-0"	54'-0"	679 S.F.
110'	14'-9"	15'-0"	45'-0"	738 S.F.
115'	14'-9"	10'-0"	61'-0"	649 S.F.
115'	14'-9"	15'-0"	51'-0"	732 S.F.
105'	12'-0"	10'-0"	27'-0"	816 S.F.
110'	12'-0"	10'-0"	36'-0"	768 S.F.
115'	12'-0"	10'-0"	45'-0"	720 S.F.
115'	12'-0"	15'-0"	29'-0"	852 S.F.



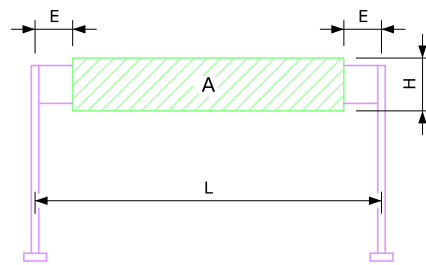
**Isometric View
Typical Truss Unit**

Interior diagonals shown in red for clarity



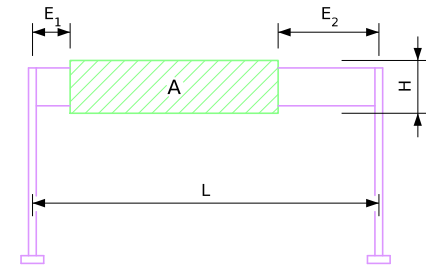
Camber Diagram

Span L	Camber C
105'	2 1/4"
110'	2 1/2"
115'	2 3/4"



Sign Area for Steel Overhead Sign Truss

Centered



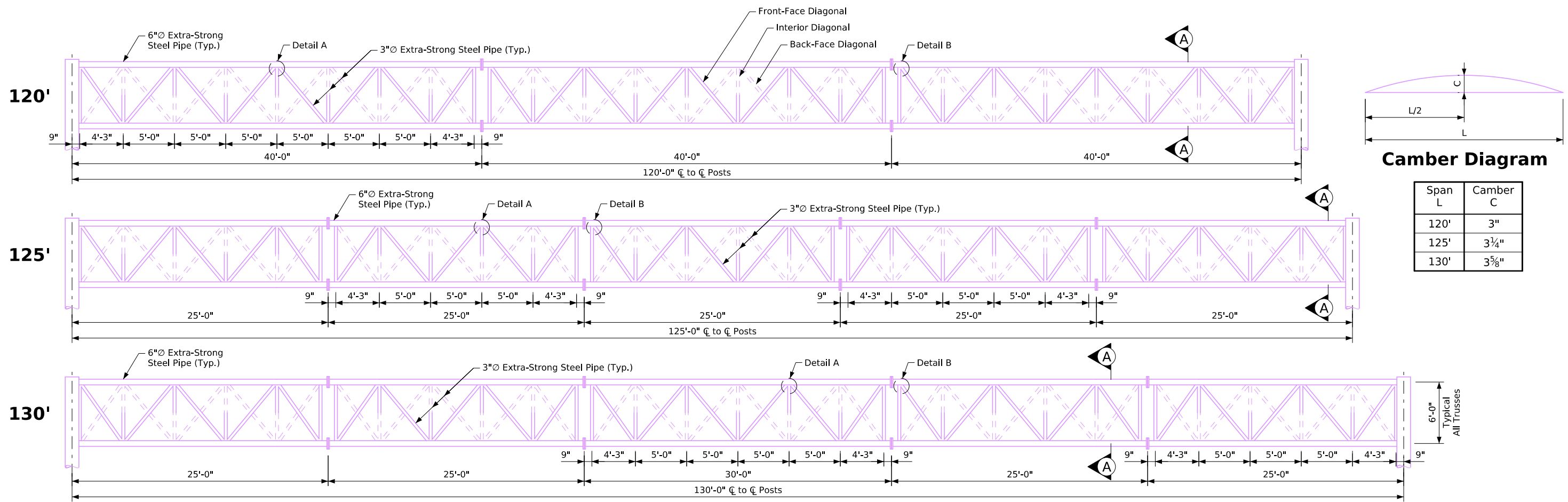
Sign Area for Steel Overhead Sign Truss

Offset
Sign offset may be mirrored (E₁ and E₂ values reversed).

See Standard Sheet SOST-08-11 for Section A-A and Details A, B and C.

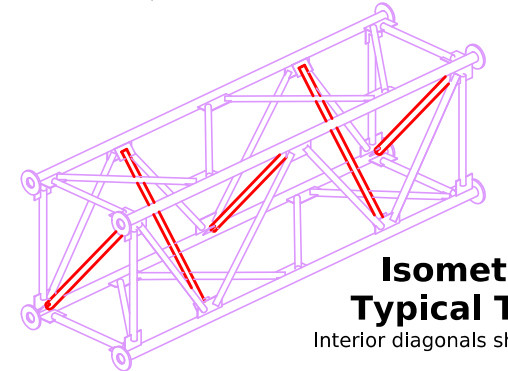
06-2025 Latest Revision Date Approved by Bridge Engineer	
	Standard Design Steel Overhead Sign Truss September, 2011
	Elevation Views for Truss Spans 105'-115' Spans SOST-04-11

•Revised 03-2019: Updated Bridge Engineer signature.
 •Revised 06-2025: This sheet reissued, sheet format update.
 •steeloverheadsigntruss.dgn - SOST-04-11 - This sheet issued 09-2011.



Camber Diagram

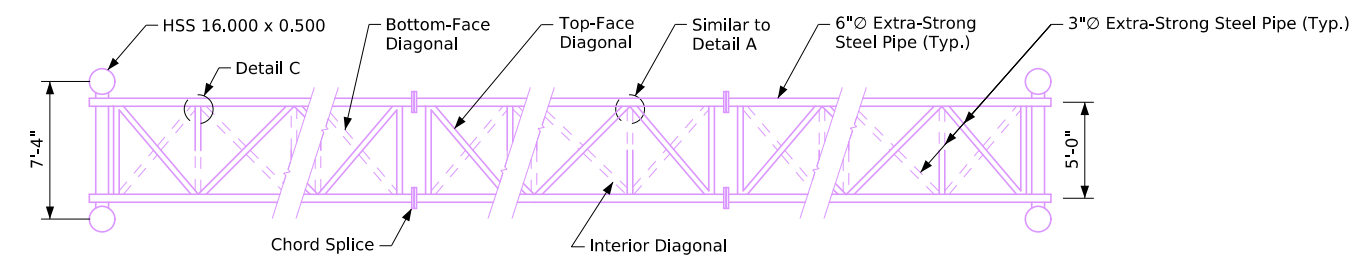
Span L	Camber C
120'	3"
125'	3 1/4"
130'	3 5/8"



**Isometric View
Typical Truss Unit**
Interior diagonals shown in red for clarity

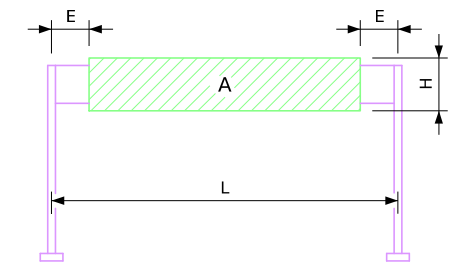
Back-face diagonals and bottom-face diagonals are shown with dashed lines. Interior diagonals are shown solid near the front face and top face. Interior diagonals are shown dashed towards the back face and bottom face.

Part Elevation Views
Gusset plates not shown



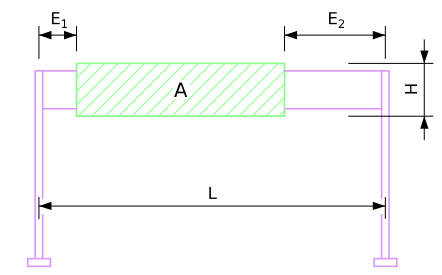
Part Top View
Interior diagonals have same orientation at chord splice locations

Allowable Sign Area				
Centered				
Span	Max. Sign Height	Min. End Dist.		Max. Sign Area
L	H	E		A
120'	19'-0"	35'-0"		950 S.F.
125'	19'-0"	37'-6"		950 S.F.
130'	19'-0"	40'-0"		950 S.F.
120'	14'-9"	28'-0"		944 S.F.
125'	14'-9"	30'-6"		944 S.F.
130'	14'-9"	33'-0"		944 S.F.
120'	12'-0"	20'-6"		948 S.F.
125'	12'-0"	23'-0"		948 S.F.
130'	12'-0"	25'-6"		948 S.F.



Sign Area for Steel Overhead Sign Truss
Centered

Allowable Sign Area				
Offset				
Span	Max. Sign Height	Min. Left End Dist.	Min. Right End Dist.	Max. Sign Area
L	H	E ₁	E ₂	A
120'	19'-0"	10'-0"	79'-0"	589 S.F.
120'	19'-0"	20'-0"	64'-0"	684 S.F.
125'	19'-0"	10'-0"	84'-0"	589 S.F.
125'	19'-0"	20'-0"	70'-0"	665 S.F.
130'	19'-0"	10'-0"	90'-0"	570 S.F.
130'	19'-0"	20'-0"	75'-0"	665 S.F.
120'	14'-9"	10'-0"	67'-0"	634 S.F.
120'	14'-9"	20'-0"	48'-0"	767 S.F.
125'	14'-9"	10'-0"	72'-0"	634 S.F.
125'	14'-9"	20'-0"	55'-0"	738 S.F.
130'	14'-9"	10'-0"	78'-0"	620 S.F.
130'	14'-9"	20'-0"	62'-0"	708 S.F.
120'	12'-0"	10'-0"	51'-0"	708 S.F.
120'	12'-0"	20'-0"	23'-0"	924 S.F.
125'	12'-0"	10'-0"	58'-0"	684 S.F.
125'	12'-0"	20'-0"	34'-0"	852 S.F.
130'	12'-0"	10'-0"	65'-0"	660 S.F.
130'	12'-0"	20'-0"	43'-0"	804 S.F.



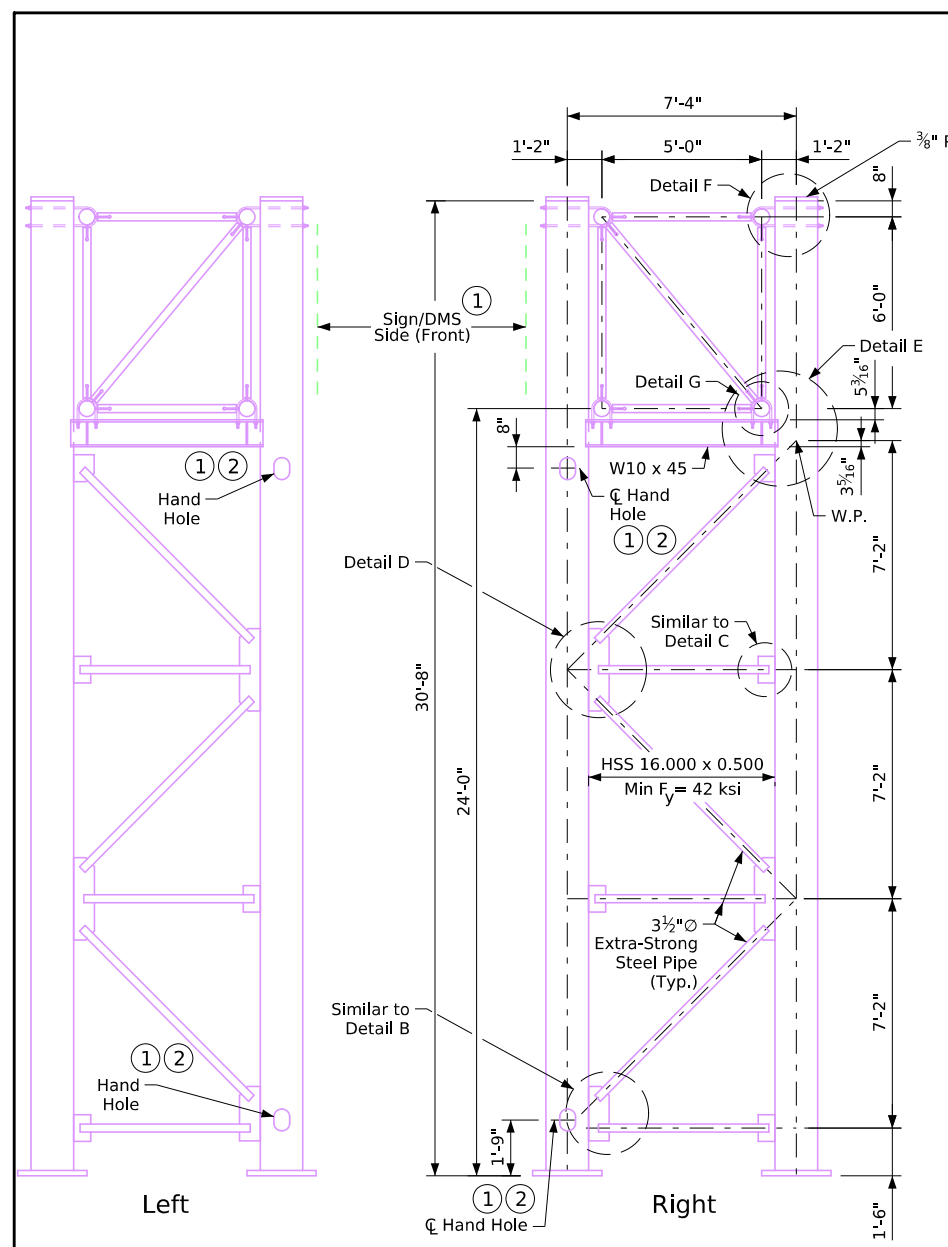
Sign Area for Steel Overhead Sign Truss
Offset
Sign offset may be mirrored (E₁ and E₂ values reversed).

See Standard Sheet SOST-08-11 for Section A-A and Details A, B and C.

06-2025 Latest Revision Date Approved by Bridge Engineer	
	Standard Design Steel Overhead Sign Truss September, 2011
	Elevation Views for Truss Spans 120'-130' Spans SOST-05-11

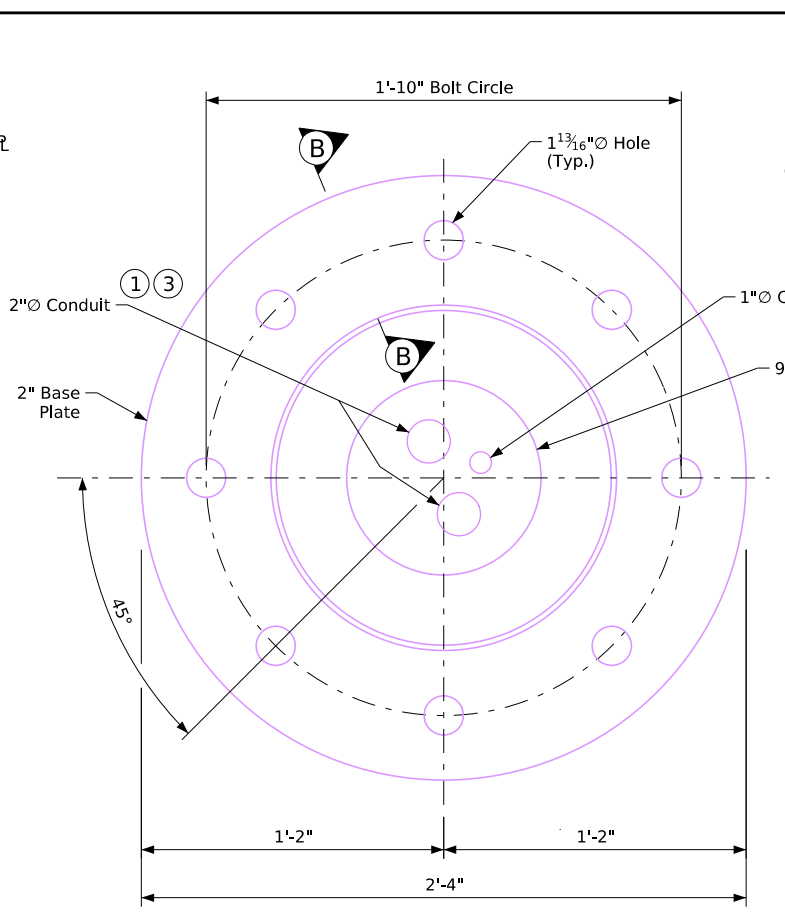
• Revised 03-2019: Updated Bridge Engineer signature.
 • Revised 06-2025: This sheet reissued, sheet format update.
 • steeloverheadsigntruss.dgn - SOST-05-11 - This sheet issued 09-2011.

Revised Section B-B to reflect hole use as a galvanizing vent hole and/or a galvanizing drain hole. Revised Section B-B post-to-base-plate weld symbol to show a standard-sized backing element. Changed "Full-Penetration Groove Weld" to "Complete-Joint-Penetration Groove Weld" to conform to AWS nomenclature.
 Revised 06-2025: This sheet reissued, sheet format update.
 steeloverheadsigntruss.dgn - SOST-06-11 - This sheet issued 09-2011.



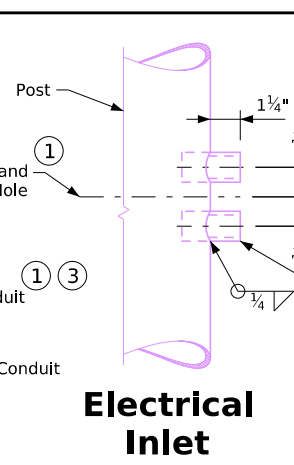
End View of Truss Supports

② Hand holes shall be located only in posts that are closest to dynamic message sign and be positioned on side opposite traffic.

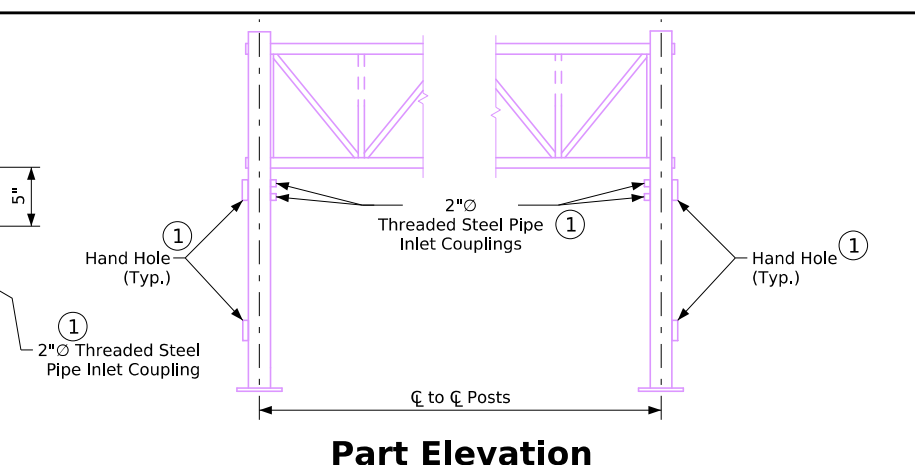


Base Plate Plan

③ Conduit is present only in posts with hand holes.

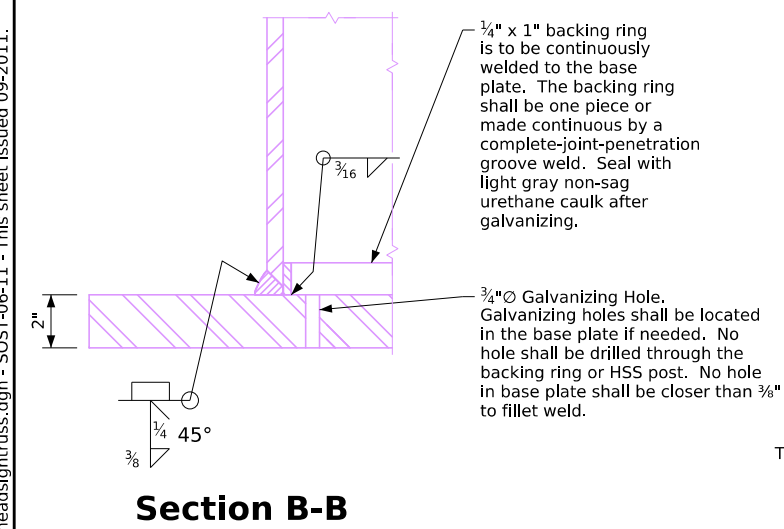


Electrical Inlet



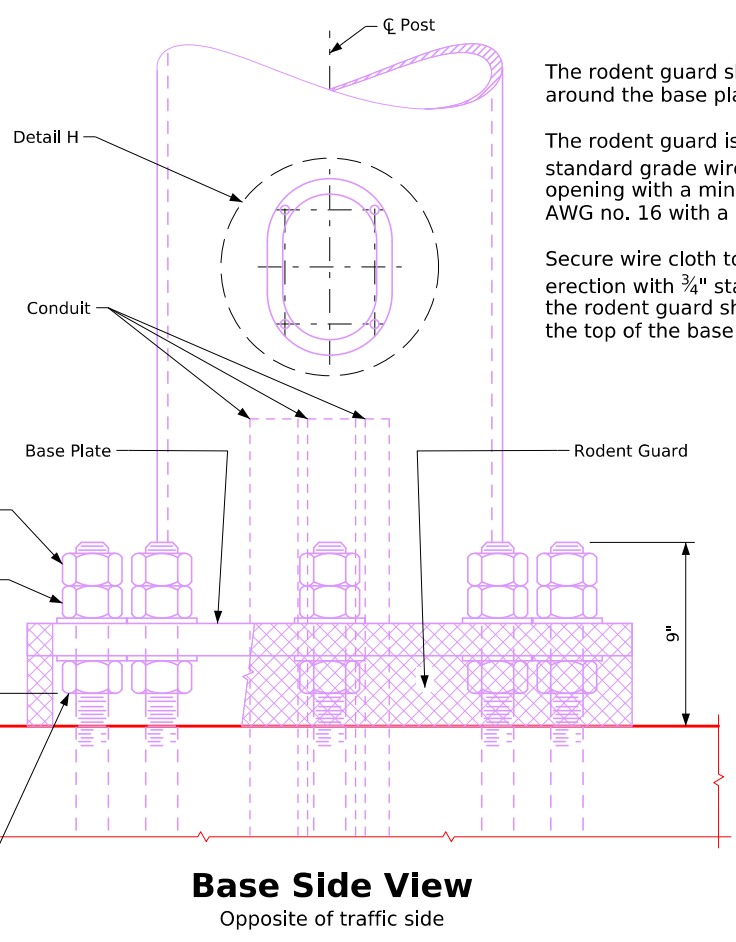
Part Elevation

① For DMS Trusses Only
 Hand holes, conduit, and pipe inlet couplings are to be included on DMS truss designs only. See Standard Sheet SOST-18-11 for foundation conduit location details.
 Hand holes and electrical inlet holes shall be located in both truss supports unless otherwise indicated on detail project plans. Locate holes only in posts that are closest to dynamic message sign.
 Threaded steel pipe inlet couplings are to be placed opposite to upper hand hole on post. Couplings shall be fitted with standard plugs until conduit is installed.
 All conduit shall be Schedule 40 plastic.



