INDEX FOR STEEL OVERHEAD SIGN TRUSS STANDARDS
SOST-01-11

ANCHOR-BOLT NUT TIGHTENING PROCEDURE:
1) Each level of tightening shall be done when the wind speed is less than 15 mph. All
   tightening of the nuts shall be done in the presence of the inspector.
2) The tightening procedure is started by turning the top nut with full effort of one
   person on a wrench with a length equal to 21 inches.
   a) Ensure the anchorage bolt is snug-tight.
   b) Table 4 details the steps for tightening the top nut.
3) 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
   the centers of rear anchor bolt groups shall not differ by more than 1 inch.
4) The anchor bolts shall project above top of foundation within 1/8 inch of the
   plan location in the horizontal direction parallel with the truss.
5) Steel overhead sign truss shall not be used on bridges without the approval of the
   bridges and structures bureau.

GALVANIZED STEEL NOTES:
- All steel chords, diaphragms and struts shall comply with ASTM A36 grade B.
- Regular nuts and jam nuts shall be used for all anchor bolts. Regular nuts may be
  substituted for jam nuts. Lock washers shall not be substituted for jam nuts.

U-BOLT NOTES:
- The required length of Anchor Bolt for U-Bolt shall be specified in each detail.

ANCHOR BOLT NOTES:
- All anchor bolt materials and galvanized steel shall be in accordance with Article
  Article 8.0.3.0 of the standard specifications. Regular nuts and jam nuts shall use the
  same alloy properties as those of the anchor bolts. Jam nuts shall be specified for
  anchor bolts. Lock washers shall not be substituted for jam nuts.

Specifications:
- Design stresses for materials are in accordance with ASTM standard specifications for
  structural supports for highway sign, lamp, and traffic signals, series of 2014 with
  design stresses for materials for highway signs, lamp, and traffic signals, series of 2014.
- The design stresses for materials are in accordance with ASTM standard specifications for
  structural supports for highway signs, lamp, and traffic signals, series of 2014 with
  design stresses for materials for highway signs, lamp, and traffic signals, series of 2014.

General Notes:
- All steel overhead truss bridge sign supports are designed for 30 to 60 mph winds on
  support members. 30 mph on sign and 40 mph on dynamic winds. 60 mph on sign & 40
  mph on dynamic winds. The maximum height of 10 feet shall be limited to a height of 20 feet.
- Great care shall be taken to prevent any damage to the truss supports.

Steel Overhead Sign Truss Standards
September 2011
INDEX AND NOTES
SOST-01-11
50'-130' SPANS
ISOMETRIC VIEW
TYPICAL TRUSS UNIT
INTERIOR DIAGONALS SHOWN IN RED FOR CLARITY

INTERIOR DIAGONALS SHOWN IN RED FOR CLARITY

SIGN AREA FOR
STEEL OVERHEAD
SIGN TRUSS
(CENTERED)

ALLOWABLE SIGN AREA

SIGN OFFSET MAY BE
WIDER; AS NEEDED.

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.

INTERIOR DIAGONALS SHOWN IN RED FOR CLARITY

PART TOP VIEW
INTERIOR DIAGONALS MADE SAME ORIENTATION AT CHORD SPLICE LOCATIONS

PART ELEVATION VIEWS
GUARD PLATES NOT SHOWN

INTERIOR DIAGONALS SHOWN IN RED FOR CLARITY

CAMBER DIAGRAM

STEEL OVERHEAD SIGN TRUSS
SEPTEMBER, 2011

STEEL OVERHEAD SIGN TRUSS

SIGN OFFSET MAY BE
WIDER; AS NEEDED.

NO CHORDS OR DIAGONALS TO DETAILS A, B, AND C.

CAMBER DIAGRAM

STEEL OVERHEAD SIGN TRUSS

SIGN OFFSET MAY BE
WIDER; AS NEEDED.

NO CHORDS OR DIAGONALS TO DETAILS A, B, AND C.

NO CHORDS OR DIAGONALS TO DETAILS A, B, AND C.
ALLOWABLE SIGN AREA

<table>
<thead>
<tr>
<th>SPAN</th>
<th>MAX. SIGN AREA</th>
</tr>
</thead>
<tbody>
<tr>
<td>120'</td>
<td>665 sq ft</td>
</tr>
<tr>
<td>125'</td>
<td>665 sq ft</td>
</tr>
<tr>
<td>130'</td>
<td>665 sq ft</td>
</tr>
</tbody>
</table>

ISOMETRIC VIEW
TYPICAL TRUSS UNIT
INTERIOR DIAGONALS SHOWN IN RED FOR CLARITY.

