### Reference Drawings

**Sheets: 1 of 4**

**Date:** Nov. 21, 2014

**General Notes:**

1. All dimensions are in U.S. customary units.
2. Use Class A concrete C30 – 50 psi in flexible pavements, footings and caissons.
3. Provide test boring at the locations of all caisson foundations, except as noted.
4. Provide test holes at the locations of all caisson foundations, except as noted.
5. Dimensions are based on normal temperature of 70 degrees F.
6. Spread footings or caissons may be required to achieve an adequate load distribution.
7. Provide all structural steel bolts, nuts & washers in accordance with PennDOT's specifications.
8. Provide materials and workmanship in accordance with the current version of the PennDOT PUB 408, Design Manual, and applicable PennDOT specifications.
9. Provide structural steel conforming to the following:
10. Provide anchor bolts with larger than specified diameter.
11. Provide test boring shall be provided at each foundation location.

**Construction General Notes:**

1. Materials and workmanship:
   - Provide materials and workmanship in accordance with the current version of the PennDOT PUB 408, Design Manual, and applicable PennDOT specifications.
   - Provide structural steel conforming to the following:

**Design Criteria for PennDOT DMS Structures**

<table>
<thead>
<tr>
<th>Structure</th>
<th>Qty.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>DMS:</td>
<td>1</td>
<td>Dynamic Message Sign</td>
</tr>
<tr>
<td>ACI:</td>
<td>1</td>
<td>American Concrete Institute</td>
</tr>
<tr>
<td>U.N.O.:</td>
<td>1</td>
<td>Unless Noted Otherwise</td>
</tr>
</tbody>
</table>

**Legend:**

- COMMONWEALTH OF PENNSYLVANIA DEPARTMENT OF TRANSPORTATION STANDARD DYNAMIC MESSAGE SIGNS TRUSS SIGN STRUCTURES DESIGN CRITERIA AND GENERAL NOTES

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**Notes:**

- All welds shown are welded and labeled.
- A Fatigue Importance Factor of II may be used for DMS support structures located on or below this elevation.
- Fatigue Requirements (Fatigue Category I) Section 11
- Maximum Design Lateral Displacement 0.5"
NOTES TO DESIGNER

1. PROVIDE CONTRACT DRAWINGS IN ACCORDANCE WITH PENNSYLVANIA DESIGN MANUAL, PART 4, AND THESE STANDARDS.
2. THE FOLLOWING INFORMATION MUST BE SHOWN ON THE CONTRACT DRAWINGS (IF APPLICABLE):
   - LATITUDE AND LONGITUDE OR STATION AND OFFSET OF THE CENTER OF BOTH FOUNDATIONS
   - CMS HEIGHT AND WIDTH
   - CMS AREA
   - CMS WEIGHT
   - CMS IDENTIFICATION
   - CMS HEIGHT OR CMS
   - ACCESS CONFIGURATION (FRONT ACCESS CATALOG OR WALL-TO)
   - IF THE STRUCTURE IS TO SUPPORT A BACK TO BACK MOUNT
   - TOP OF PEDESTAL ELEVATION(S)
   - BOTTOM OF PEDESTAL ELEVATION(S)
   - MINIMUM VERTICAL CLEARANCE(S) PROJECTED TO EDGE OF PAVEMENT
   - PLATFORM LOCATIONS ON CONTRACT DRAWINGS BASED ON SITE SPECIFIC REQUIREMENTS. MAINTAIN PLATFORMS ARE LOCATED ON ONE END ONLY AT EACH CMS. IDENTIFY CATWALK AND WALK-IN ACCESS CONFIGURATION (FRONT ACCESS CATWALK OR WALK-IN)
   - DESIGN WEIGHT OF CMS
   - DESIGN ECCENTRICITY
   - DESIGN HEIGHT
   - DMS AREA
   - DMS HEIGHT AND LENGTH
   - LATITUDE AND LONGITUDE OR STATION AND OFFSET OR THE CENTER OF BOTH FOUNDATIONS
   - CMS HEIGHT AND WIDTH
   - CMS AREA
   - CMS WEIGHT
   - CMS IDENTIFICATION
   - CMS HEIGHT OR CMS
   - ACCESS CONFIGURATION (FRONT ACCESS CATALOG OR WALL-TO)
   - IF THE STRUCTURE IS TO SUPPORT A BACK TO BACK MOUNT
   - TOP OF PEDESTAL ELEVATION(S)
   - BOTTOM OF PEDESTAL ELEVATION(S)
   - MINIMUM VERTICAL CLEARANCE(S) PROJECTED TO EDGE OF PAVEMENT