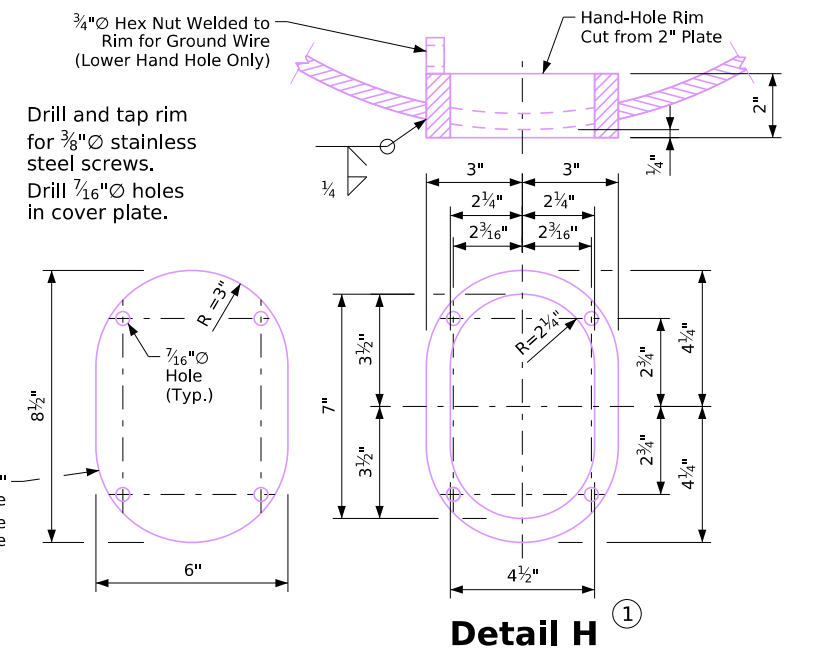
Section B-B

1/4" x 1" backing ring is to be continuously welded to the base plate. The backing ring shall be one piece or made continuous by a complete-joint-penetration groove weld. Seal with light gray non-sag urethane caulk after galvanizing.
 3/4" Galvanizing Hole. Galvanizing holes shall be located in the base plate if needed. No hole shall be drilled through the backing ring or HSS post. No hole in base plate shall be closer than 3/8" to fillet weld.



Base Side View
 Opposite of traffic side

The rodent guard shall be placed around the base plate.
 The rodent guard is stainless steel standard grade wire cloth, 1/4" maximum opening with a minimum wire diameter of AWG no. 16 with a minimum 2" lap.
 Secure wire cloth to base plate after erection with 3/4" stainless steel banding. the rodent guard shall not extend above the top of the base plate.



Detail H

Drill and tap rim for 3/8" stainless steel screws.
 Drill 7/16" holes in cover plate.

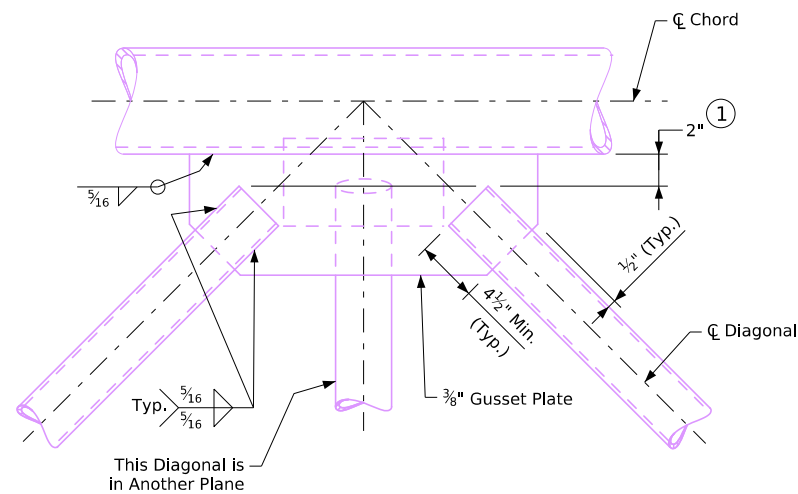
Galvanized Steel Cover Plate with 1/8" x 6" x 0'-8 1/2" Neoprene Gasket to Match Plate

See Standard Sheet SOST-08-11 for Details B, C, D and E.

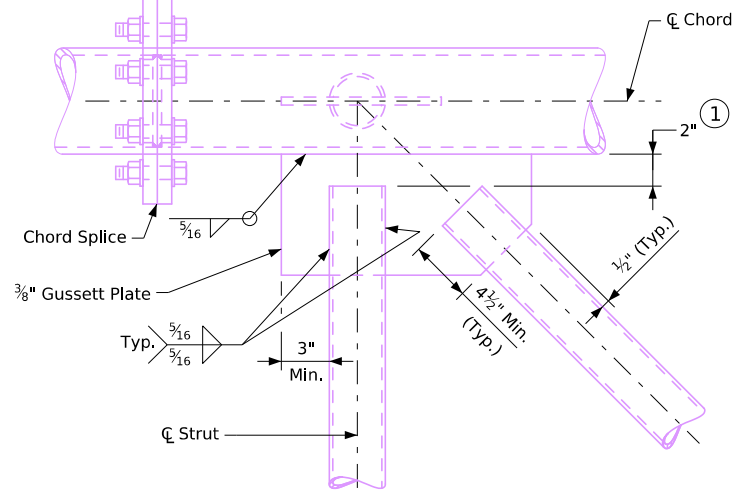
See Standard Sheet SOST-09-11 for Details F and G.

06-2025 Latest Revision Date Approved by Bridge Engineer 	 Standard Design	
	Steel Overhead Sign Truss September, 2011	
	Support Post Base and DMS Electrical Access Details 105'-130' Spans	SOST-07-11

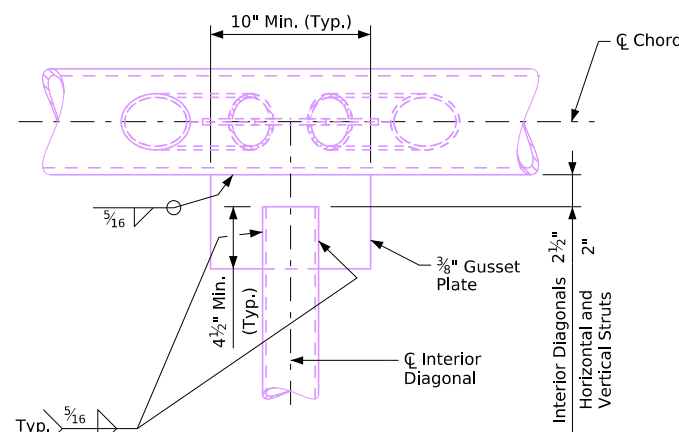
Revised 04-2020: Replaced Detail D note identifier asterisk with circled number to improve readability. Lengthened dimensional extension line in Details A and B to clarify 2" distance between end of web members and chord.
 Lengthened dimensional extension line in slotted-pipe-ends detail to clarify that dimensional extension line is tangent to circular hole.
 Revised 06-2025: This sheet reissued, sheet format update.
 steeloverheadsigntruss.dgn - SOST-08-11 - This sheet issued 09-2011.



Detail A



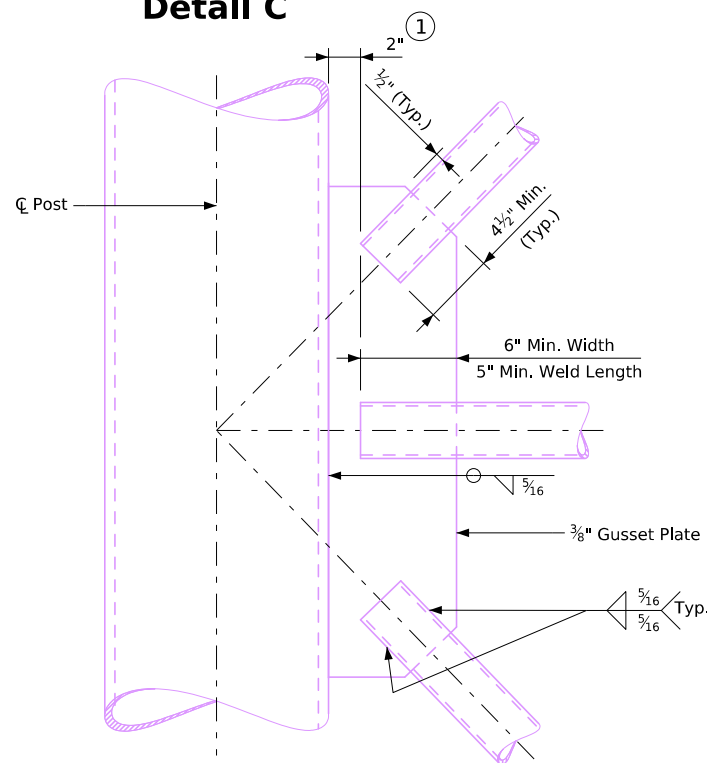
Detail B



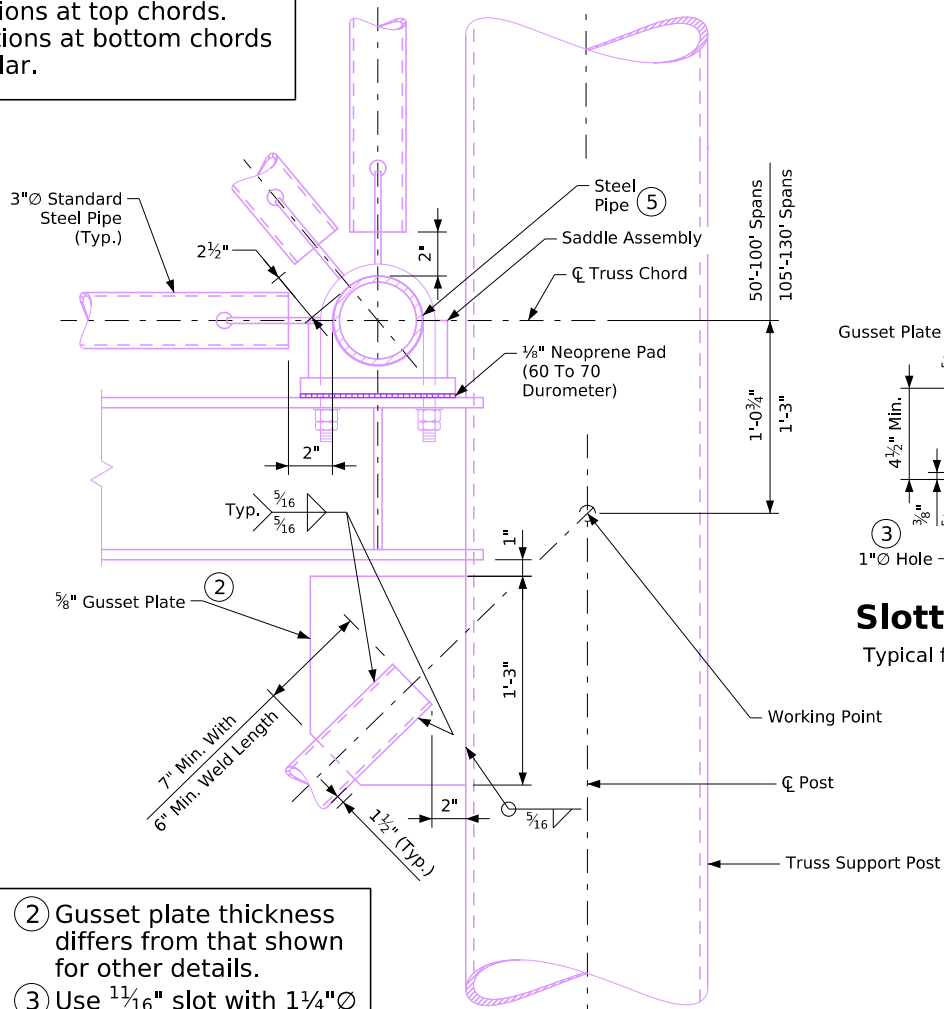
Detail C

① This dimension may be reduced by 3/16".

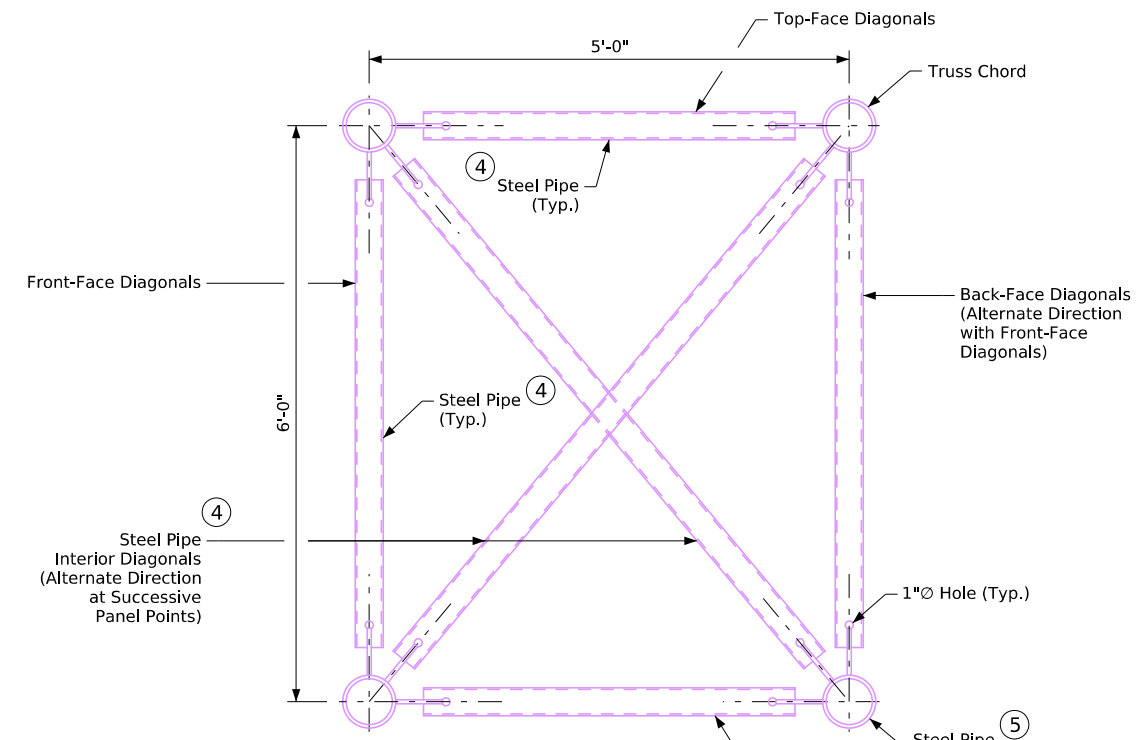
Details A, B and C show connections at top chords. Connections at bottom chords are similar.



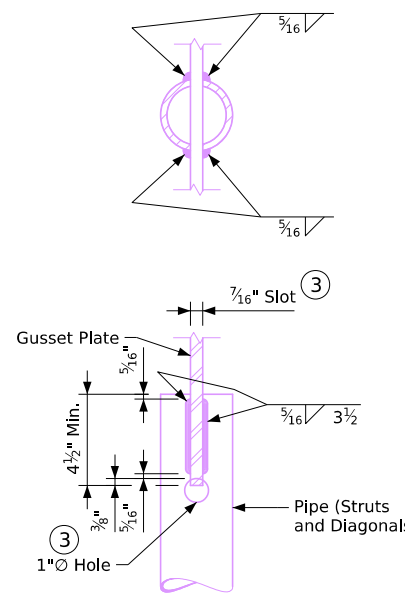
Detail D



Detail E



Section A-A



Slotted Pipe Ends

Typical for struts and diagonals

See Standard Sheets SOST-02-11, SOST-03-11, SOST-04-11 and SOST-05-11 for locations of Section A-A; Details A, B and C; and detail similar to Detail A.

See Standard Sheets SOST-06-11 and SOST-07-11 for locations of details that are similar to Details B and C and locations of Details D and E.

Truss Pipe Details		
Span	④ Truss Diagonals	⑤ Truss Chords
50'-100'	3"Ø Standard Steel Pipe	5"Ø Extra-Strong Steel Pipe
105'-130'	3"Ø Extra-Strong Steel Pipe	6"Ø Extra-Strong Steel Pipe

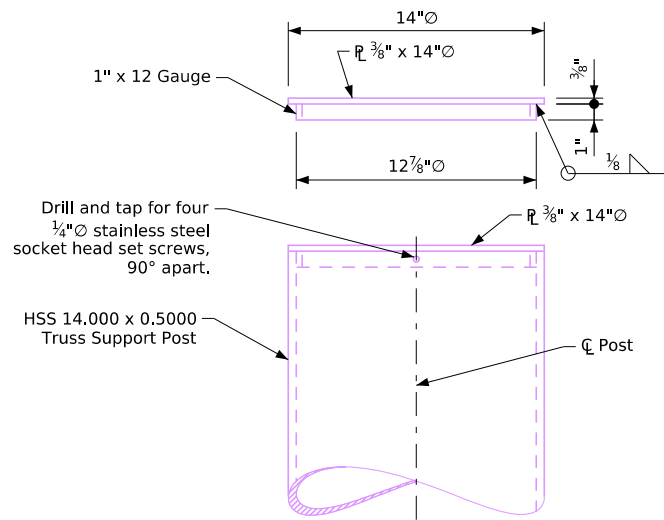
- ② Gusset plate thickness differs from that shown for other details.
- ③ Use 1 1/16" slot with 1 1/4"Ø hole at 5/8" gusset plate (Detail E locations only).

06-2025 Latest Revision Date	Approved by Bridge Engineer <i>[Signature]</i>	IOWA DOT	
		Standard Design	
Steel Overhead Sign Truss			
September, 2011			
Gusset Plate Connections 50'-130' Spans		SOST-08-11	

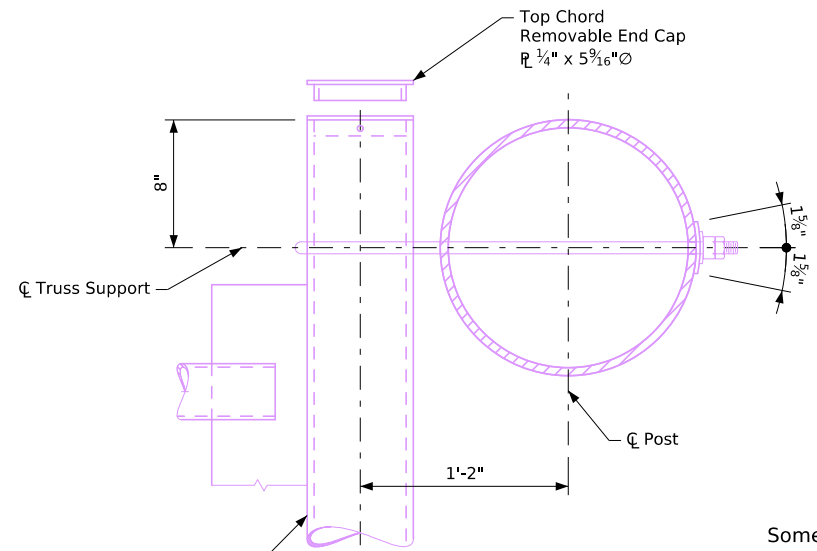
Revised 03-2019: Modified chord splice fastener note to address change in ASTM Specifications. Clarified acceptable hardness of neoprene pad. Updated Bridge Engineer Signature.

Revised 06-2025: This sheet reissued, sheet format update.

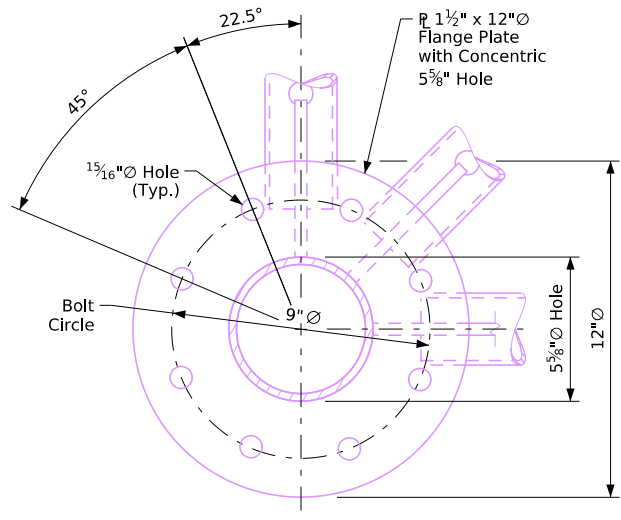
steeloverheadsigntruss.dgn - SOST-09-11 - This Sheet Issued 09-2011.



