MICHIGAN
DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION
FOR
DYNAMIC MESSAGE SIGN SUPPORT STRUCTURE

ITS:EG 1 of 3 APPR:MJF:POJ:05-28-20
FHWA:APPR:06-04-20

a. Description. This work consists of fabricating, furnishing, and installing a dynamic message sign (DMS) support structure. Perform all work in accordance with the MDOT DMS Sign Support special detail plan sheets, the standard specifications (substituting a DMS sign type for any dynamic message sign reference), the contract, and as specified herein.

b. Materials.

1. Provide stainless steel bolts (for connecting aluminum angles on DMS cabinet to DMS structure) meeting the requirements of *ASTM A320/A320M, Grade B8M, Class 1*.

2. Provide high strength bolts, nuts, and washers in accordance with subsection 906.07 of the Standard Specifications for Construction.

3. Provide steel hollow structural shape for column and chord meeting the requirements of *API 5L, Grade X52*.

4. Provide structural steel plate and rolled shape meeting the requirements of *AASHTO M270M/M270, Grade 36* or *ASTM A36/A36M*.

5. Provide a galvanized (*AASHTO M111M/M111*) steel self-closing safety gate (Fabenco Inc. Model R70-36 or approved equal) mounted to handrail per the manufacturer's direction.

6. Provide conduit, grounding, and risers for electrical and lighting meeting the requirements of section 918 of the Standard Specifications for Construction. Other required material must meet local utility company specifications and the *NEC*.

7. Provide a ladder system equipped with a safety rail system approved by the Engineer.

c. Fabrication.

1. Certifications. Fabricator must possess a valid *American Institute of Steel Construction (AISC) - Bridge Component QMS Certification (CPT)* and *Sophisticated Paint Endorsement (SPE)* if painting steel surface areas greater than 500 square feet. The Engineer will accept *Society of Protective Coatings (SSPC) QP3 - Standard Procedure for Evaluating the Qualifications of Shop Application Firms*.

2. Welding. Fabricate and weld in accordance with section 707 of the Standard Specifications for Construction and the *American Welding Society (AWS) D1.1*, *Structural Welding Code - Steel* (as modified by 20SP-707A - Structural Steel and Aluminum Construction), hereafter called *AWS D1.1*, except as modified herein.

All welds must be 100 percent visually test (VT) inspected by an *AWS* Certified Welding Inspector (CWI). All fillet welds (except end cap and column cap welds) must be 25 percent magnetic particle test (MT) inspected by a technician qualified in accordance with *American Society of Nondestructive Testing (ASNT) Level II*. All complete joint penetration (CJP) welds must be 100 percent ultrasonic test (UT) inspected by a technician qualified in accordance with *ASNT Level II*.

Weld the column and chord connection flanges following a shrinkage and distortion control plan that results in full flange contact in the relaxed position prior to snugging the high strength bolts. Do not torque flange bolts to close the flange connections that do not make full contact.

Base plate warpage must not exceed 1/16 inch per foot.

3. Shop Drawings. Submit shop drawings in portable document format (PDF) file in accordance with subsection 104.02 of the Standard Specifications for Construction.

4. Coatings. Hot-dip galvanize structural steel in accordance with subsection 707.03.D.20 of the Standard Specifications for Construction except, steel 1/2 inch or thinner is not required to be blast cleaned unless recommended by the galvanizer in order to meet *AASHTO M111M/M111*. Hot-dip galvanize all carbon steel fasteners in accordance with *AASHTO M232M/M232*. Repair damage to hot-dip galvanizing in accordance with subsection 716.03.E of the Standard Specifications for Construction.

d. Construction. Install the DMS structure in accordance with sections 707 and 810 of the Standard Specifications for Construction.

1. Ensure all site work is complete and power service installed and operational prior to the site delivery of the DMS structure.

2. Tighten all high strength bolts by the turn of nut method per subsection 707.03.E.6.d of the Standard Specifications for Construction.

3. Install signs in compliance with the codes and standards noted in the MDOT DMS Sign Support Plan and Details Standard, and the *AASHTO Standard Specifications for Highway Signs, Luminaires, and Traffic Signals*.

4. Do not lift the truss by the web members, column caps, or end caps. Do not lift walk platform by handrails or posts.

5. Adjust stop bolts on safety-gate to assure proper closing.

6. Grounding of structure includes electrically bonding the foundation reinforcing steel to the anchor bolts.

7. Remove galvanizing from surface of chord where bonding will take place. After galvanizing is removed, apply conductive grease compound to surface. Attach bonding clamp to chord and remove excess conductive grease compound from surface. Repair exposed areas of the chord with a paint that contains zinc dust in accordance with *ASTM A780/A780M Annex A2*.

e. Measurement and Payment. The completed work, as described, will be measured and paid for at the contract unit prices using the following pay item:

Pay Item	**Pay Unit**
Dynamic Message Sign, Support Structure	Each