ALLOWABLE SIGN AREA

<table>
<thead>
<tr>
<th>OFFSET</th>
<th>SPAN</th>
<th>MAX. SIGN AREA</th>
</tr>
</thead>
<tbody>
<tr>
<td>L</td>
<td>120'</td>
<td>665 sq ft</td>
</tr>
<tr>
<td>H</td>
<td>120'</td>
<td>665 sq ft</td>
</tr>
<tr>
<td>E</td>
<td>120'</td>
<td>665 sq ft</td>
</tr>
<tr>
<td>L</td>
<td>125'</td>
<td>665 sq ft</td>
</tr>
<tr>
<td>H</td>
<td>125'</td>
<td>665 sq ft</td>
</tr>
<tr>
<td>E</td>
<td>125'</td>
<td>665 sq ft</td>
</tr>
<tr>
<td>L</td>
<td>130'</td>
<td>665 sq ft</td>
</tr>
<tr>
<td>H</td>
<td>130'</td>
<td>665 sq ft</td>
</tr>
<tr>
<td>E</td>
<td>130'</td>
<td>665 sq ft</td>
</tr>
</tbody>
</table>

SIGN AREA FOR STEEL OVERHEAD SIGN TRUSS CENTERED

CAMBER DIAGRAM

PART ELEVATION VIEWS
GUSSET PLATES NOT SHOWN

PART TOP VIEW
INTERIOR DIAGONALS HAVE SAME ORIENTATION AT CHORD SPLICE LOCATIONS

STANDARD DESIGN
STEEL OVERHEAD SIGN TRUSS
SEPTEMBER, 2011

ELEVATION VIEWS FOR TRUSS SPANS
SOST-05-11
END VIEW OF TRUSS SUPPORTS

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

Hand holes shall be located only in posts that are closest to dynamic message sign.

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.

Threed steel pipe inlet couplings are to be placed opposite to upper hand hole in post. Couplings shall be fitted with standard plugs until conduit is installed.

All conduit shall be schedule 40 plastic.

For DMS trusses only, hand holes, conduit, and pipe inlet couplings are to be included on DMS trusses designs only. See standard sheet SOST-18-11 for foundation 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.

Threed steel pipe inlet couplings are to be placed opposite to upper hand hole in post. Couplings shall be fitted with standard plugs until conduit is installed.

All conduit shall be schedule 40 plastic.

For DMS trusses only, hand holes, conduit, and pipe inlet couplings are to be included on DMS trusses designs only. See standard sheet SOST-18-11 for foundation 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.

Threed steel pipe inlet couplings are to be placed opposite to upper hand hole in post. Couplings shall be fitted with standard plugs until conduit is installed.

All conduit shall be schedule 40 plastic.
DETAIL A

DETAIL B

DETAIL C

DETAIL D

DETAIL E

SECTION A-A

TRUSS PIPE DETAILS

<table>
<thead>
<tr>
<th>SPAN</th>
<th>1&quot; FILLER DIAGONALS</th>
<th>1&quot; TRUSS CHORDS</th>
</tr>
</thead>
<tbody>
<tr>
<td>50'-100'</td>
<td>3/4&quot; STANDARD STEEL PIPE</td>
<td>3/4&quot; EXTRA-STRONG STEEL PIPE</td>
</tr>
<tr>
<td>105'-130'</td>
<td>2&quot; STANDARD STEEL PIPE</td>
<td>2&quot; EXTRA-STRONG STEEL PIPE</td>
</tr>
</tbody>
</table>

SLOTTED PIPE ENDS

TYPICAL FOR STRUTS AND DIAGONALS

NOTE: IDENTIFIER ASTERISKS AND TRIANGLES WITH ENCIRCLED NUMBERS TO IMPROVE READABILITY. UPDATED BRIDGE ENGINEER SIGNATURE.

REVISED 03-2019: MODIFIED DETAIL E NOTE TO CLARIFY THAT 1"½ HOLE IS...SET PLATE. CLARIFIED ACCEPTABLE HARDNESS OF NEOPRENE PAD. REPLACED CIRCULAR HOLE.

DISTANCE BETWEEN END OF WEB MEMBER AND CHORD. LENGTH ENDED DIMENSIONAL EXTENSION LINE IS TANGENT TO DETAIL D-ENDS DETAIL TO CLARIFY THAT DIMENSIONAL EXTENSION LINE IN DETAILS A AND B TO CLARIFY 2" DIMENSIONAL EXTENSION LINE IN DETAILS A AND B.