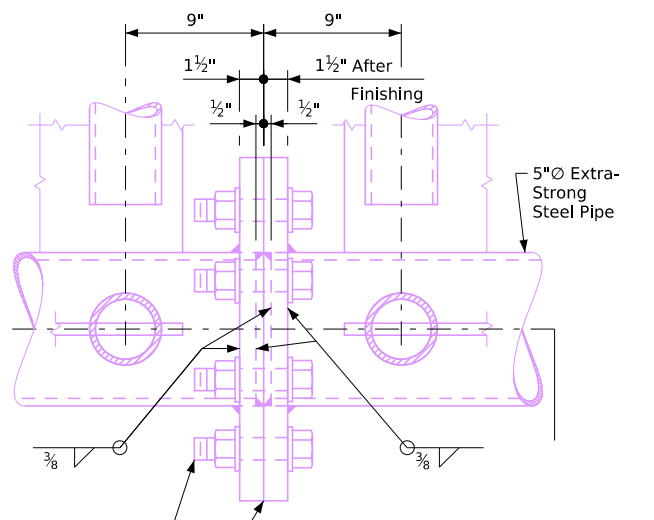
Post Top Detail



View C-C

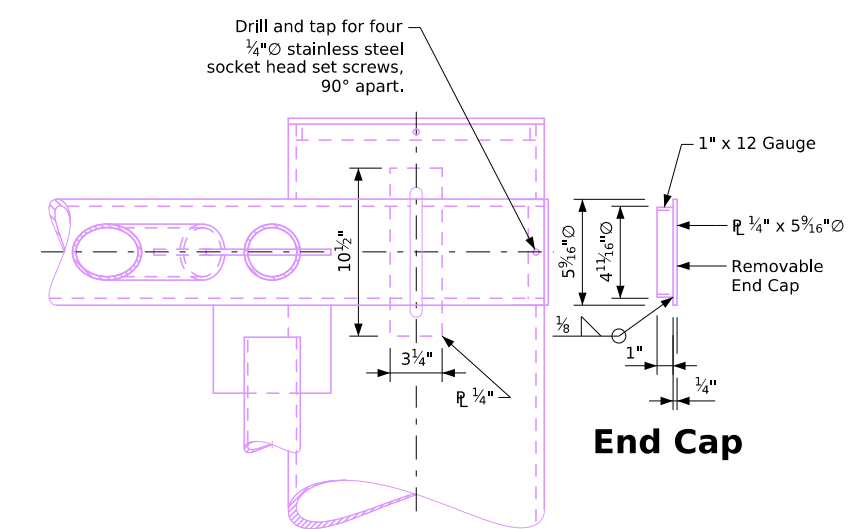


$\frac{7}{8}'' \text{ } \phi \times 4 \frac{3}{4}''$ F3125 Grade A325 Galvanized Bolt with Washers and Nut (Typ.) - 32 bolts, 64 washers and 32 nuts required per truss splice. Provide a washer under bolt head and each nut. Tension galvanized steel fasteners by turn-of-nut method.

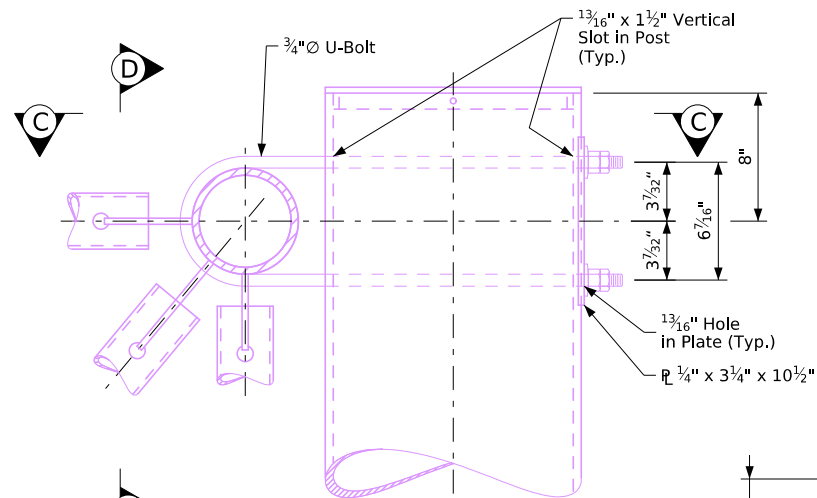


Chord Splice

Secure proper alignment after finishing, then weld flange plates to chord members.

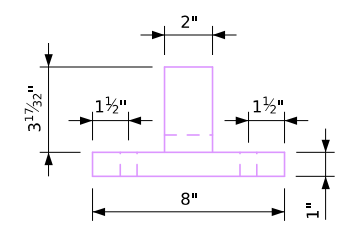


End Cap

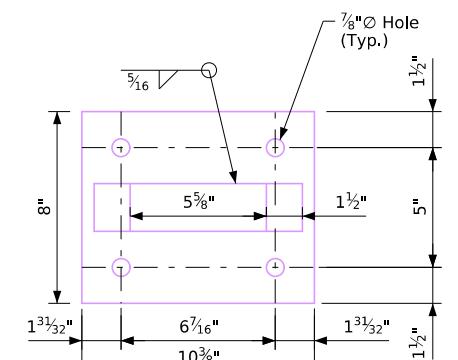


Detail F

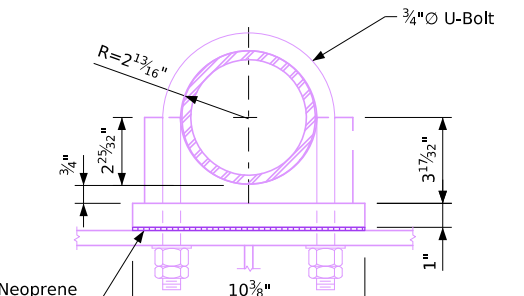
Top Chord



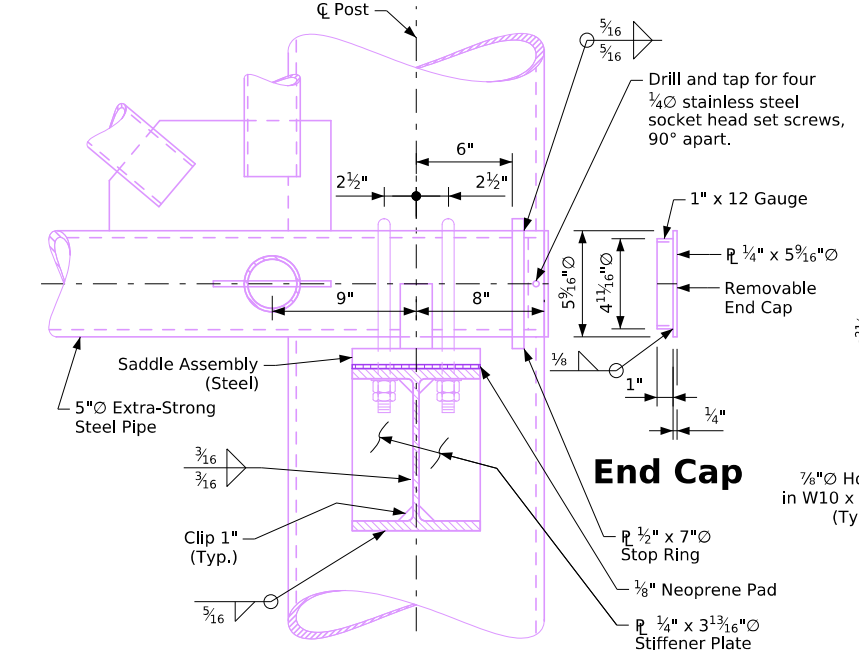
Saddle End View



Saddle Plan View

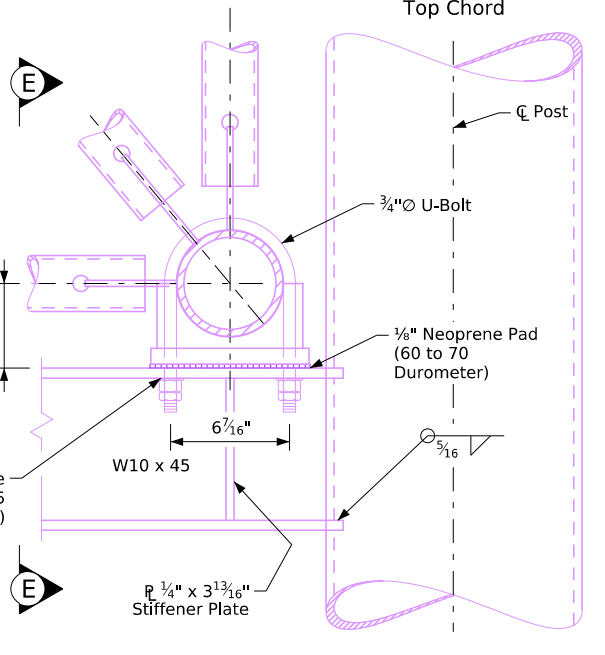


Saddle Side View



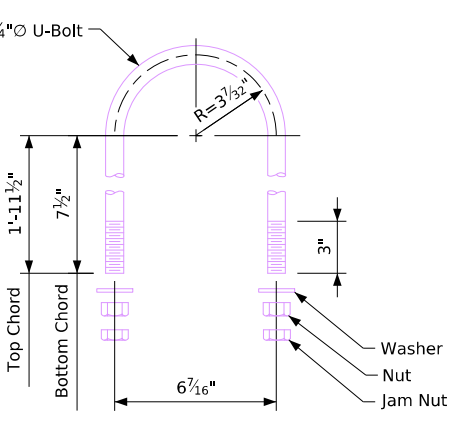
End Cap

View E-E



Detail G

Bottom Chord

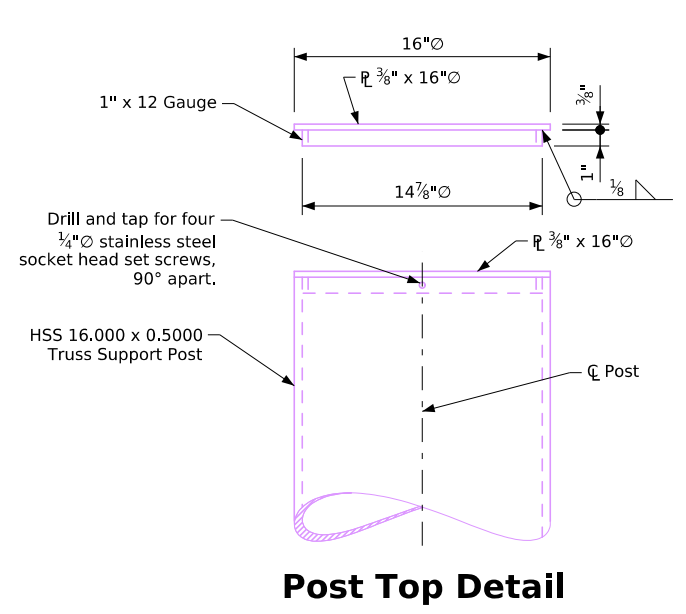


U-Bolt Detail

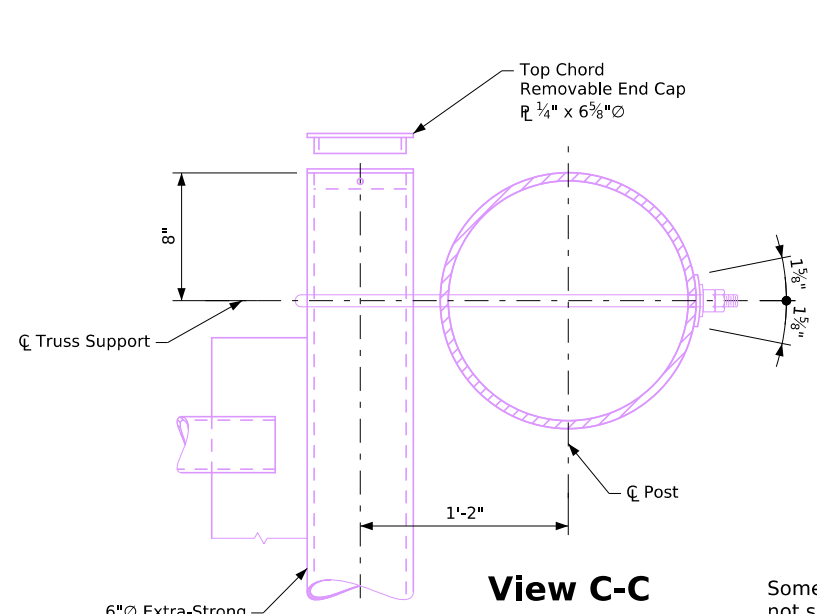
See Standard Sheet SOST-06-11 for locations of Details F and G.

06-2025 Latest Revision Date Approved by Bridge Engineer 	 Standard Design Steel Overhead Sign Truss September, 2011	
	Truss Support and Chord Splice Details 50'-100' Spans	SOST-09-11

Revised 03-2019: Modified chord splice fastener note to address change in ASTM Specifications. Clarified acceptable hardness of neoprene pad. Updated Bridge Engineer signature.
 Revised 06-2025: This sheet reissued, sheet format update.
 steeloverheadsigntruss.dgn - SOST-10-11 - This Sheet Issued 09-2011.

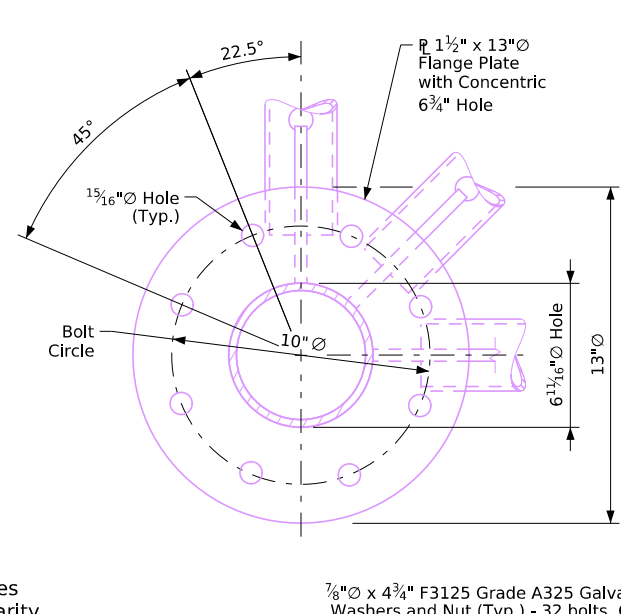


Post Top Detail

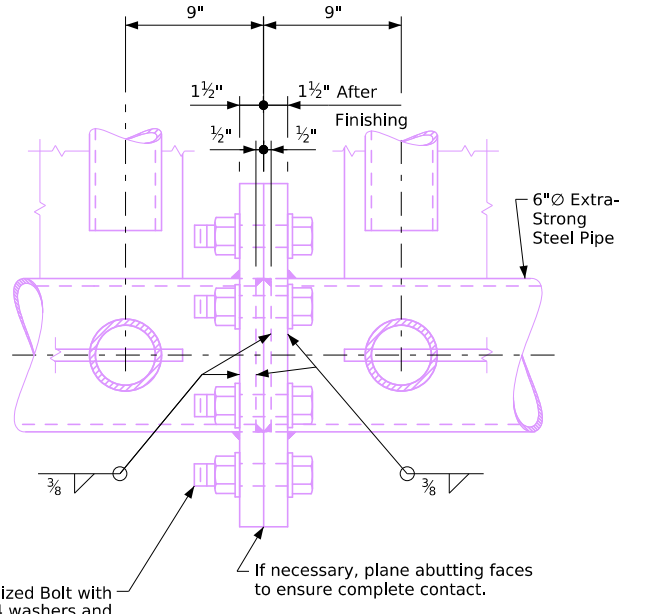


View C-C

Some hidden lines not shown for clarity.

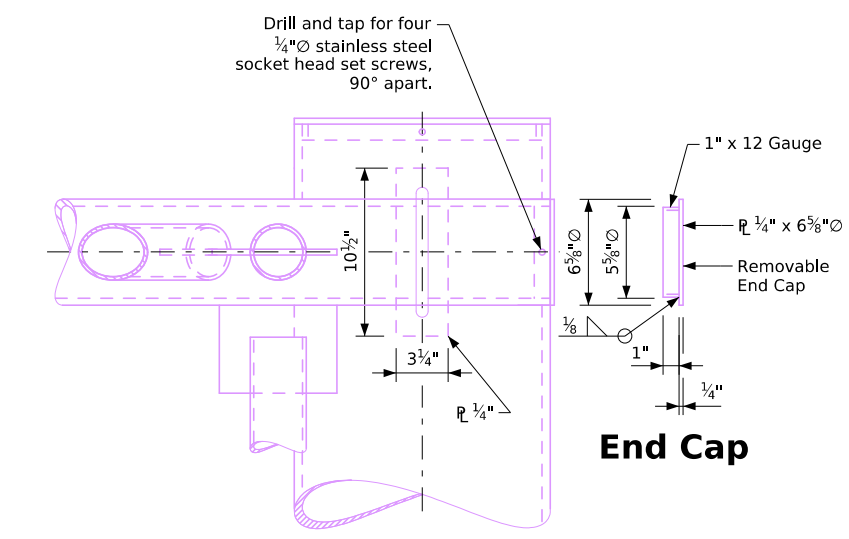


7/8" x 4 3/4" F3125 Grade A325 Galvanized Bolt with Washers and Nut (Typ.) - 32 bolts, 64 washers and 32 nuts required per truss splice. Provide a washer under bolt head and each nut. Tension galvanized steel fasteners by turn-of-nut method.



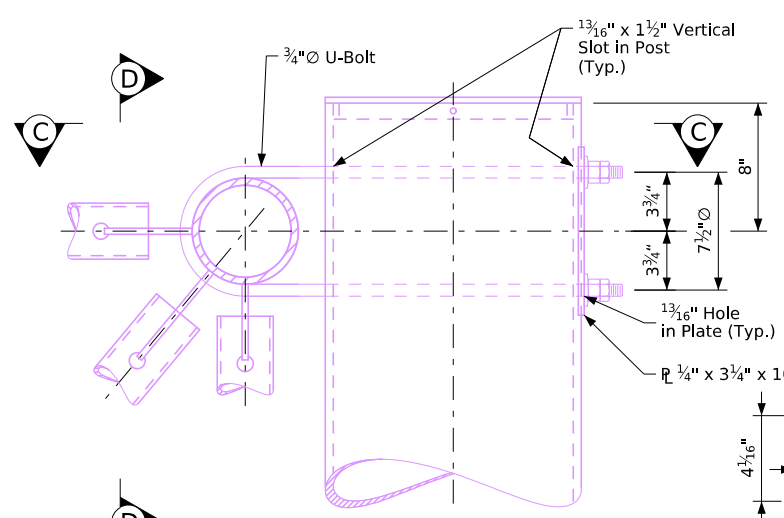
Secure proper alignment after finishing, then weld flange plates to chord members.

