ROADSIDE DYNAMIC MESSAGE SIGN SUPPORT STANDARDS
INDEX FOR ROADSIDE DMS SUPPORT STANDARDS

RDSM-01-13 INDEX AND NOTES FOR DMS SIGN SUPPORT
RDSM-01-14 SUPPORT FRAME DETAILS
RDSM-01-15 WORK PLATFORM DETAILS
RDSM-01-16 SUPPORT POST BASE DETAILS
RDSM-01-17 FOUNDATION DETAILS
RDSM-01-18 50 FOR ROTATIONAL VIEW

ANCHOR-BOLT NUT TIGHTENING PROCEDURE:
1. This work shall be performed only on days with a wind less than 15 MPH.
2. All tightening of the nuts is to be done in the presence of the contractor, once the tightening procedure is started it must be completed on all of the base plate nuts without pause or delay.
3. Properly sized washers designed for tightening nuts and/or bolts shall be used to avoid rounding or other change to the nuts. Adjustable end washers or pipe washers may not be used.
4. Base plate, anchor bolts and nuts are to be free of any dirt or debris.
5. Apply stick wax or bees wax to the threads and bearing surfaces of the anchor bolts, nuts and washers.
6. Tighten top nuts so they fully contact the base plate, tighten leveling nuts to snug condition, once tightness is achieved, as the full effort of one person on a wrench at a length equal to 24 inches, apply force as close to the mouth as possible. Pull tight by looping back and using entire body weight on the end of the wrench. Never tighten a nut using a wrench of less than a quarter of the separate passes of tightening. Repeat 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.
7. Tighten top nuts to snug tight as described for the leveling nuts.
8. Matchmark 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 string or recording equipment. Further tighten the top nuts in each pass 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 tightened. Do not reverse the leveling nuts during the nut tightening anchor bolt size first pass second pass total rotation
1/2" 1/2 turn 1/2 turn 1/2 turn
5/8" 1/2 turn 1/2 turn 1/2 turn
Lubricate, place and tighten the jam nuts to snug tight.

SPECIFICATIONS:
Construction Against Department of Transportation Standard Specifications for Highway and Bridge Construction, Series of 2015.
Applicable Federal Supplemental Specifications, Developmental Specifications and Special Provisions shall apply to construction work on this project.

DESIGN STRESSES:
Designing steel in accordance with AASHTO, Standard Specifications for Highway Bridges, Series of 2012, Section B, Article 6.2, Article 6.3.

GENERAL NOTES:
All roadside dynamic message sign (DMS) supports are designed for 40 lb/ft² wind pressure on members and signs panel.
Shop drawings shall be submitted to the contractor in accordance with Article 10.2 of the Standard Specifications.
Clear distance from face of concrete to the nearest reinforcing bar shall be 2" unless otherwise shown.
Unless otherwise noted on the plans, keyway dimensions shown on the plans are based on normal dimensions. In addition, the steel used on the keyway shall be limited to a maximum of 10 degrees from vertical.
Roadside DMS supports shall not be used on bridges.
The foundation shall be specified prior to erecting the DMS support frame.
The foundation design is based on an allowable soil bearing of 0.75 ton/ft² for locations within 50 feet of the edge of pavement.
For locations more than 30 feet from the edge of pavement, the designer shall inspect the soil in conjunction with Iowa DOT design section to make sure the soil is meeting the 0.75 ton/ft² allowable soil bearing capacity.

STRUCTURAL ALIGNMENT/TOLERANCE NOTES:
The precise installation and alignment of all components of the roadside dynamic message sign support 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:
1. The elevation at the top of the foundation shall be within 1 inch of plan elevation.
2. Anchor bolt groups shall be located accurately by template or other positive method of alignment. Anchor bolt groups shall not be replaced after the leveling is completed.
3. Anchor bolts shall be placed within 1 inch per foot of vertical.
4. Anchor bolts shall project above foundation within 1 inch, plus or minus 1/8 inch.
5. U-bolt tightening shall be performed by subcontractor method.
6. U-bolt tightening shall be performed by subcontractor method.
7. U-bolt tightening shall be performed by subcontractor method.

U-BOLT NOTES:
U-bolts may be made of galvanized steel or stainless steel and shall be in accordance with Article 10.2 of the Standard Specifications. Washers, regular nuts and jam nuts shall have 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.

INDEX AND NOTES
RDSM-01-13
ANCHOR BOLT NOTES:

All anchor bolt material and galvanizing shall be in accordance with Article 4187.01, C, 3 of the Standard Specifications. The anchor bolt assembly shall be properly aligned at the center of pedestal and securely wired in place before concrete is placed. Bending or bending of anchor bolts shall not be allowed. The price bid for contract items shall include all labor and materials necessary to construct roadside dynamic message sign support foundation as detailed herein, the cost of furnishing and installing rebar shall be included in the price bid for structural concrete and epoxy-coated and no separate payment will be made. The cost of furnishing anchor bolt assembly shall be included in the price bid for anchor bolt assembly—installer. Note that this is a special bid item. The cost of accurately installing and securing the anchor bolt assembly shall be included in the price bid for anchor bolt assembly—install and survey. Note that this is a special bid item. All structural alignment/measurements notes on exhibit should be covered in the price bid for anchor bolt assembly—alignment documentation requirements. Contract items for roadside dynamic message sign support foundation construction area:

- Steel
- Epoxy-coated reinforcing bar
- Concrete
- Excavation
- Structural concrete miscellaneous—clinch yards

Estimated foundation quantities:

<table>
<thead>
<tr>
<th>Type</th>
<th>Unit</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Structural concrete</td>
<td>C.Y.</td>
<td>1120</td>
</tr>
<tr>
<td>Epoxy-coated reinforcing</td>
<td>LBS.</td>
<td>1120</td>
</tr>
</tbody>
</table>

Concrete placement quantities:

<table>
<thead>
<tr>
<th>Type</th>
<th>Unit</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pedestal</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Post</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total (LBS.)</td>
<td></td>
<td>1120</td>
</tr>
</tbody>
</table>

Foundation details:

- Iowa DOT
- Standard Design
- Roadside Dynamic Message Sign (DMS) Support
- April 2013
- RDMS-05-13
THIS IS A 3D FILE THAT CAN BE VIEWED ELECTRONICALLY. YOU WILL BE ABLE TO ZOOM IN OR OUT, PAN, ROTATE, ETC.

THIS STRUCTURE SHALL BE CONSTRUCTED FROM DIMENSIONS SHOWN ON THE PREVIOUS STANDARD SHEETS. THIS SHEET IS INTENDED TO CLARIFY THE DESIGN DETAILS AS AN AID IN FABRICATION AND ERECTION OF THE STRUCTURE. CLICK ON THE DEFAULT VIEW ICON (THE HOUSE ICON 🏡) IN ADOBE ACROBAT READER TO RETURN TO THE ORIGINAL VIEW.