REVISED 04-2020: REPLACED DETAIL D IDENTIFIER ASTERISK WITH ENCIRCLED NUMBER IN DETAIL D-ENDS DETAIL TO CLARIFY THAT DIMENSIONAL EXTENSION LINE IS TANGENT TO DETAIL D-ENDS.

NOTE: IDENTIFIER ASTERISKS AND TRIANGLES WITH ENCIRCLED NUMBERS TO IMPROVE READABILITY. UPDATED BRIDGE ENGINEER SIGNATURE.

STEEL OVERHEAD SIGN TRUSS

SEPTEMBER, 2011

IOWA DOT

STANDARD DESIGN

GUSSET PLATE CONNECTIONS
50'-100' SPANS

SOST-08-11
**PART ELEVATION**

Looking in direction of traffic (min) not shown.

- MAX. SPACING
- MIN. SPACING

**PART PLAN**

- HANDRAIL IS TO BE USED FULL LENGTH OF RUNWAY
- MAX. SPACING
- MIN. SPACING

**VIEW K-K**

Showing min. and gate details.

- SIGN
- MESSAGE
- DYNAMIC

**DIMENSION TABLE**

<table>
<thead>
<tr>
<th>SPAN</th>
<th>PRESS SUPPORT POST</th>
</tr>
</thead>
<tbody>
<tr>
<td>50'-130'</td>
<td>W 14 x 0.500</td>
</tr>
<tr>
<td>100'-150'</td>
<td>W 16 x 0.500</td>
</tr>
</tbody>
</table>

**DETAIL J**

- CLIP ANGLE
- STEEL PIPE
- W6 x 20 (TYP.)

**SECTION G-G**

- CLIP ANGLE
- STEEL PIPE
- W6 x 20 (TYP.)

- CLIP ANGLE
- STEEL PIPE
- W6 x 20 (TYP.)

**SECTION H-H**

- CLIP ANGLE
- STEEL PIPE
- W6 x 20 (TYP.)

- CLIP ANGLE
- STEEL PIPE
- W6 x 20 (TYP.)

**SECTION J-J**

- CLIP ANGLE
- STEEL PIPE
- W6 x 20 (TYP.)

- CLIP ANGLE
- STEEL PIPE
- W6 x 20 (TYP.)

**NOTE**

- THE GALVANIZED STEEL BAR GRATING INCLUDING BEARING BAR, CROSS BARS and BANDING BARS shall comply with the requirements of ASTM A1011 TYPE 2.
- JAM NUT (AN A449 BOLT IS REQUIRED IF REGULAR NUT IS SUBSTITUTED FOR JAM NUT) ADJUST CLIP 30° GRATING ON BEAM.

**PERFORMANCE REQUIREMENT**

- THE GALVANIZED STEEL BAR GRATING INCLUDING BEARING BAR, CROSS BARS and BANDING BARS shall comply with the requirements of ASTM A1011 TYPE 2.

**LADDER**

- CLIP ANGLE
- STEEL PIPE
- W6 x 20 (TYP.)

- CLIP ANGLE
- STEEL PIPE
- W6 x 20 (TYP.)

- CLIP ANGLE
- STEEL PIPE
- W6 x 20 (TYP.)

- CLIP ANGLE
- STEEL PIPE
- W6 x 20 (TYP.)

**NOTE**

- J x CROSS BARS OR APPROVED EQUAL CROSS BARS ARE TO BE PRESSURE LOCKED OR WELDED TO BEARING BARS.

- J x CROSS BARS OR APPROVED EQUAL CROSS BARS ARE TO BE PRESSURE LOCKED OR WELDED TO BEARING BARS.

- J x CROSS BARS OR APPROVED EQUAL CROSS BARS ARE TO BE PRESSURE LOCKED OR WELDED TO BEARING BARS.

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**DIMENSION TABLE**

<table>
<thead>
<tr>
<th>SPAN</th>
<th>TRUSS CHORD</th>
<th>A</th>
<th>B</th>
<th>R</th>
<th>S</th>
</tr>
</thead>
<tbody>
<tr>
<td>50'-100'</td>
<td>6&quot; Extra-Strong Steel Pipe</td>
<td>7/8</td>
<td>8</td>
<td>11</td>
<td>11</td>
</tr>
<tr>
<td>105'-130'</td>
<td>6&quot; Extra-Strong Steel Pipe</td>
<td>3/4</td>
<td>7</td>
<td>12</td>
<td>12</td>
</tr>
</tbody>
</table>

See Standard Sheet SOST-13-11 for Location of Section L-L.
1. Hole for 1/2" fasteners to be a minimum 1" in diameter with a washer, nut, and jam nut. An 1/8" hole is recommended if 1/2" fastener is used.