Chord Splice



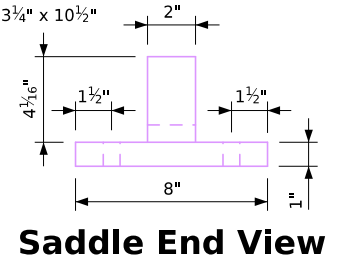
End Cap

View D-D

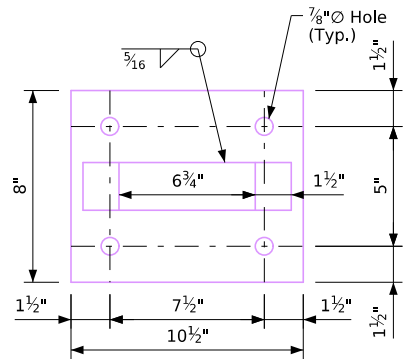


Detail F

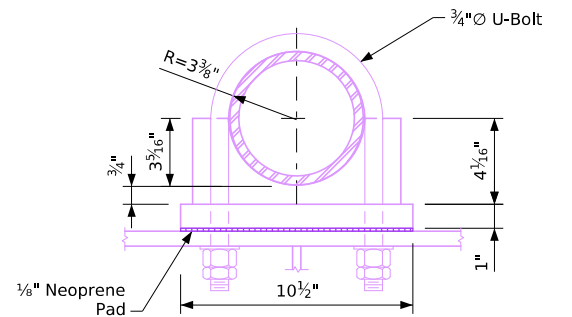
Top Chord



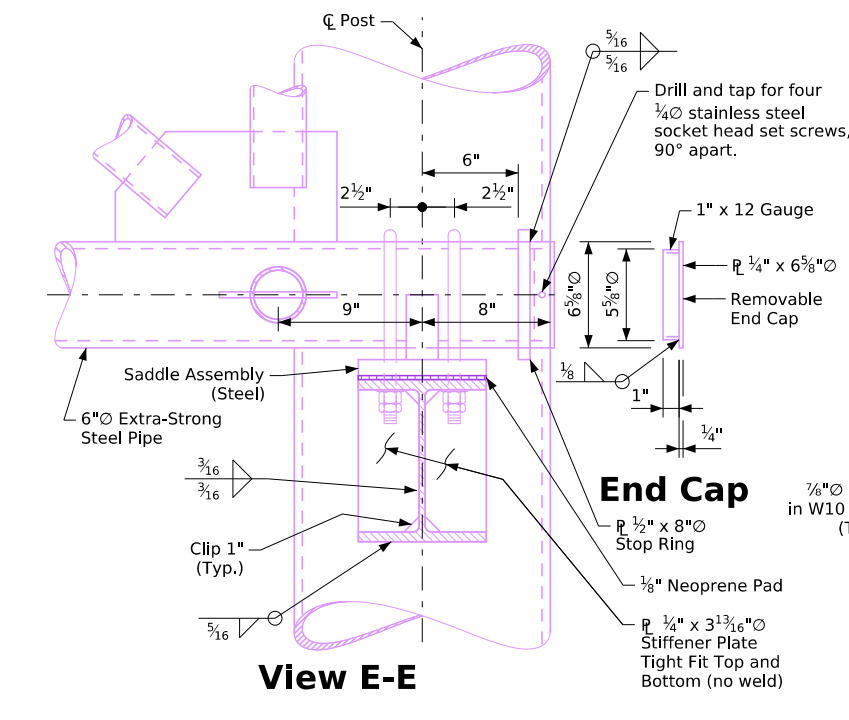
Saddle End View



Saddle Plan View

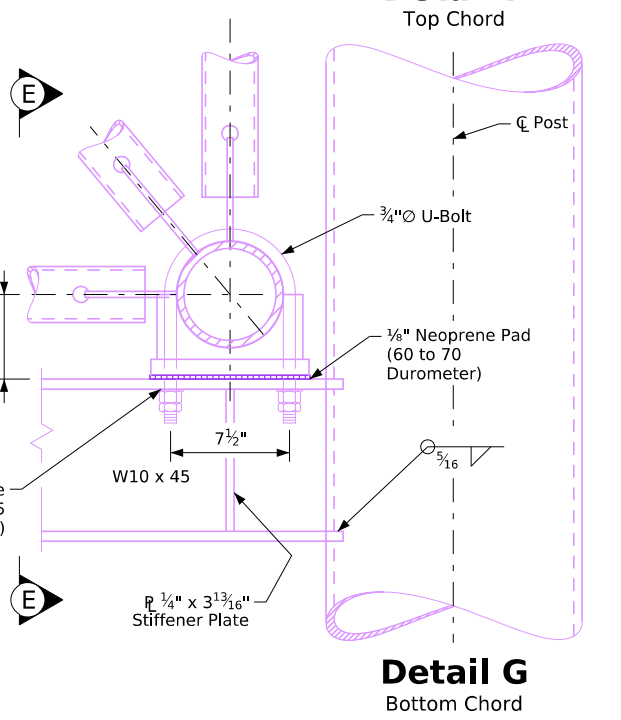


Saddle Side View



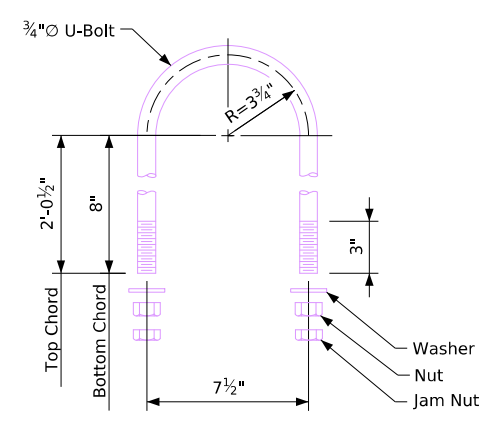
View E-E

End Cap



Detail G

Bottom Chord

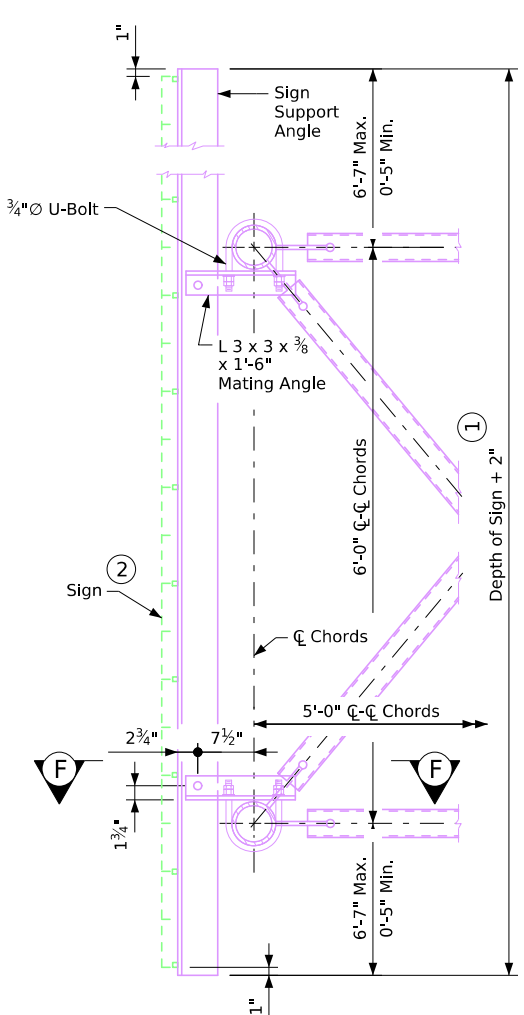


U-Bolt Detail

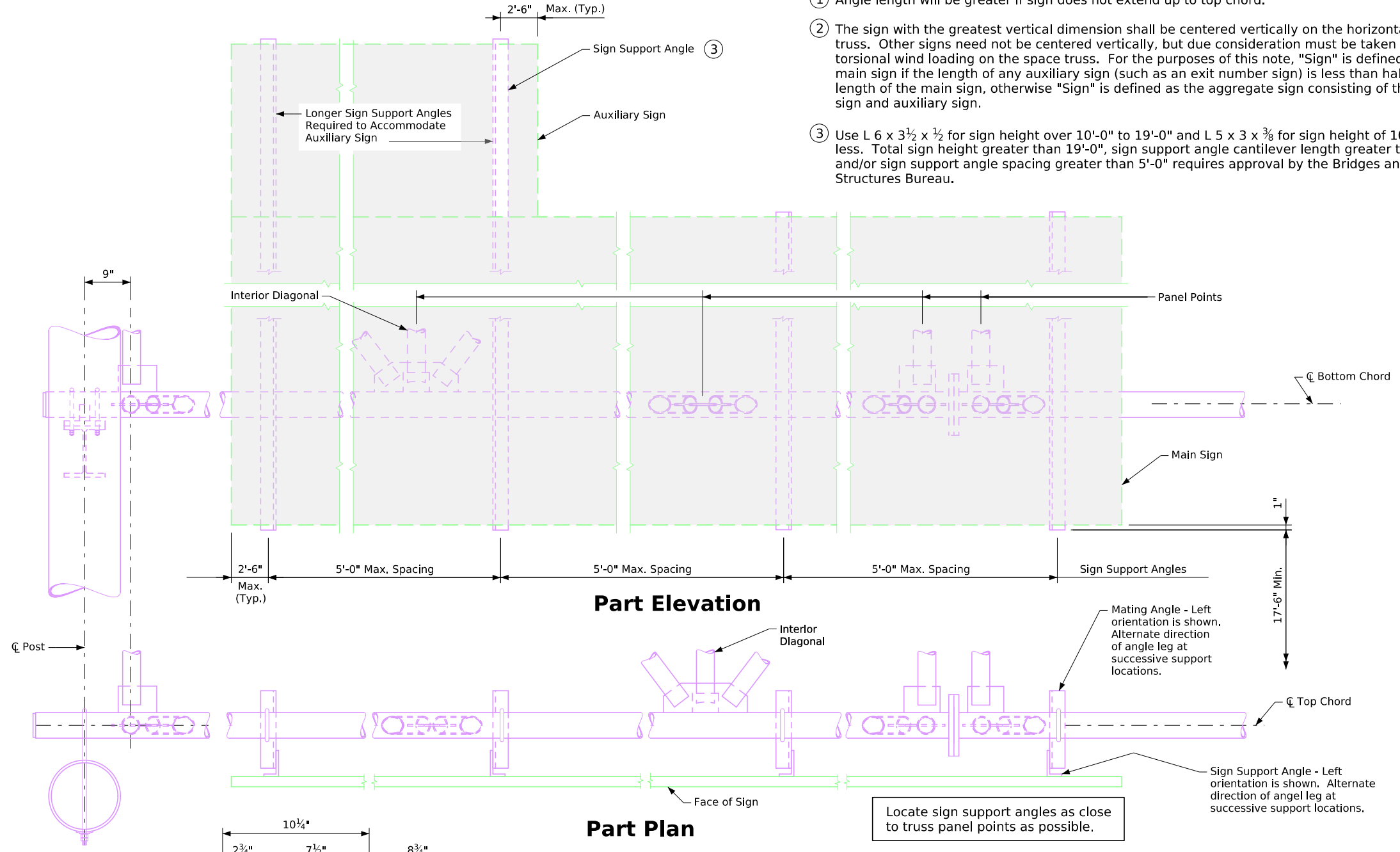
See Standard Sheet SOST-06-11 for locations of Details F and G.

06-2025 Latest Revision Date Approved by Bridge Engineer 	 Standard Design Steel Overhead Sign Truss September, 2011	
	Truss Support and Chord Splice Details 105'-130' Spans	SOST-10-11

Revised 12-2024: Modified Note 2 to improve clarity. At various locations, changed "Additional sign" to "Auxiliary Sign", changed "Typical Sign" to "Main Sign" and changed "Sign Panel" to "Sign".
 Revised 06-2025: This sheet reissued, sheet format update.
 steeloverheadsigntruss.dgn - SOST-11-11 - This sheet issued 09-2011.



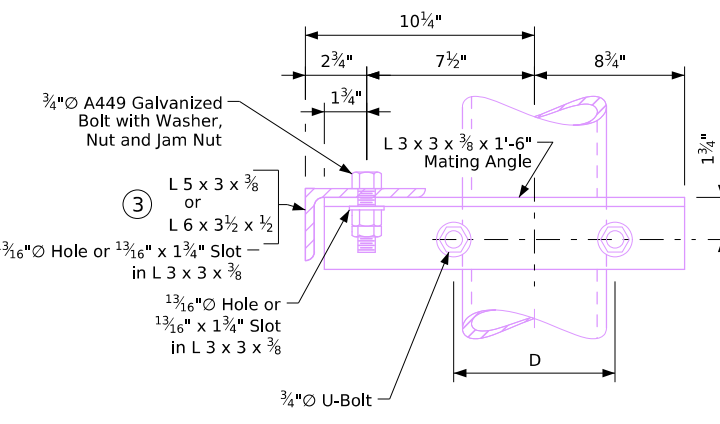
Typical Sign Section



Part Elevation

Part Plan

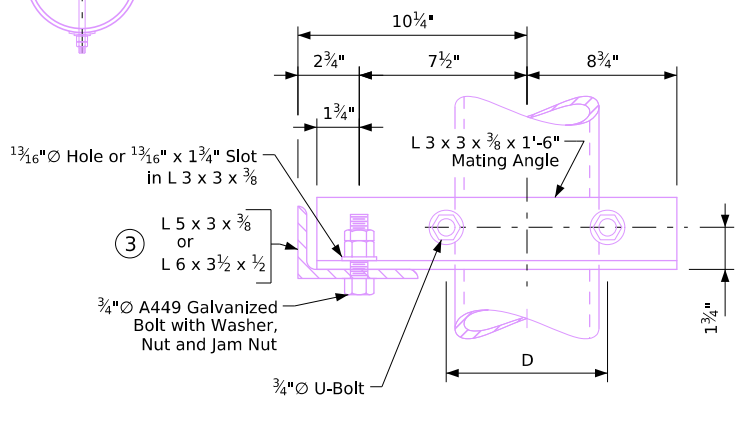
- ① Angle length will be greater if sign does not extend up to top chord.
- ② The sign with the greatest vertical dimension shall be centered vertically on the horizontal space truss. Other signs need not be centered vertically, but due consideration must be taken to limit torsional wind loading on the space truss. For the purposes of this note, "Sign" is defined as the main sign if the length of any auxiliary sign (such as an exit number sign) is less than half the length of the main sign, otherwise "Sign" is defined as the aggregate sign consisting of the main sign and auxiliary sign.
- ③ Use L 6 x 3 1/2 x 1/2 for sign height over 10'-0" to 19'-0" and L 5 x 3 x 3/8 for sign height of 10'-0" or less. Total sign height greater than 19'-0", sign support angle cantilever length greater than 6'-7" and/or sign support angle spacing greater than 5'-0" requires approval by the Bridges and Structures Bureau.



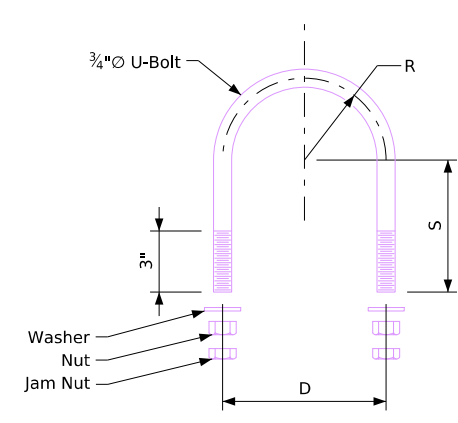
(Left Orientation)

Section F-F

Alternate direction of sign support angle leg and mating angle leg at successive supports as shown in Part Plan.



(Right Orientation)

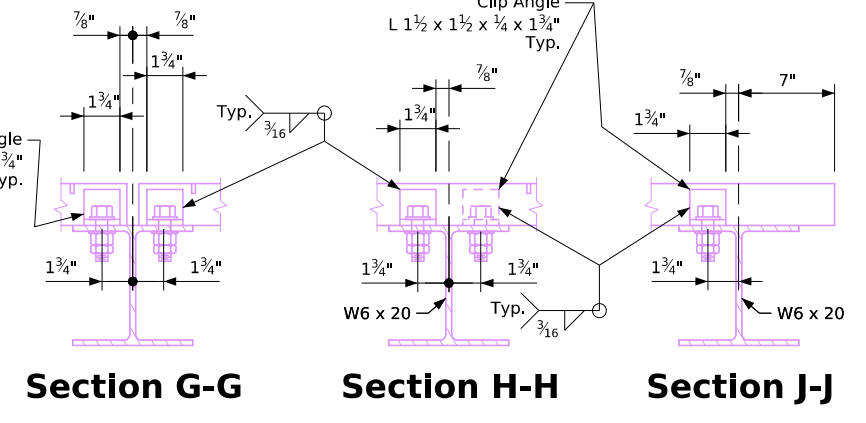
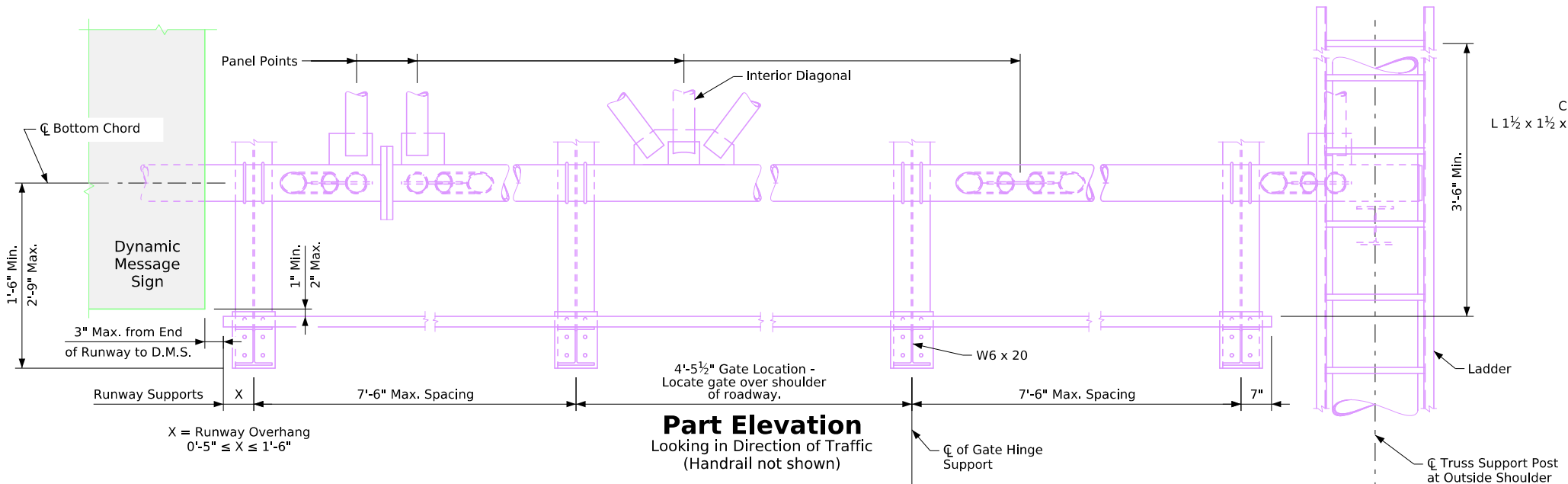


U-Bolt Detail

U-Bolt Dimension Table				
Span	Truss Chord	U-Bolt Dimensions		
		D	R	S
50'-100'	5" Extra-Strong Steel Pipe	6 7/16"	3 3/32"	5 1/2"
105'-130'	6" Extra-Strong Steel Pipe	7 1/2"	3 3/4"	6"

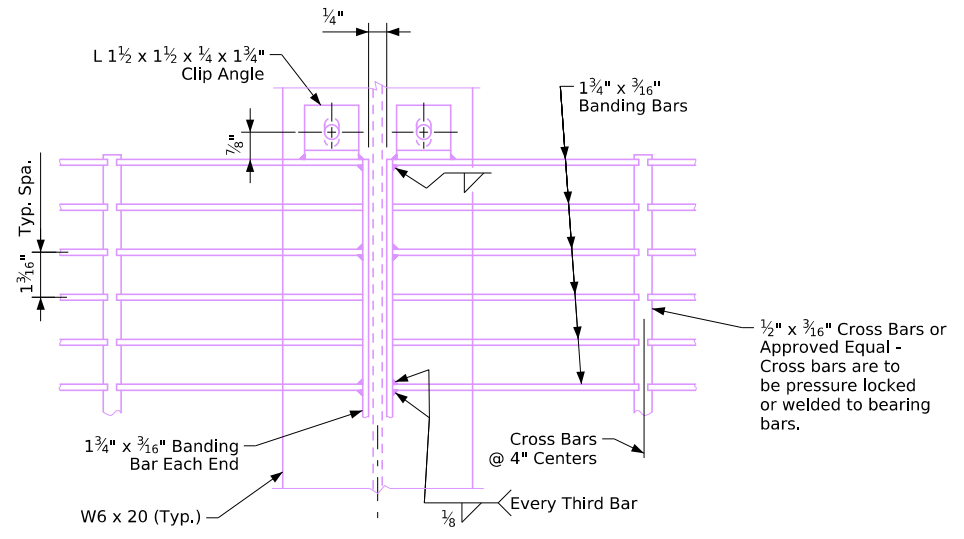
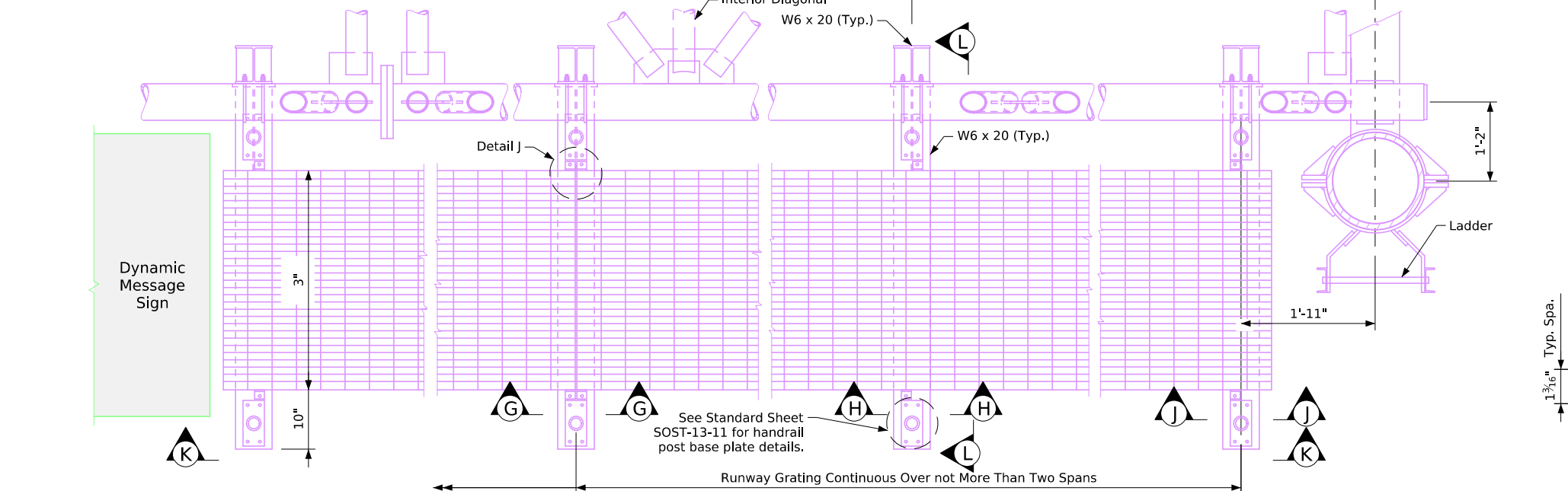
06-2025 Latest Revision Date Approved by Bridge Engineer	 Standard Design Steel Overhead Sign Truss September, 2011
	Sign Attachment Details 50'-130' Spans
	SOST-11-11

Revised 06-2025: Changed maximum cantilever length of DMS runway support bracket vertical W6 x 20 member from 2'-6" to 2'-9" to match dimension of SOST-13-11 typical runway section. Changed width of handrail gate opening from 4'-5" to 4'-5½" to facilitate proper functioning of latch when gate is in open position. Removed dimension table for "W" (denoting horizontal distance from ladder rung to front face of runway grating) as dimension "W" cannot be determined accurately until DMS cabinet size and mounting assembly dimensions are known. This sheet reissued. sheet format update.
 •steeloverheadsigntruss.dgn - SOST-12-11 - This sheet issued 03-2013.

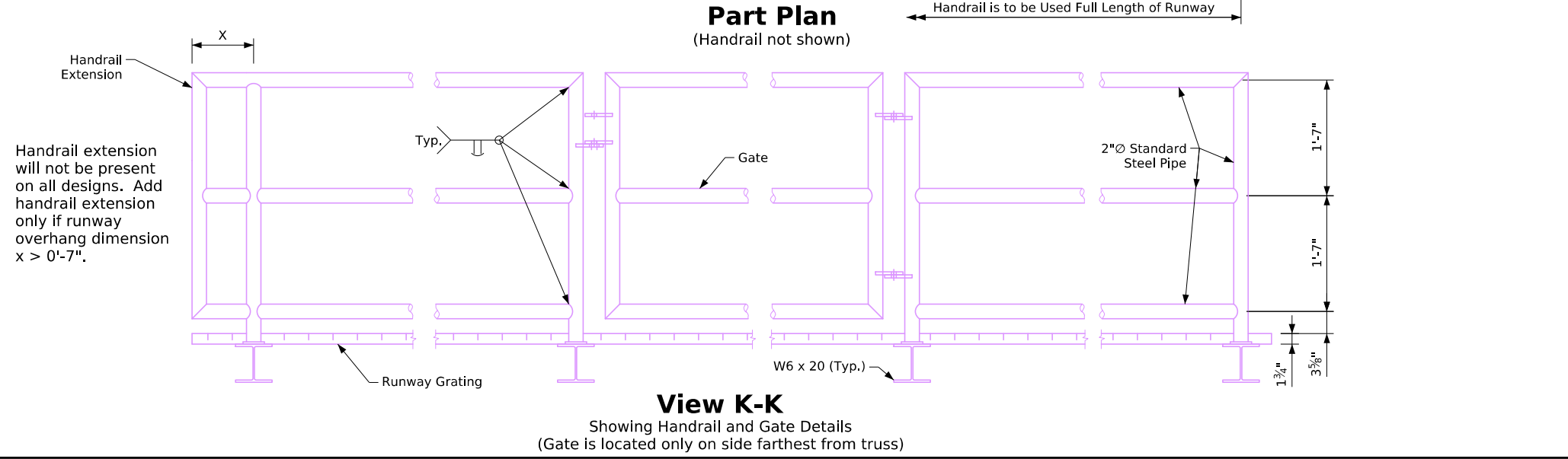


Drill 9/16"Ø hole in clip angle and 9/16" x 1" slotted hole in W6 x 20 for 1/2"Ø F3125 Grade A325 galvanized bolt with washers, nut and jam nut. (An A449 bolt is required if regular nut is substituted for jam nut.) Adjust clip so grating bears on beam.