3. IDENTIFY IF AN ENCLOSURE IS REQUIRED AND SPECIFY TYPE
4. PROVIDE A WORKSHOP PADDLE IS REQUIRED AND LOCATE
5. PROVIDE A SEPARATE CMS CABINET IS REQUIRED AND LOCATE
6. PROVIDE A LADDER IS REQUIRED AND LOCATE
7. IDENTIFY THE PRESENCE OF GUIDERAIL, BARRIER OR PLACEMENT OUTSIDE THE CLEAR ZONE
8. THE DESIGNER MUST DETAIL THE LIGHT DISTANCE FROM CMS TO MID-TO-YEAR OF GUIDERAIL POST OR BARRIER AND ENGINEER IT IS IN ACCORDANCE WITH BC-745M, SHEET 2 TABLE A
9. IDENTIFY IF A MAINTAINER PAD IS REQUIRED AND LOCATE
10. PROVIDE A TABLE OF QUANTITIES INCLUDING:
     - CMS INSERTS
     - CMS INSERTS TYPE
     - CMS INSERTS SIZE
     - CMS INSERTS MATERIAL
     - CMS INSERTS FABRICATOR

NOTES TO FABRICATOR

1. PROVIDE SHOP DRAWINGS IN ACCORDANCE WITH PUBLICATION 408, SECTION 105.02(D) AND CONTRACT SPECIAL PROVISIONS.
2. THE FOLLOWING INFORMATION MUST BE SHOWN ON THE SHOP DRAWINGS:
   - MATERIALS AND SPECIFICATIONS
   - INSTALLATION NOTES
   - INSTALLATION NOTES
   - PROVIDE A TABLE OF QUANTITIES INCLUDING:
     - CMS WEIGHT
     - CMS IDENTIFICATION
     - CMS HEIGHT OR CMS
     - ACCESS CONFIGURATION (FRONT ACCESS CATALOG OR WALL-TO)
     - CMS HEIGHT AND WIDTH
     - CMS AREA
     - CMS WEIGH

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
BUREAU OF PROJECT DELIVERY
STANDARD
DYNAMIC MESSAGE SIGNS
TRUSS SIGN STRUCTURES
NOTES TO DESIGNER AND FABRICATOR

BD-650M
RECOMMENDED NOV. 21, 2014
RECOMMENDED NOV. 21, 2014
1. Minimum size of sign support bracket is 3 x 3. Larger sign support brackets may be required to provide clearance between vertical Z-brackets and column.

2. Horizontal Z-brackets shall be made of aluminum alloy suitable to be attached to the sign structure. These shall be a minimum of 3/8" thick.

3. Connection details provided on this sheet have been designed based on the following assumptions:
   - Maximum dead load: 6000 lbs
   - Maximum eccentricity: 5'-0"
   - Maximum length (DX): 30'-0"
   - Maximum height (DY): 10'-0"
   - Maximum depth: 4'-0"
   - Design calculations are required for deviations to these assumptions.

4. Alternate connection details are permitted, but require calculations prepared by a professional engineer registered in the Commonwealth of Pennsylvania. These calculations must be provided by the DMS manufacturer and approved by both professional engineers.

5. Details provided are the minimum requirements. Any deviations require special design.

6. Field welded DMS connections are not permitted.

7. Use of 3rd Z-bracket is based on project and wind loading requirements. Mounting calculations to be completed to AASHTO standards (Specifications for Structural Supports for Highway Signs, Luminaries and Traffic Signals, 4th Edition, 2001, including Interims through 2006) and submitted by the fabricator.

NOTE: Shim as required between angle and top of chord to provide tight fit. (See Shim Detail this sheet)