2. Tighten nut to hinge plate to allow for free rotation of the hinge.

3. Cover plate.

GENERAL NOTES:

For foundations supporting trusses with dynamic message signs, place the 1"½ conduit and two 2½" conduits within the anchor bolt circle adjacent to the direction of the approaching traffic. Extend conduit ends a minimum of 1'-0 above foundation wall and 1'-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.

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.

See the following standard sheets for electrical access details in support posts for DMS truss design:

STANDARD SHEET SOST-07-11 FOR 16½" POSTS (105'-130' TRUSS SPANS)
STANDARD SHEET SOST-06-11 FOR 14½" POSTS (50'-100' TRUSS SPANS)
STANDARD SHEET SOST-18-11 FOR 10½" POSTS (40'-65' TRUSS SPANS)

This sheet for DMS trusses only

Electrical conduit is required in foundations supporting trusses with dynamic message signs.

See the following standard sheets for electrical access details in support posts for DMS truss design:

STANDARD SHEET SOST-07-11 FOR 16½" POSTS (105'-130' TRUSS SPANS)
STANDARD SHEET SOST-06-11 FOR 14½" POSTS (50'-100' TRUSS SPANS)
STANDARD SHEET SOST-18-11 FOR 10½" POSTS (40'-65' TRUSS SPANS)
STAGED FOUNDATION CONSTRUCTION NOTES:

CONSTRUCTION NOTES:

STAGED FOUNDATION CONSTRUCTION NOTES:

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STAGED FOUNDATION CONSTRUCTION NOTES:

STAGED FOUNDATION CONSTRUCTION NOTES:
GENERAL NOTES:

STRUCTURAL CONCRETE, CLASS G, SHALL BE USED FOR THE FOUNDATION.
TWO ANCHOR BOLT ASSEMBLIES INCLUDING ANCHOR PLATES, TEMPLATES, NUTS, BOLTS AND WASHERS AS DIRECTED BY THE ENGINEER DURING STAGE 1.

ALL ANCHOR BOLT MATERIALS AND GALVANIZING SHALL BE IN ACCORDANCE WITH ARTICLE 4187.01, C, 3 OF THE STANDARD SPECIFICATIONS.

ALL MECHANICAL SPLICE ASSEMBLIES, BOLTS, BARS AND 414 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.

ELEVATION STEM WALL WILL BE TEMPORARILY COVERED WITH A 5" THICK PLYWOOD 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 5" THICK PLYWOOD FLUSH WITH THE TOP OF THE STAGE 1 STEM WALL.

MECHANICAL SPLICE ASSEMBLIES. MECHANICAL SPLICES SHALL BE SELECTED DURING THE BIDDING PROCESS.

8A2 AND 8A4 BARS SHALL BE SPLICED AT THE LOCATIONS SHOWN USING MECHANICAL SPLICE ASSEMBLIES. MECHANICAL SPLICE ASSEMBLIES SHALL BE SELECTED DURING STAGE 1 FROM MATERIALS LISTED IN APPENDIX E TO ENABLE THE SPLICE TO BE EMBEDDED IN THE TOP OF THE STAGE 1 FOUNDATION STEM WALL. THE TOP OF THE STAGE 1 FOUNDATION STEM WALL WILL BE TEMPORARILY COVERED WITH A 5" THICK PLYWOOD SHEET TO KEEP THE CONCRETE SURFACE AND MECHANICAL SPLICE CLEAN.

CONCRETE PLACEMENT QUANTITIES

<table>
<thead>
<tr>
<th>ITEM</th>
<th>QUANTITIES</th>
</tr>
</thead>
<tbody>
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</table>

CONTRACT APPOINTED DATE: 30-JUNE-2023

NOTES TO WORK SHEET: STANDARD SHEETS SOST-20-11 "STAGED FOUNDATION CONSTRUCTION ACTIVITIES" AND ITEM 3 ON STORAGE ITEMS.

STAGE 2 FOUNDATION DETAILS

STANDARD DESIGN

STEEL OVERHEAD SIGN TRUSS

OCTOBER 2021

IOWA DOT

SOST-21-11