The galvanized steel bar grating including bearing bar, cross bars and banding bars shall comply with the requirements of ASTM A1011 Type 2.



See Standard Sheet SOST-13-11 for Section L-L.
 See Standard Sheet SOST-15-11 for ladder details.



06-2025 Latest Revision Date	Approved by Bridge Engineer <i>[Signature]</i>	IOWA DOT	
		Standard Design	
		Steel Overhead Sign Truss	
		September, 2011	
		DMS Runway Details	SOST-12-11
		50'-130' Spans	

• Revised 12-2024: Modified Section L-L (Typical Runway Section) dimensions to facilitate proper alignment of runway with DMS cabinet. Expanded dimension table associated with DMS cabinet access runway to accommodate multiple DMS cabinet models.
 • Revised 06-2025: Changed Detail K dimension from 1'-5 3/4" to "X" to match variable dimension "X" in Section L-L. This sheet reissued, sheet format update.
 • steeloverheadsigntruss.dgn - SOST-13-11 - This sheet issued 03-2013.

Dimension Table

For Runway Compatible with
Skyline VMSLED-WV-20F-112x432-30C-I+-ISC DMS Cabinet

Span	Truss Chord	A	B	L*	X*	U-Bolt Dimensions		
						D	R	S
50'-100'	5"Ø Extra-Strong Steel Pipe	2 ²⁵ / ₃₂ "	5 1/4"	5'-0 3/4"	1'-2 3/4"	6 7/16"	3 3/32"	5 1/2"
105'-130'	6"Ø Extra-Strong Steel Pipe	3 5/16"	5 3/4"	5'-1 3/4"	1'-3 3/4"	7 1/2"	3 3/4"	6"

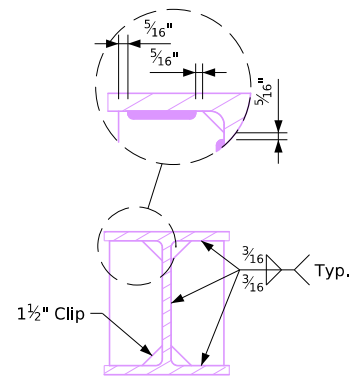
Dimension Table

For Runway Compatible with
Daktronics VF-2020-112x432-20 DMS Cabinet

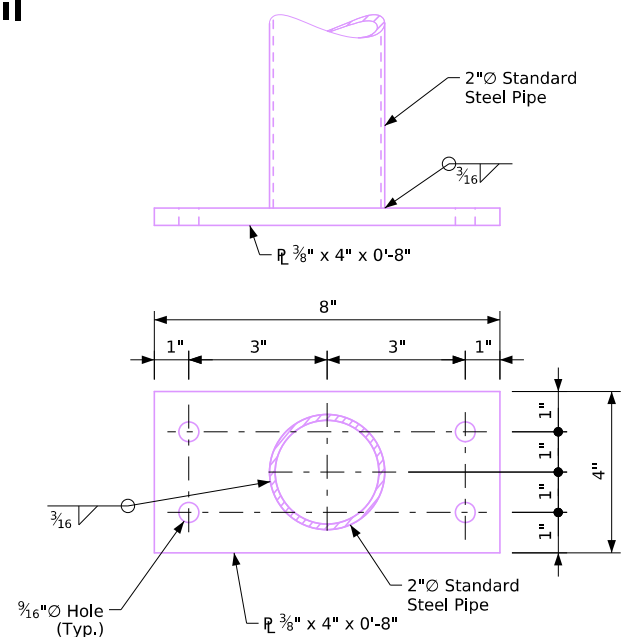
Span	Truss Chord	A	B	L*	X*	U-Bolt Dimensions		
						D	R	S
50'-100'	5"Ø Extra-Strong Steel Pipe	2 ²⁵ / ₃₂ "	5 1/4"	5'-3 1/4"	1'-5 1/4"	6 7/16"	3 3/32"	5 1/2"
105'-130'	6"Ø Extra-Strong Steel Pipe	3 5/16"	5 3/4"	5'-4 1/4"	1'-6 1/4"	7 1/2"	3 3/4"	6"

*These dimensions are for estimating purposes only. The Contractor shall verify specific DMS cabinet dimensions, positioning and orientation relative to the support truss before detailing shop drawings to ensure proper alignment of DMS access runway and associated handrails with DMS access door.

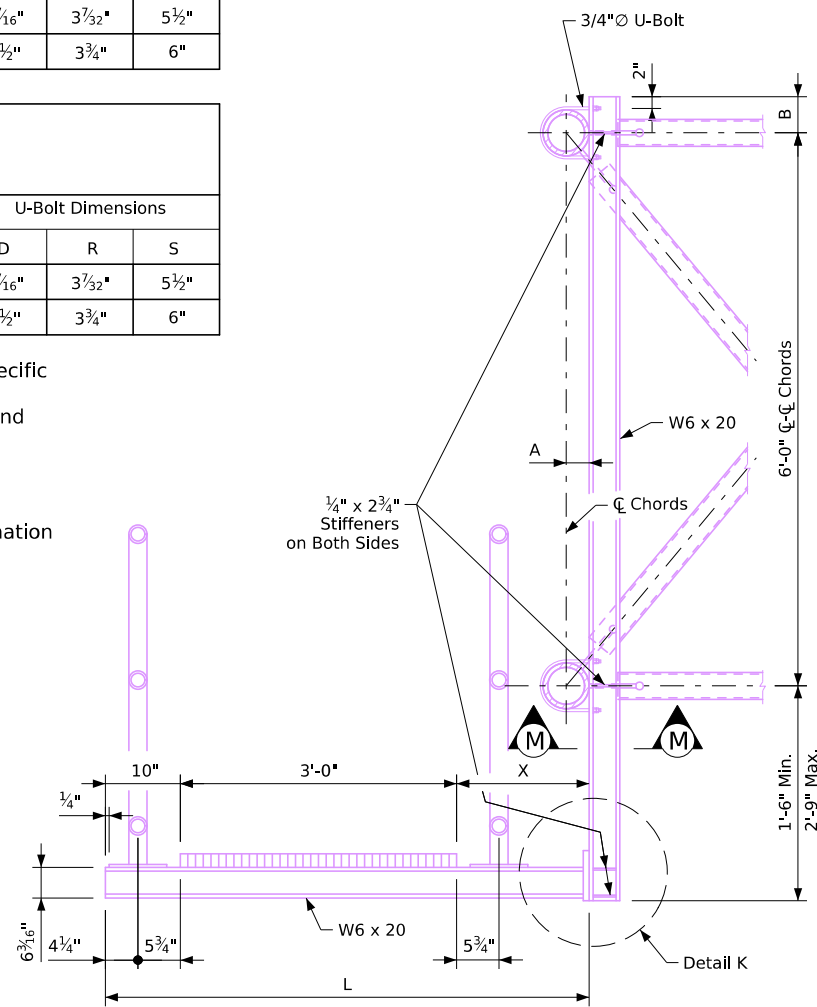
Note that identical DMS cabinets may be positioned and oriented differently due to differences in DMS-to-truss attachment hardware. Do not assume dimensions of attachment hardware. Contact the Iowa D.O.T. Traffic Operations Bureau for information about specific DMS cabinet dimensions, positioning and orientation relative to a particular support truss.



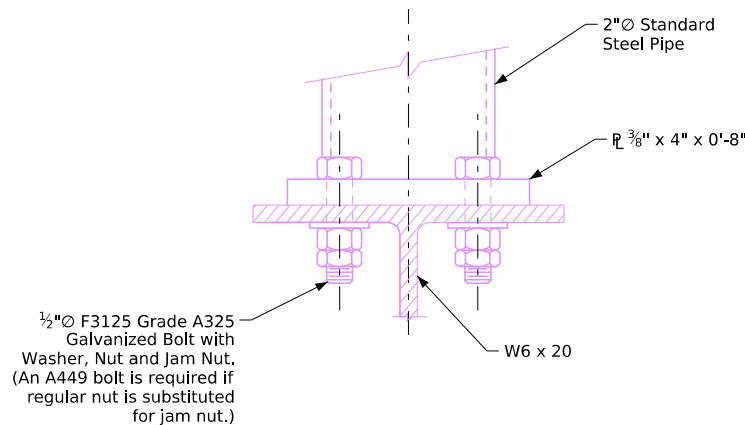
Typical Stiffener Detail



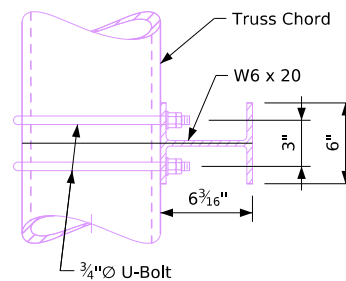
Handrail Post Base Plate



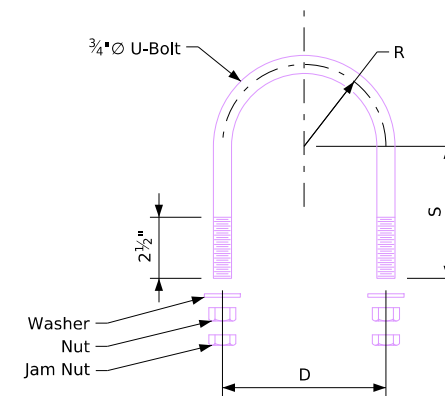
Section L-L Typical Runway Section



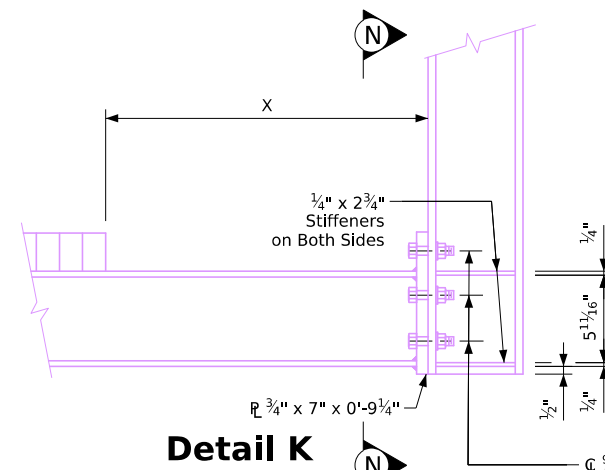
End Elevation of Handrail Post Base



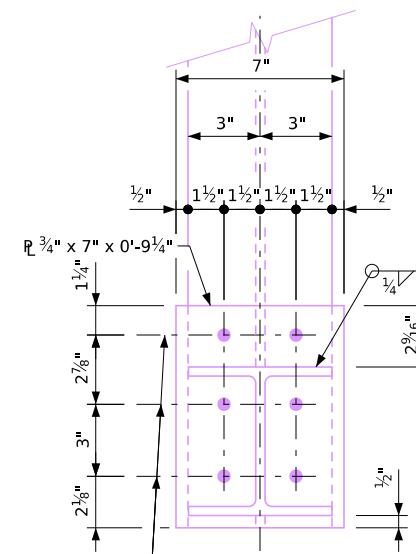
Section M-M



U-Bolt Detail



Detail K

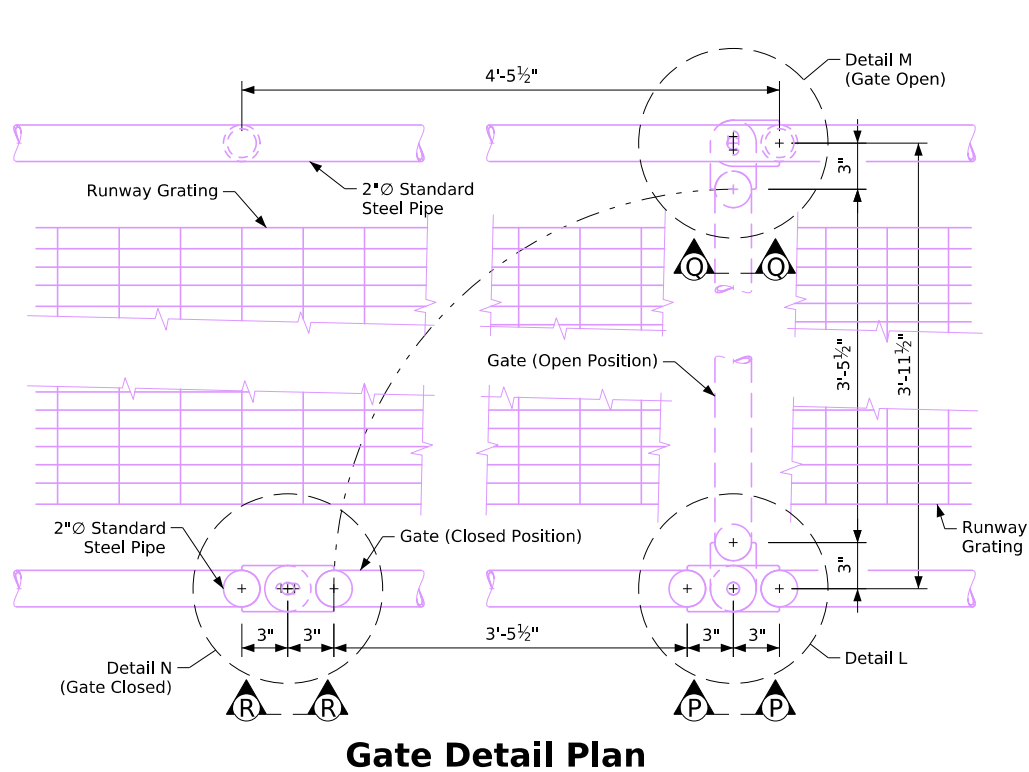


Section N-N
Fasteners not shown

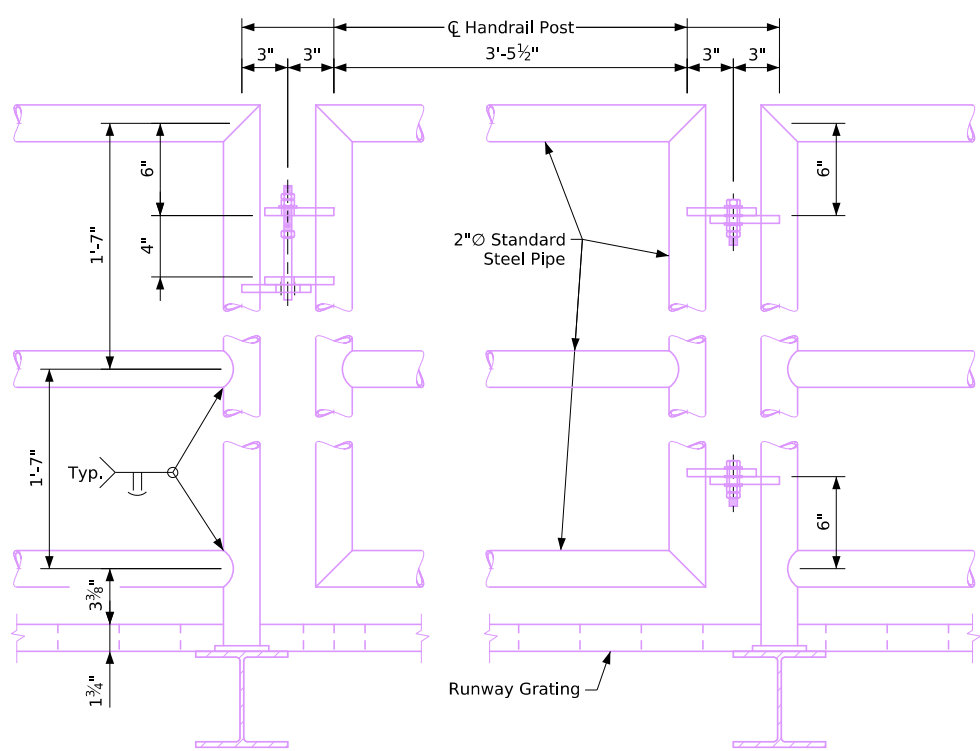
06-2025 Latest Revision Date Approved by Bridge Engineer	 Standard Design
	Steel Overhead Sign Truss September, 2011
	DMS Runway Details 50'-130' Spans

SOST-13-11

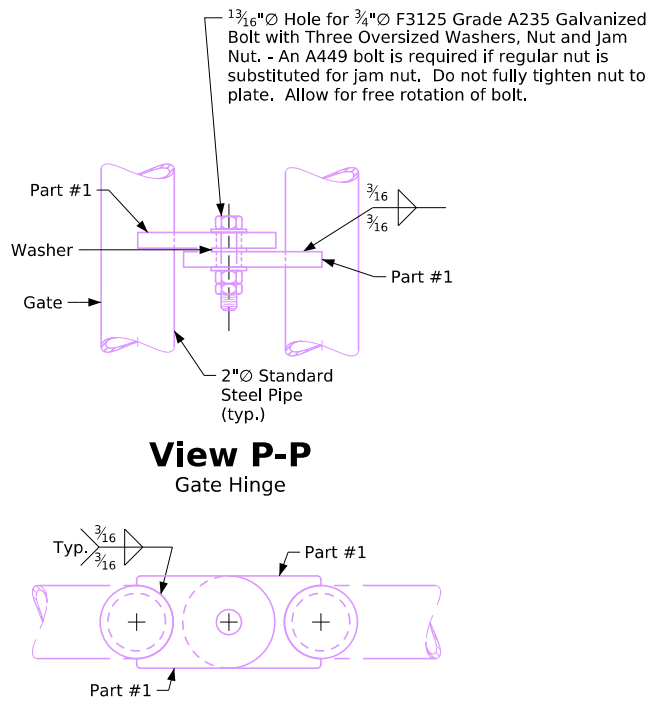
Revised 06-2025: Corrected horizontal distance between DMS access runway handrails to 3'-11 1/2" (was 3'-11") for consistency with dimensions shown on SOST-13-11 Section L-L, to 3'-5 1/2" and width of handrail gate opening from 4'-5" to 4'-5 1/2" to facilitate proper functioning of latch when gate is in open position. This sheet reissued, sheet format update.
 •steeloverheadsigntruss.dgn - SOST-14-11 - This sheet issued 03-2013.



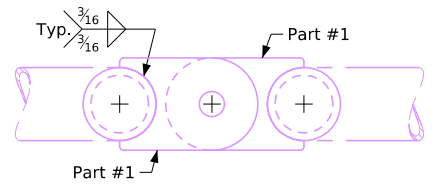
Gate Detail Plan



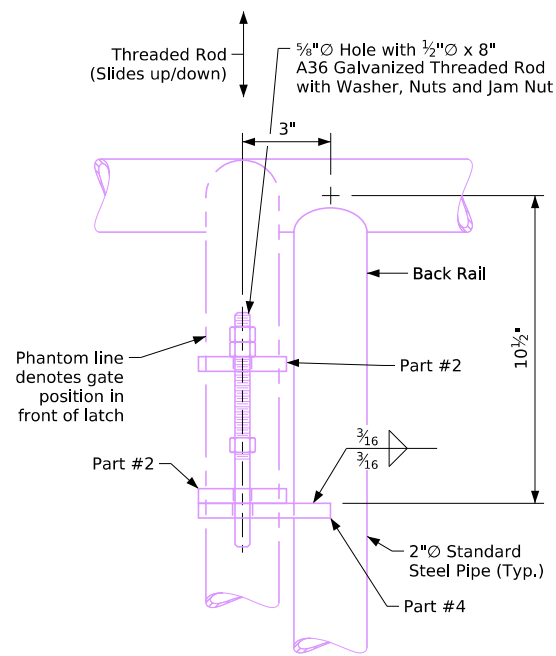
Gate Detail Elevation
 Gate located over shoulder of Roadway



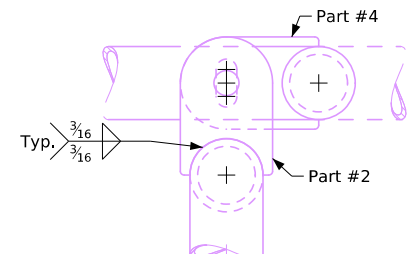
View P-P
 Gate Hinge



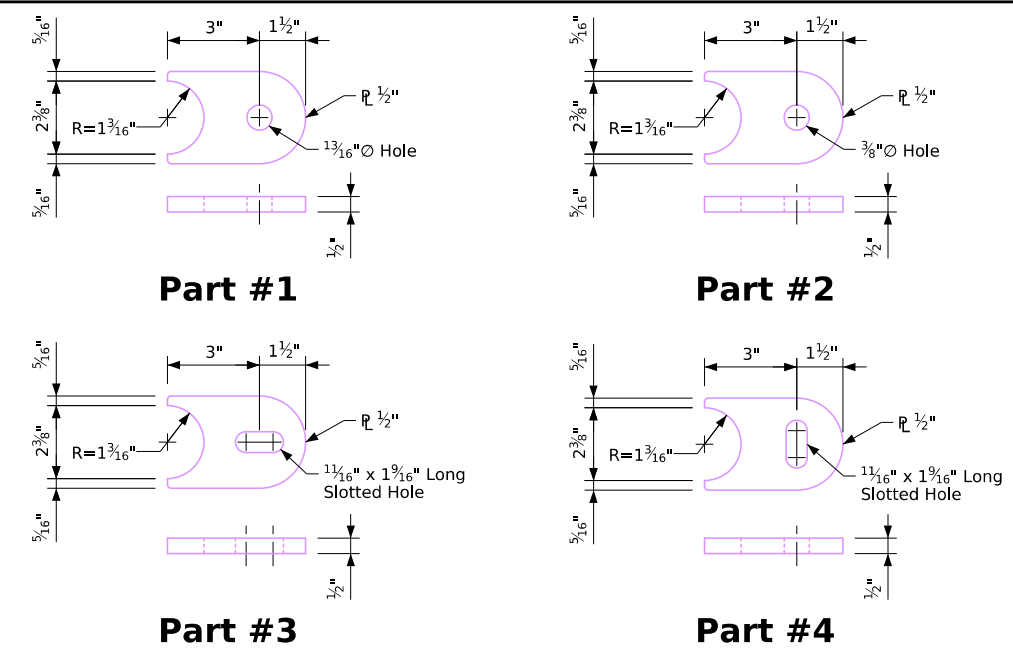
Detail L



View Q-Q
 Gate Latch with Gate Open



Detail M

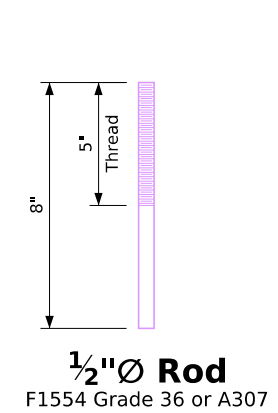


Part #1

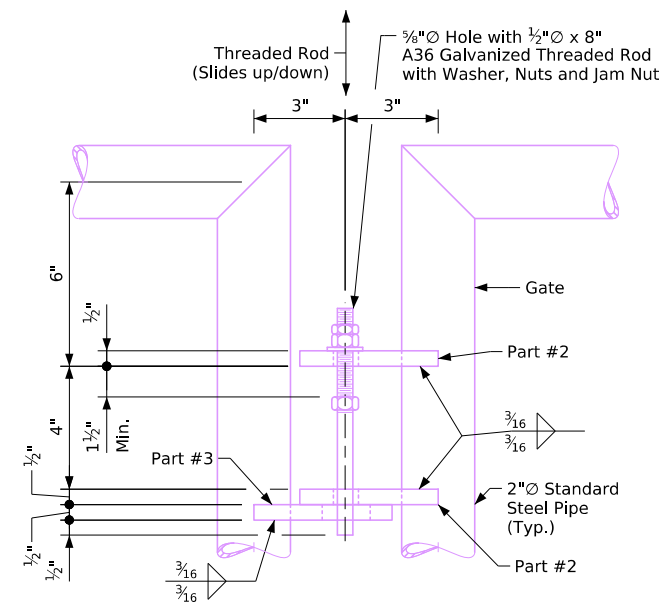
Part #2

Part #3

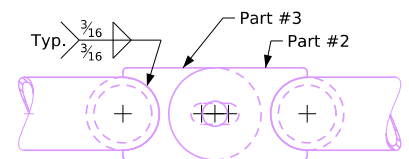
Part #4



1/2" Ø Rod
 F1554 Grade 36 or A307



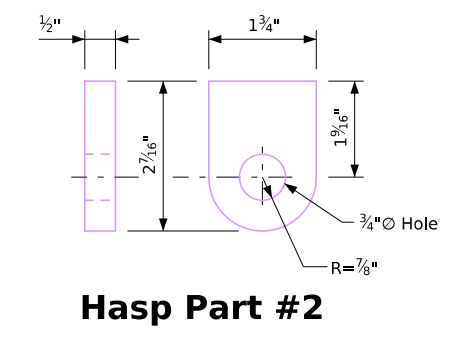
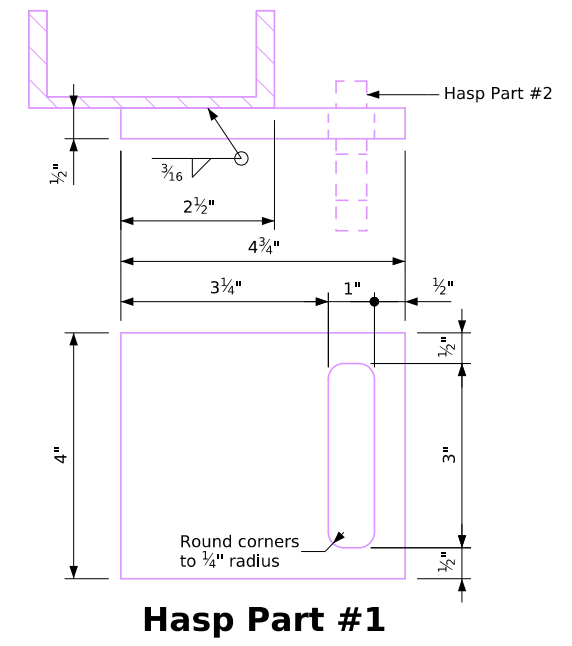
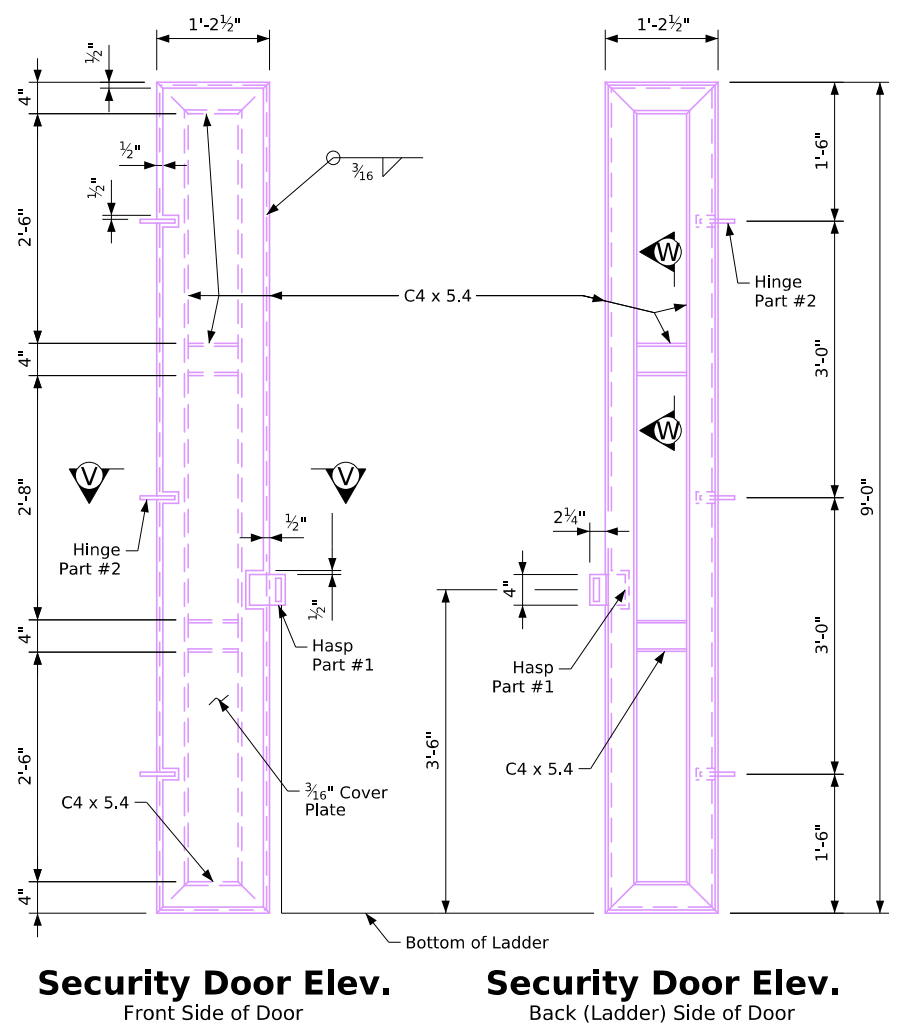
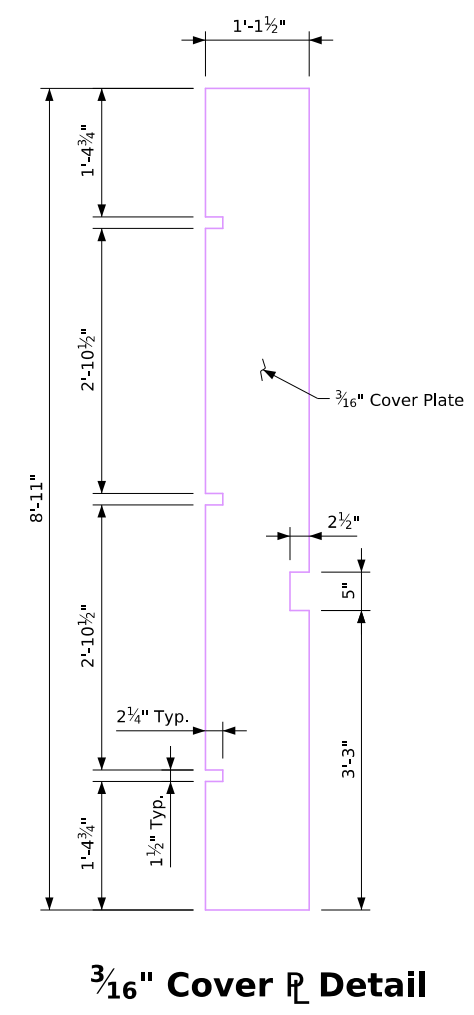
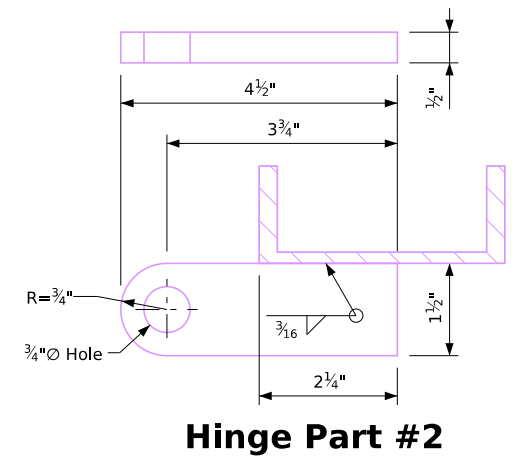
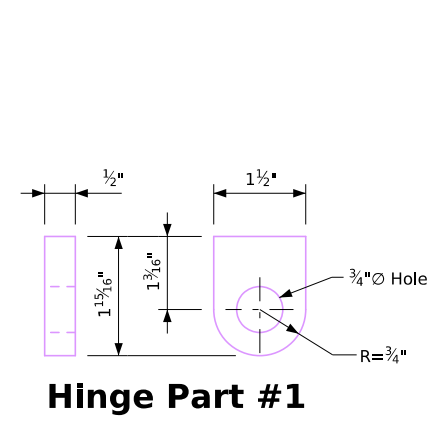
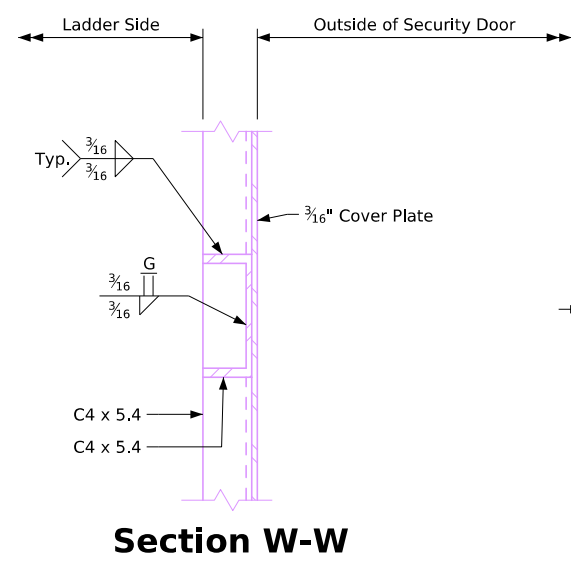
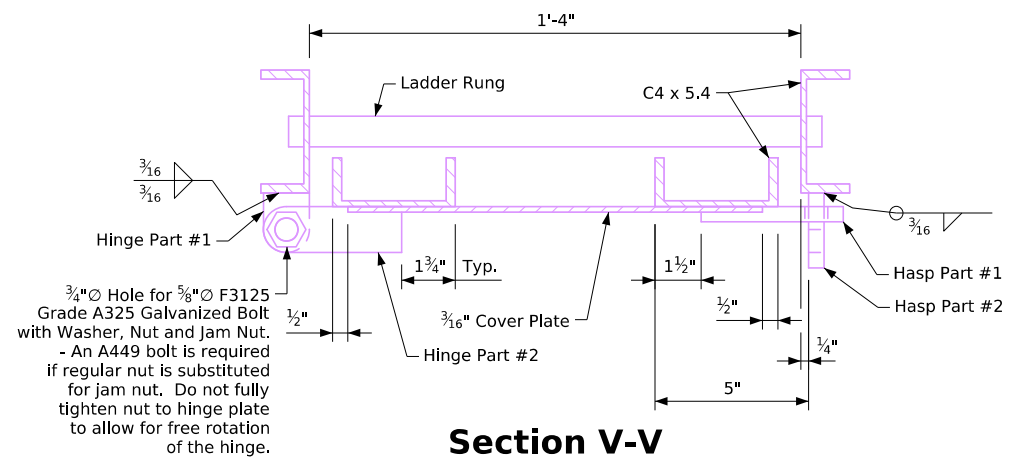
View R-R
 Gate Latch with Gate Closed



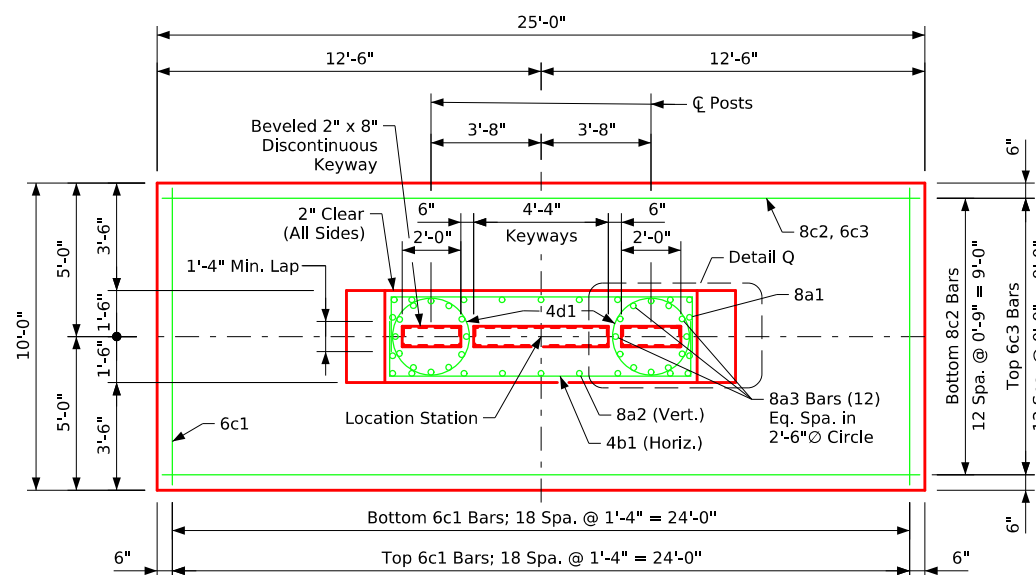
Detail N

06-2025 Latest Revision Date Approved by Bridge Engineer 	 Standard Design	
	Steel Overhead Sign Truss September, 2011	
	DMS Runway Gate Details 50'-130' Spans	SOST-14-11

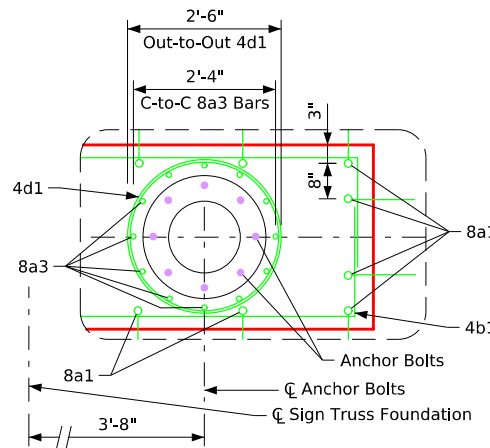
Revised 07-2017: Modified formatting of callouts.
 Revised 03-2019: Modified Section V-V fastener note to address change in ASTM Specifications. Updated Bridge Engineer signature.
 Revised 06-2025: This sheet reissued, sheet format update.
 steeloverheadsigntruss.dgn - SOST-16-11 - This sheet issued 03-2013.



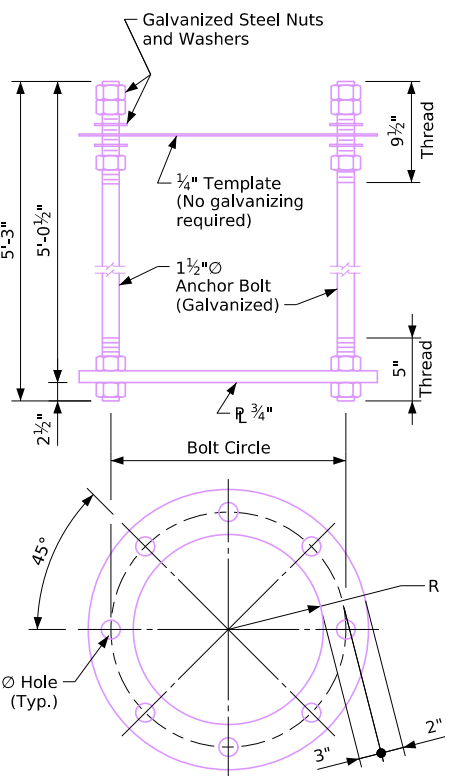
06-2025 Latest Revision Date Approved by Bridge Engineer 	 Standard Design Steel Overhead Sign Truss September, 2011	
	DMS Ladder Security Door Details 50'-130' Spans	SOST-16-11



Plan
Anchor bolt assemblies not shown



Detail Q
Anchor Bolt And Anchor Reinforcing Placement
Keyway not shown



Anchor Bolt Assembly
Weight of one anchor bolt assembly (includes template, excludes galvanizing weight)

50'-100' Spans: 388 lbs.
105'-130' Spans: 397 lbs.

	R	Bolt Circle Diameter
For 14"Ø Posts (50'-100' Spans)	7	1'-8"
For 16"Ø Posts (105'-130' Spans)	8	1'-10"

General Notes:

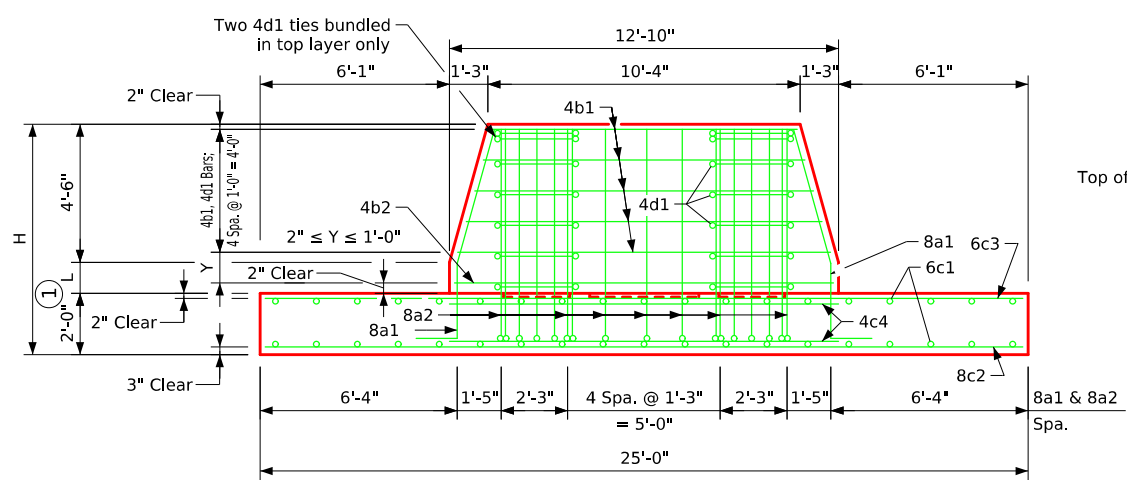
Structural concrete, Class C, shall be used for the Foundation.
Excavation for the Foundation shall be to neat lines and concrete shall be placed against the undisturbed material. All excavation for the Foundation shall be disposed in the area adjacent to the Foundation and shaped to normal ground contour, unless otherwise directed by the Engineer. The Foundation details shown are based on a net allowable soil bearing pressure (for settlement) of 1.0 ton / ft². (Foundation design is based on a maximum soil surcharge depth of 6'-0".)

Two Anchor Bolt Assemblies including anchor plates, templates, nuts (5 per bolt) and washers (2 per bolt) are required per Foundation.

All Anchor Bolt materials and galvanizing shall be in accordance with Article 4187.01, C, 3 of the Standard Specifications.

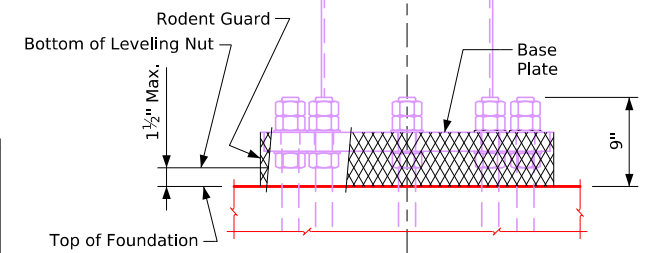
Price bid for contract items shall include all labor and materials necessary to construct overhead sign truss foundation as detailed hereon. The cost of furnishing and installing conduit and Rodent Guards shall be included in the price bid for "Structural Concrete (Miscellaneous)" and no separate payment will be made. The cost of furnishing Anchor Bolt Assemblies shall be included in the price bid for "Anchor Bolt Assembly--Furnish". (Note that this is a special bid item.) The cost of accurately installing and surveying Anchor Bolt Assemblies shall be included in the price bid for "Anchor Bolt Assembly--Install and Survey". (Note that this is a special bid item.) See structural alignment/tolerance notes on Standard Sheet SOST-01-11 for anchor bolt assembly alignment documentation requirements. Contract items for overhead sign truss Foundation construction are:

- Reinforcing steel, epoxy coated - pounds
- Structural concrete (miscellaneous) - cubic yards
- Excavation - cubic yards of class specified
- Anchor bolt assembly--furnish (special bid item) - pounds
- Anchor bolt assembly--install and survey (special bid item) - each



Side Elevation
Anchor bolt assemblies not shown

① L shall not exceed 6'-0"



Post Base Detail
Showing the Rodent Guard

The rodent guard shall be placed around the base plate.

The rodent guard is stainless steel standard grade wire cloth, 1/4" maximum opening with a minimum wire diameter of AWG No. 16 with a minimum 2" lap.

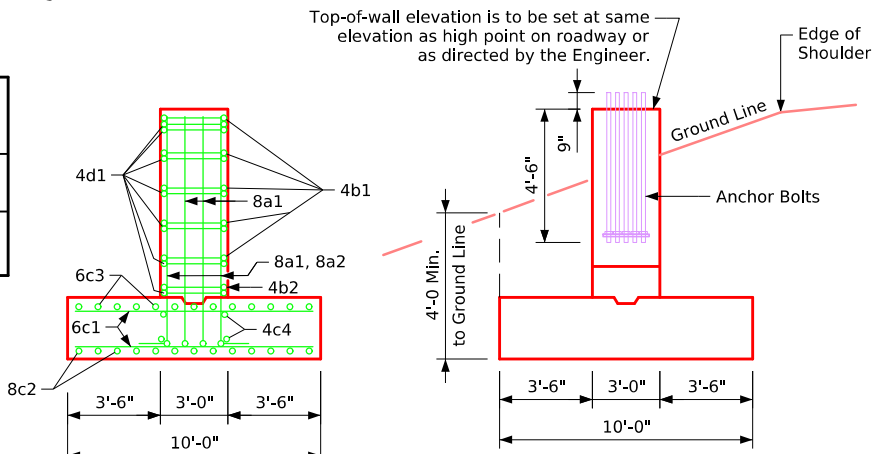
Secure wire cloth to base plate after erection with 3/4" stainless steel banding. The rodent guard shall not extend above the top of the base plate.

Concrete Placement Quantities

Item	One Foundation	
	L = 0	Each 1'-0" of L
Wall	5.71	1.41
Footing	18.52	---
Total (c.y.)	24.23	1.41

Reinforcing Bar List - Epoxy Coated

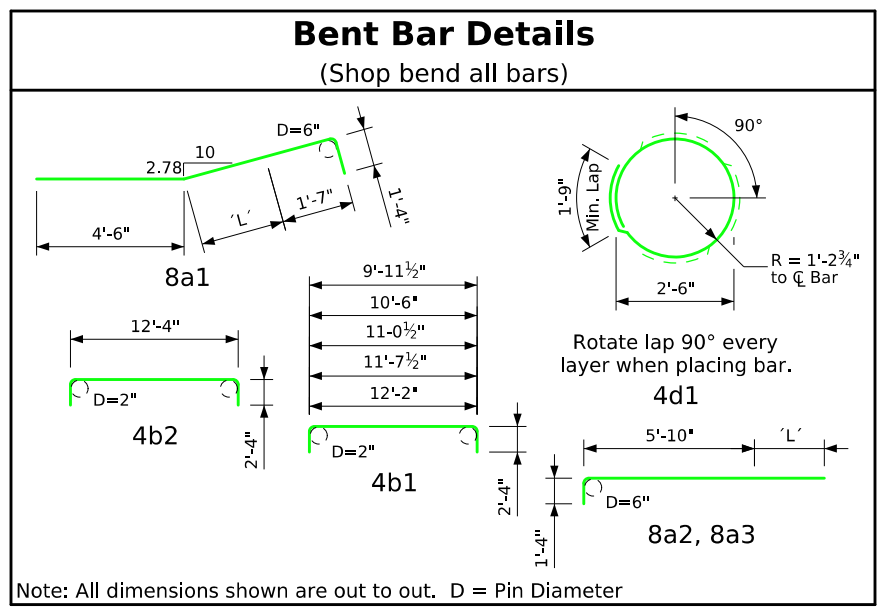
Bar	Shape	Tabulated Value For L = 0 and H = 6'-6"				Each 1'-0" of L and H		
		No.	Length	Weight	Spacing	No.	Length	Weight
8a1		8	7'-5"	158	See detail	8	1'-0" ②	21
8a2		14	7'-2"	268	See detail	14	1'-0" ②	37
8a3		24	7'-2"	459	See detail	24	1'-0" ②	64
4b1		10	Varies	105	1'-0" ④	--	--	--
4b2		---	---	---	---	2 ③	17'-0"	23
6c1		38	9'-6"	542	1'-4"	--	--	--
8c2		13	24'-6"	850	0'-9"	--	--	--
6c3		13	24'-6"	478	0'-9"	--	--	--
4c4		4	12'-8"	34	See detail	--	--	--
4d1		12 ⑤	9'-6"	76	1'-0" ④	2 ③	9'-6"	13
Total				2970 LBS.	Total 158 LBS.			



End Elevation
Reinforcing - 8a3 not shown

End Elevation
Anchor Bolts

For DMS Trusses Only
Electrical conduit is required in foundations supporting trusses with dynamic message signs. See Standard Sheet SOST-18-11 for conduit location details.



- ② Additional length to bars 8a1, 8a2, and 8a3 for L > 0.
- ③ Two in each 1'-0" of L.
- ④ Maintain uniform 1'-0" spacing for all values of L, with remainder spacing at bottom of stem wall 2" < Y < 1'-0".
- ⑤ Bundle two 4d1 circular ties in top layer.

Revised 06-2025; This sheet reissued, sheet format update. steeloverheadsigntruss.dgn - SOST-17-11 - this sheet issued 09-2011.

IOWA DOT

Standard Design

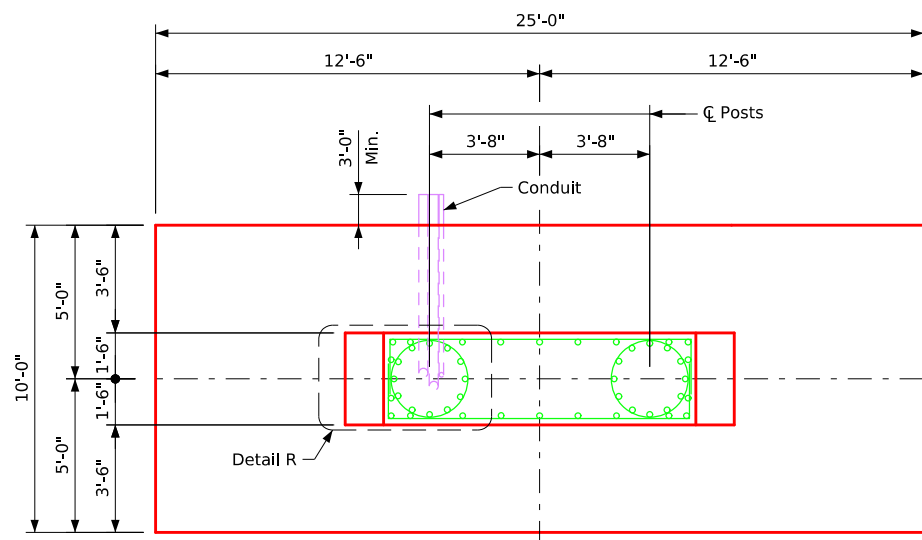
Steel Overhead Sign Truss

September, 2011

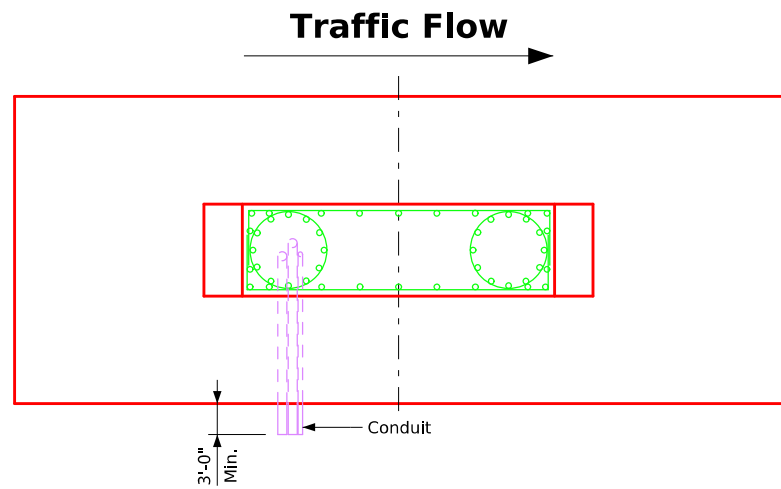
Non-Staged Foundation Details 50'-130' Spans	SOST-17-11
---	-------------------

06-2025 Latest Revision Date
Approved by Bridge Engineer

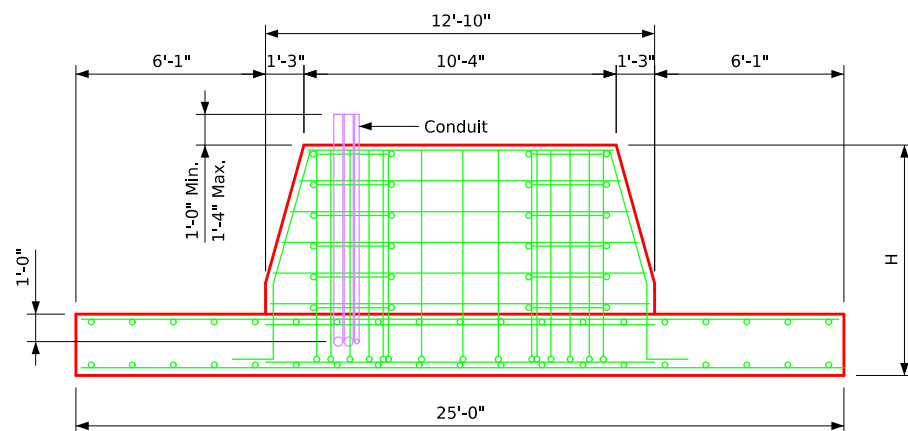
Revised 07-2017: Modified notes.
 Revised 03-2019: Added H (total foundation height) dimension to Side Elevation to improve clarity. Updated Bridge Engineer signature.
 Revised 06-2025: Increased conduit outlet length at edge of foundation footing from 1'-0" min. to 3'-0" min. This sheet reissued, sheet format update.
 steeloverheadsigntruss.dgn - SOST-18-11 - This sheet issued 03-2013.



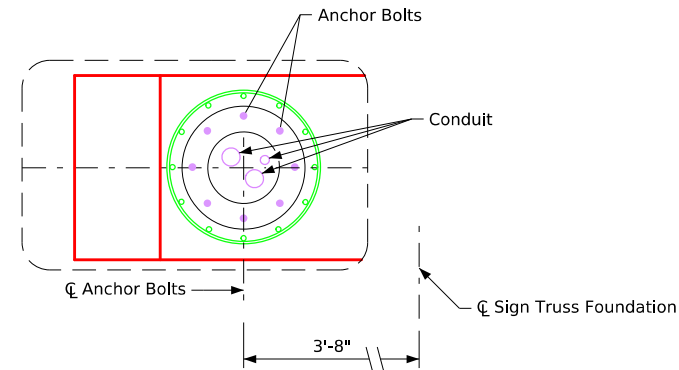
Foundation Plan for Left Truss Support
 Located at Median for Typical Designs
 Anchor bolt assemblies and selected reinforcing bars not shown



Foundation Plan for Right Truss Support
 Located at Outside Shoulder for Typical Designs
 Anchor bolt assemblies and selected reinforcing bars not shown



Side Elevation
 Anchor bolt assemblies not shown

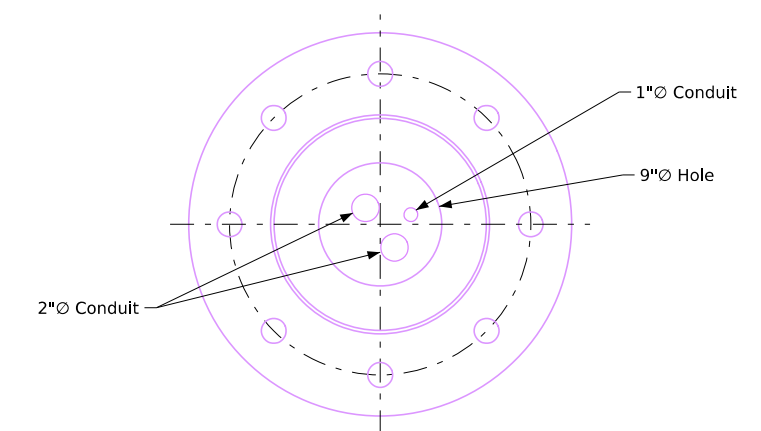


Detail R
 Location of Conduit Within Anchor Bolt Circle
 Stem wall perimeter reinforcing bars not shown

This Sheet for DMS Trusses Only
 Electrical conduit is required in foundations supporting trusses with dynamic message signs.

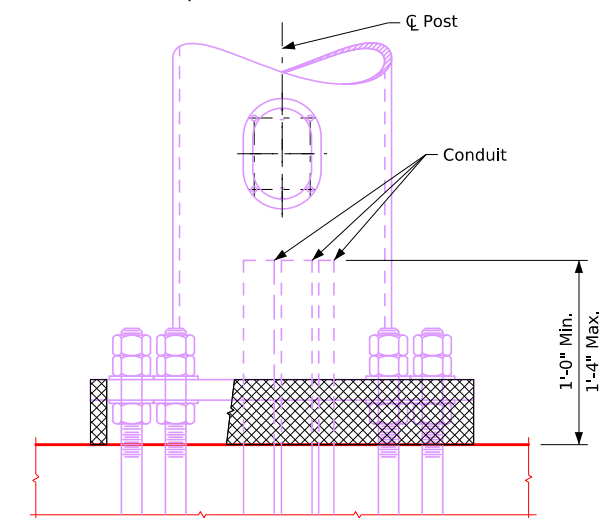
General Notes:

For foundations supporting trusses with dynamic message signs, place one 1"Ø conduit and two 2"Ø conduits within the anchor bolt circle closest to the direction of the approaching traffic. Extend conduit ends a minimum of 1'-0" above foundation wall and 3'-0" past edge of foundation footing on side away from roadway. Conduit shall be placed in both foundations unless otherwise indicated on detail project plans. All conduit shall be Schedule 40 plastic.



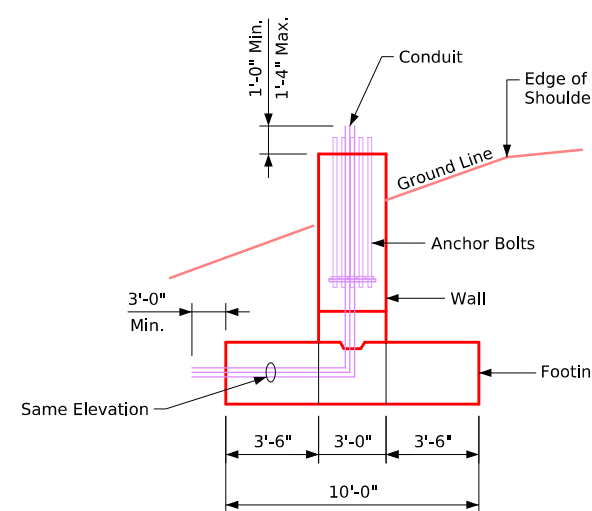
Base Plate Plan

Conduit is present only in posts with hand holes



Base Side View

Opposite of Traffic Side
 Not all anchor bolts shown



End Elevation

Reinforcing bars not shown

See the following Standard Sheets for electrical access details in support posts for DMS truss designs:
 Standard Sheet SOST-06-11 for 14"Ø posts (50'-100' truss spans)
 Standard Sheet SOST-07-11 for 16"Ø posts (105'-130' truss spans)

06-2025 Latest Revision Date	 Approved by Bridge Engineer	 Standard Design	
		Steel Overhead Sign Truss September, 2011	
		Conduit Location Details 50'-130' Spans	SOST-18-11

Staged Foundation Construction Notes:

Structural concrete, Class C, shall be used for the foundation.

Excavation for the foundation shall be to neat lines and concrete shall be placed against the undisturbed material. All excavation for the foundation shall be disposed as directed by the Engineer. The foundation details shown are based on a net allowable soil bearing pressure (for settlement) of 1.0 ton / ft². (Foundation is based on a maximum soil surcharge depth of 1'-0".)

Accurate placement of 8a3 bars shall be considered essential. 8a4 bars will be mechanically spliced to 8a3 bars during Stage 2 and must not interfere with anchor bolt assemblies.

All mechanical splice assemblies to be used in splicing 8a1, 8a2, 8a3, and 8a4 bars shall be epoxy coated.

Clarification Of Stage 1 Foundation Construction Activities:

All splice assemblies shall be furnished and installed in Stage 1.

All reinforcing bars to be placed in Stage 1 and Stage 2 shall be furnished in Stage 1.

All reinforcing bars to be placed in Stage 2 (i.e., 8a2, 8a4, applicable 4b1 and applicable 4d1 bars) shall be transported and stockpiled in an appropriate storage location as directed by the Engineer in Stage 1.

Concrete for Stage 1 foundation (i.e., Stage 1 footing and Stage 1 stem wall) shall be placed in Stage 1.

Special backfill (see Section 4132 of the Standard Specifications for description and gradation) shall be placed in Stage 1.

Clarification Of Stage 2 Foundation Construction Activities:

All reinforcing bars to be placed in Stage 2 (i.e., 8a2, 8a4, applicable 4b1 and applicable 4d1 bars) shall be obtained from storage, transported and placed as directed by the Engineer in Stage 2.

All anchor bolt assemblies and rodent guards shall be furnished and installed in Stage 2.

The portion of special backfill placed in Stage 1 above the plywood sheet covering the top of the Stage 1 stem wall shall be sufficiently removed in Stage 2 to expose and maintain a clean cold joint before construction of the Stage 2 stem wall.

Concrete for Stage 2 foundation (i.e., Stage 2 stem wall) shall be placed in Stage 2.

After completion of the Stage 2 stem wall, the excavated special backfill around the stem wall shall be replaced up to the bottom of pavement elevation. The backfill shall be replaced in loose 6-inch lifts and compacted with a mechanical tamper. Moisture adjustment shall be employed as needed.

Price Bid For Contract Items:

If Stage 1 and Stage 2 of the foundation are to be constructed in the same project, the price bid for contract items shall include all labor and materials necessary to construct both Stage 1 and Stage 2 of the foundation as detailed on Standard Sheets SOST-20-11 and SOST-21-11 including both the Stage 1 and Stage 2 construction activities listed on this sheet.

If Stage 2 of the foundation will be constructed in a separate project, the price bid for contract items shall include all labor and materials necessary to construct the Stage 1 foundation as detailed on Standard Sheet SOST-20-11 (worked with Standard Sheet SOST-21-11) including the Stage 1 construction activities listed on this sheet.

If Stage 1 of the foundation has been constructed in a separate project, the price bid for contract items shall include all labor and materials necessary to construct the Stage 2 foundation as detailed on Standard Sheet SOST-21-11 (worked with Standard Sheet SOST-20-11) including the Stage 2 construction activities listed on this sheet.

The cost of all splice assemblies is to be included in the price bid for "Reinforcing Steel, Epoxy Coated" and no separate payment will be made. The weight of mechanical splice assemblies is not included in the quantity shown for "Reinforcing Steel, Epoxy Coated". A total of 46 splices will be required.

The Contractor is strongly encouraged to construct a template for the 8a3 bars in Stage 1 to ensure that they are in the correct locations when the 8a4 bars are placed in Stage 2. The 8a4 bars shall not interfere with the anchor bolt assembly.

The cost of furnishing and installing rodent guards, the cost of removing special backfill, and the cost of transportation and placement of reinforcing bars to be placed in the Stage 2 foundation (i.e., 8a2, 8a4, applicable 4b1 and applicable 4d1 bars) shall be included in the price bid for "Structural Concrete (Miscellaneous)" and no separate payment will be made. The cost of furnishing anchor bolt assemblies shall be included in the price bid for "Anchor Bolt Assembly - Furnish". (Note that this is a special bid item.) The cost of accurately installing and surveying anchor bolt assemblies shall be included in the price bid for "Anchor Bolt Assembly - Install and Survey". (Note that this is a special bid item.) See Structural Alignment/Tolerance Notes on Sheet Standard SOST-01-11 for anchor bolt assembly alignment documentation requirements.

Contract items for overhead sign truss foundation construction are:

Reinforcing Steel, Epoxy Coated - pounds
(Stage 1 activity)

Structural Concrete (Miscellaneous) - cubic yards
(Stage 1 and Stage 2 activities)

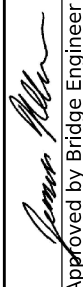

Excavation - cubic yards of class specified
(Stage 1 activity)

Special Backfill - cubic yards
(Stage 1 activity)

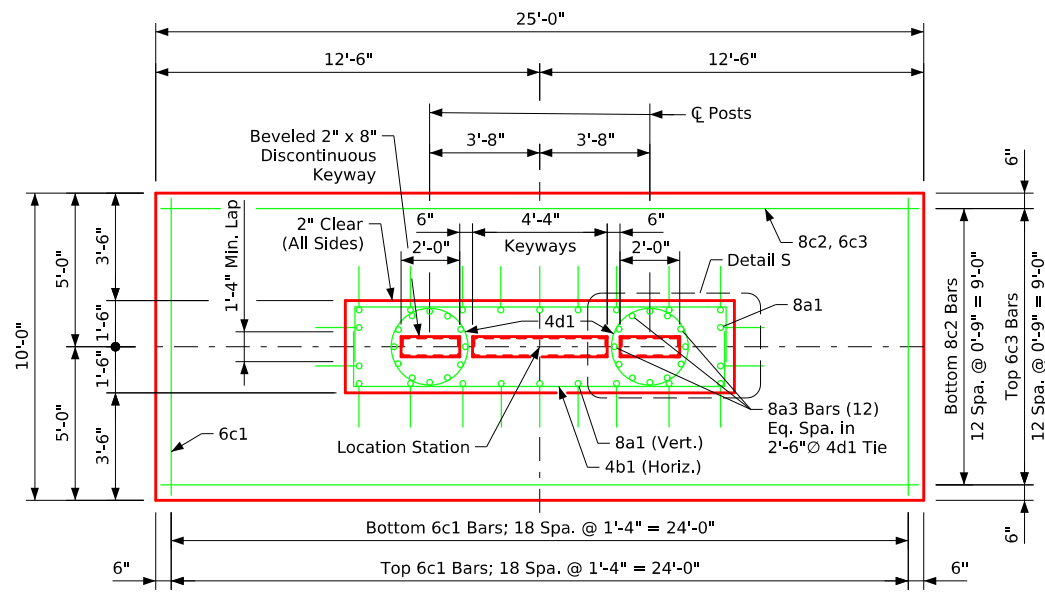
Anchor Bolt Assembly - Furnish (special bid item) - pounds
(Stage 2 activity)

Anchor Bolt Assembly - Install and Survey (special bid item) - each
(Stage 2 activity)

Work this sheet with Standard Sheets SOST-20-11 "Stage 1 Foundation Details" and SOST-21-11 "Stage 2 Foundation Details".

06-2025 Latest Revision Date Approved by Bridge Engineer 	 Standard Design	
	Steel Overhead Sign Truss September, 2011	
	Staged Foundation Construction Notes 50'-130' Spans	SOST-19-11

• Revised 06-2025; This sheet reissued, sheet format update.
 • steeloverheadsigntruss.dgn - SOST-20-11 - This sheet issued 03-2013. This sheet renamed from SOST-19-11 to SOST-20-11 on 02-2019.



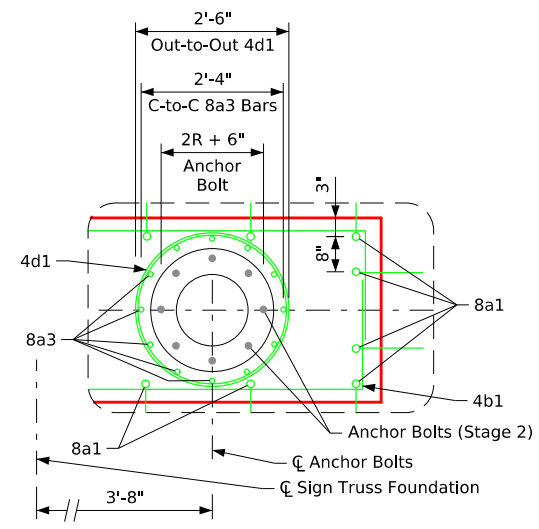
Plan

Concrete Placement Quantities

One Foundation - Stage 1

Item	C.Y.
Wall (Stage 1)	2.9
Footing	18.5
Total	21.4

	R	Bolt Circle Diameter
For 14"Ø Posts (50'-100' Spans)	7	1'-8"
For 16"Ø Posts (105'-130' Spans)	8	1'-10"



Detail S

Anchor Bolt and Anchor Reinforcing Placement
 Keyway not shown
 Anchor bolts shown for information only. Anchor bolt assemblies will be placed during Stage 2.
 See Standard Sheet SOST-21-11 for anchor bolt assembly details.

- ③ Additional length to bars 8a2 and 8a4 for $H_2 > 5'-0"$.
- ④ Two in each 1'-0" of H_2 .
- ⑤ Maintain uniform 1'-0" spacing for all values of H_2 , with remainder spacing at bottom of Stage 2 stem wall $2" \leq Y \leq 1'-0"$.
- ⑥ Bundle two 4d1 circular ties in top layer.

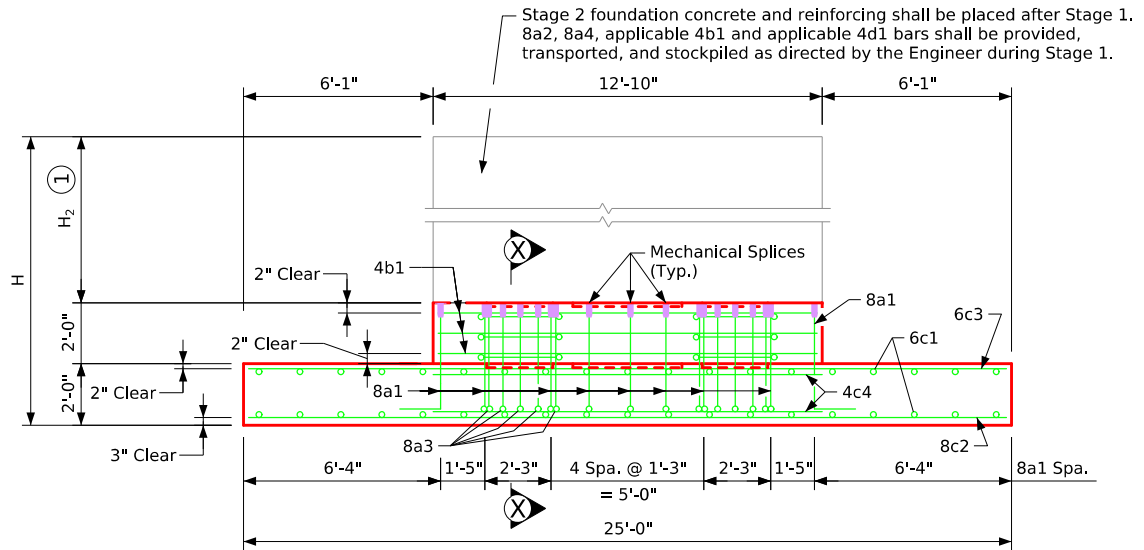
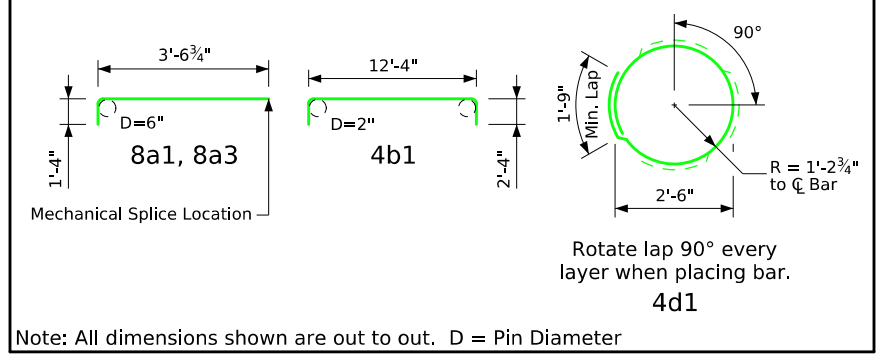
Reinforcing Bar List - Epoxy Coated

One Foundation

Bar	Shape	Tabulated Value For $H_2 = 6'-0"$ and $H = 10'-0"$				Each 1'-0" of H_2 and H		
		No.	Length	Weight	Spacing	No.	Length	Weight
8a1	⎓	22	4'-11"	289	See detail	---	---	---
8a2	⎓	22	5'-11"	348	See detail	22	1'-0" ③	59
8a3	⎓	24	4'-11"	315	See detail	---	---	---
8a4	⎓	24	5'-11"	379	See detail	24	1'-0" ③	64
4b1	⎓	20	17'-0"	227	1'-0" ⑤	2 ④	17'-0"	23
6c1	⎓	38	9'-6"	542	1'-4"	---	---	---
8c2	⎓	13	24'-6"	850	0'-9"	---	---	---
6c3	⎓	13	24'-6"	478	0'-9"	---	---	---
4c4	⎓	4	12'-8"	34	See detail	---	---	---
4d1	⊙	22 ⑥	9'-6"	140	1'-0" ⑤	2 ④	9'-6"	13
Total 3602 LBS.						Total 159 LBS.		

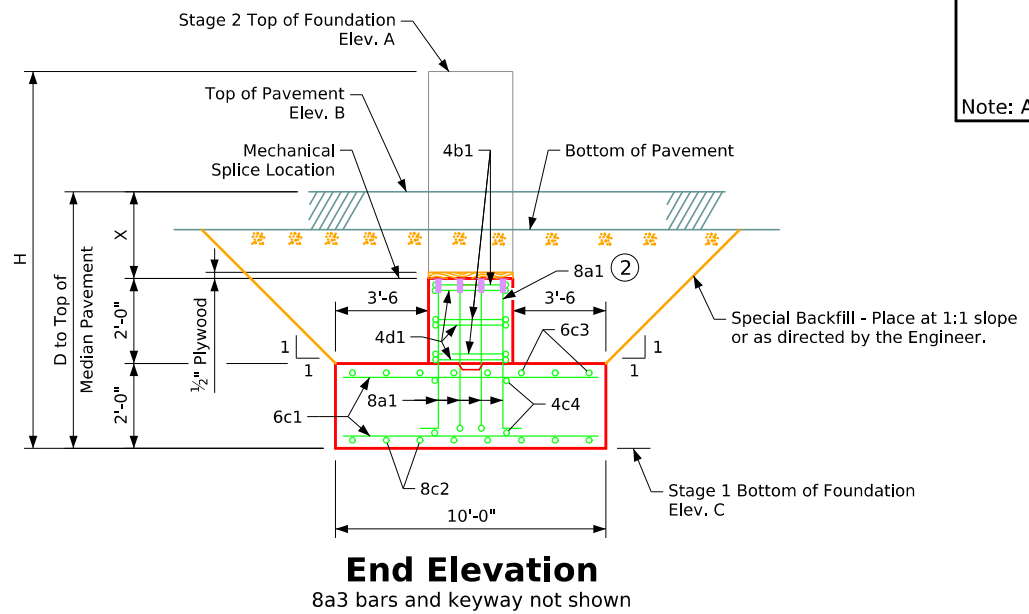
Bent Bar Details

(Shop bend all bars)



Side Elevation

① H_2 = height of Stage 2 stem wall. H_2 shall not exceed 8'-6" nor be less than 5'-0".



End Elevation

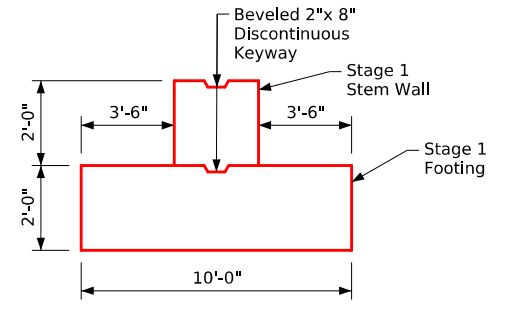
8a3 bars and keyway not shown

② The 8a1 bars shall be spliced to the 8a2 bars at the locations shown using mechanical splices. The 8a3 bars shall also be spliced to the 8a4 bars using mechanical splices. Mechanical splices shall be selected from Materials I.M. 451 Appendix E and be flush with the top of concrete at the end of Stage 1 construction. The top of the Stage 1 stem wall shall be covered with a 1/2" thick plywood sheet to keep concrete surface and mechanical splices clean.

Elev. A = Stage 2 top of foundation elevation
 Elev. B = Top of pavement elevation
 Elev. C = Stage 1 bottom of foundation elevation
 Elev. C should be set so that [Elev. A - Elev. C] is a multiple of 1'-0".

$D = [\text{Elev. B} - \text{Elev. C}]$
 X shall not be less than 2'-0".

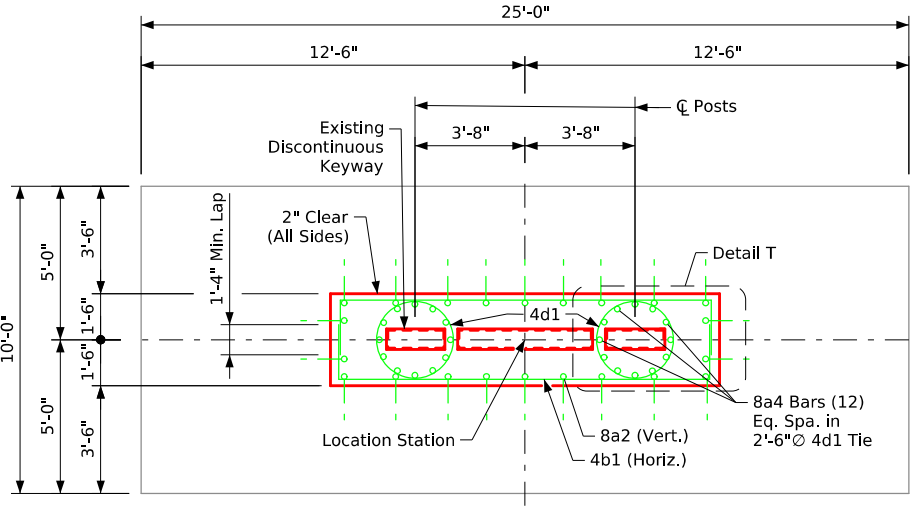
Elev. A, Elev. B, and Elev. C shall be as shown elsewhere in these plans.



Section X-X
 Reinforcing not shown

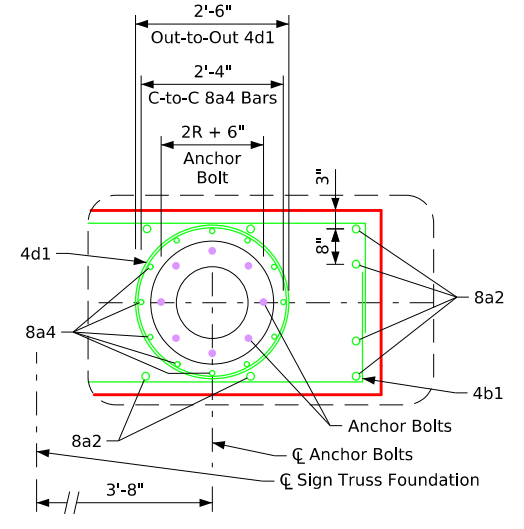
Work this sheet with Standard Sheets SOST-19-11 "Staged Foundation Construction Notes" and SOST-21-11 "Stage 2 Foundation Details".

06-2025 Latest Revision Date Approved by Bridge Engineer 	 Standard Design	
	Steel Overhead Sign Truss September, 2011	
	Stage 1 Foundation Details 50'-130' Spans	SOST-20-11

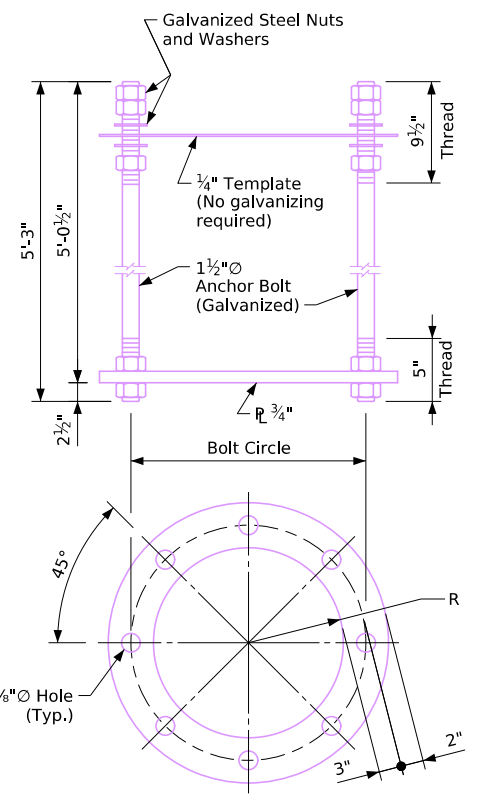


Plan

8a2, 8a4, applicable 4b1 and applicable 4d1 bars are to be provided, transported, and stockpiled as directed by the Engineer during Stage 1. Obtain, transport and place 8a2, 8a4, applicable 4b1 and applicable 4d1 bars as directed by the Engineer during Stage 2.



Detail T
Anchor Bolt and Anchor Reinforcing Placement
Keyway not shown



Anchor Bolt Assembly
Weight of One Anchor Bolt Assembly
(Includes template, excludes galvanizing weight)

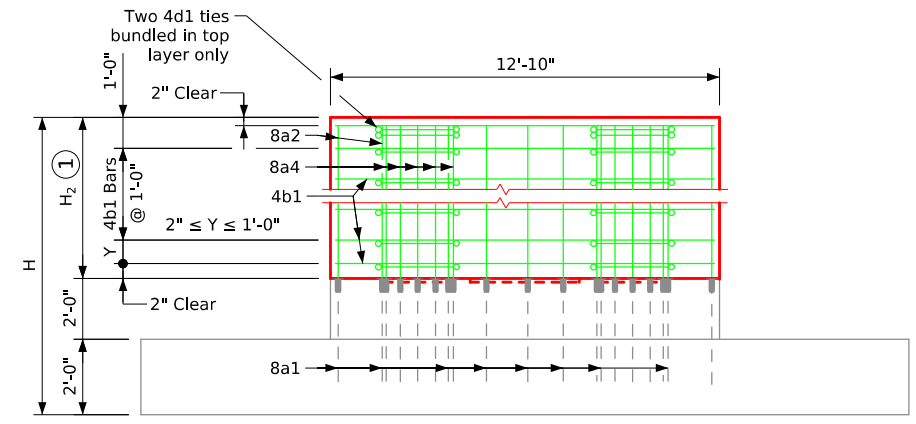
50'-100' Spans: 388 lbs.
105'-130' Spans: 397 lbs.

General Notes:
Structural concrete, Class C, shall be used for the foundation.
Two anchor bolt assemblies including anchor plates, templates, nuts (5 per bolt) and washers (2 per bolt) are required per foundation.
All anchor bolt materials and galvanizing shall be in accordance with Article 4187.01, C, 3 of the Standard Specifications.

All mechanical splice assemblies, 8a2, 8a4, 4b1 and 4d1 bars shall have been furnished in Stage 1. A total of 46 mechanical splices shall have been embedded in the top of the Stage 1 foundation stem wall. Obtain, transport and place 8a2, 8a4, applicable 4b1 and applicable 4d1 bars as directed by the Engineer in Stage 2.
A rodent guard shall be placed around the base plate as detailed hereon.
See Standard Sheet SOST-19-11 for clarification of Stage 2 foundation construction activities and price bid for contract items.

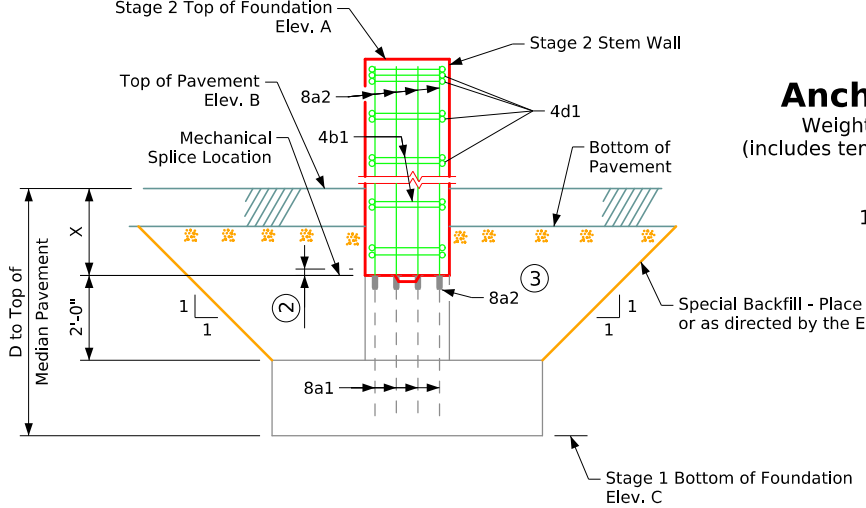
	R	Bolt Circle Diameter
For 14" Posts (50'-100' Spans)	7	1'-8"
For 16" Posts (105'-130' Spans)	8	1'-10"

Concrete Placement Quantities	
One Foundation - Stage 2	
Item	C.Y.
Wall (Stage 2)	(38.5 x H ₂)/27, H ₂ in ft.
Footing	---
Total	(38.5 x H₂)/27, H₂ in ft.



Side Elevation

① H₂ = shall not exceed 8'-6" nor be less than 5'-0".



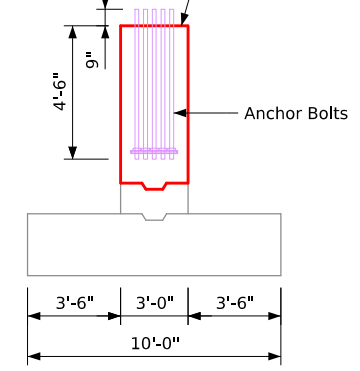
End Elevation

8a3 and 8a4 bars and keyway not shown
② 1/2" thick plywood removed for construction of Stage 2.

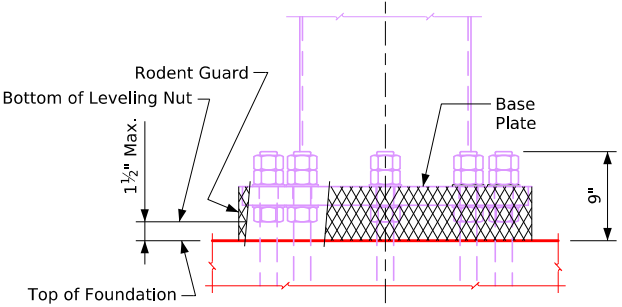
③ The 8a2 and 8a4 bars shall be spliced at the locations shown using mechanical splices assemblies. Mechanical splices shall be selected during Stage 1 from Materials I.M. 451 Appendix E to enable the splice to be flush with the top of the Stage 1 stem wall. The top of the Stage 1 foundation stem wall will be temporarily covered with a 1/2" thick plywood sheet to keep the concrete surface and mechanical splices clean.

Elev. A = Stage 2 top of foundation elevation
Elev. B = Top of pavement elevation
Elev. C = Stage 1 bottom of foundation elevation
Elev. C should be set so that [Elev. A - Elev. C] is a multiple of 1'-0".
D = [Elev. B - Elev. C]
X shall not be less than 2'-0".
Y shall not be less than 2" nor greater than 1'-0".
Elev. A, Elev. B, and Elev. C shall be as shown elsewhere in these plans.

Top-of-wall elevation is to be set at same elevation as high point on roadway or as directed by the Engineer.



End Elevation
Anchor Bolts



Post Base Detail
Showing the rodent guard

The rodent guard shall be placed around the base plate.
The rodent guard is stainless steel standard grade wire cloth, 1/4" maximum opening with a minimum wire diameter of AWG No. 16 with a minimum 2" lap.
Secure wire cloth to base plate after erection with 3/4" stainless steel banding. The rodent guard shall not extend above the top of the base plate.

Work this sheet with Standard Sheets SOST-19-11 "Staged Foundation Construction Notes" and SOST-20-11 "Stage 1 Foundation Details".

06-2025 Latest Revision Date	Approved by Bridge Engineer	IOWA DOT	
		Standard Design	
		Steel Overhead Sign Truss	
		September, 2011	
		Stage 2 Foundation Details 50'-130' Spans	SOST-21-11

Revised 06-2025; This sheet reissued, sheet format update. steeloverheadsigntruss.dgn - SOST-21-11 - This sheet issued 03-2013. This sheet renamed from SOST-20-11 to SOST-21-11 on 02-2019.