

July 6, 2012

TO: ALL OFFERERS
FROM: Scott S. Gottfried
Competitive Bid Contract Coordinator
SUBJECT: ADDENDUM TO INVITATION TO BID - CONTRACT NO. DOT1206-STEEL_POLES

ADDENDUM NUMBER TWO (2)

QUESTION AND ANSWERS AS OF JULY 5, 2012 ADDED TO THE PROPOSAL:

1. When looking at the total deflection are we to interpret that to be the dead load of the arms and all associated mountings and hardware or are there other forces we are to add to this?

As stated in the contract specifications, Page 34, the deflection due to dead loads (the mast arm and all associated mounting hardware) shall be designed and accounted for in the 1 to 3 degree rake angle between horizontal and arm center line when installed and loaded. The deflection limitations listed in the specifications on Page 35, shall account for the equivalent static design wind effect from galloping and truck-induced gusts only.

2. Specifications ask for 8" deflection for up to 60' arms and 1.5% on 70, 80, and 90' arms; at 90' this is 16". These are very tight; we usually see deflection requested at the 3% range in States no longer using 1994 AASHTO. In this range it becomes the driving force in the Mast Arm Pole designs, is there a reason for such a tight deflection?

As noted in the specifications, Page 35, the total deflection at the free end of the traffic signal structure due to galloping and truck-induced gusts shall be limited vertically to 8" (203 mm) for 60' (18.3 m) and shorter arms similar to NJDOT, Kentucky Trans and ConnDOT, and to 1.5% of the arm length for 70' (21.3 m), 80' (24.4 m), and 90' (27.4 m) arms similar to state of Oregon.

3. Holding the true round pole to a 20" bolt circle and the deflection on the 45-60' becomes a challenge as the connection point of the pole and arm should be equal diameters, meeting the deflection criteria involves larger diameters. For the 70 – 90' arms the concern again falls on keeping the true round. Holding a 1.5% deflection will give a base arm diameter of about 23" which in normal designs places the pole outside the true round diameters.

See response to question 1.

4. Not understanding the need for such a tight tolerance we would like to know if the designs could be closer but still tighter to the standards we are seeing from other States:

20-40' 8"
45-60' 2%
70-90' 3%

There are significant monetary savings in these slight changes by the use of smaller diameters in most these tubes.

See our response for question 2.

5. Specifications do not state whether or not galloping is to be used, we will design these arms considering. The longer arms (over 60') will need to be designed with a Horizontal Dampening Plate to eliminate the need of galloping consideration. We will also take this into consideration on all arms over 40', it may result in more economical designs.

As noted in the contract, Page 22, the fatigue design loads to be considered for mast arms are galloping, natural wind gusts, and truck-induced gusts. All poles and mast arms must be adequately designed to resist fatigue design loads without the use of vibration mitigation devices (horizontal dampening plates).

6. The loadings shown on this 90' mast arm is going to be difficult. Is there going to be much call for this arm size? It may be easier and more economical to design the 90' arm to specific jobs as they come up?

Please design the 90-foot arm based on the design load shown on Contract Detail Sheet 5 of 7 (page 60).

7. Round traffic signal mast arm structures: Will Delaware consider allowing the pole manufacturer to deviate from the specified pole base diameters and anchor bolt circle diameters?

The project specifications require the pole shaft, and mast arm shaft to be manufactured utilizing a 0.14 in/ft taper. The longest mast arm on the project is 90 feet long, and the smallest end diameter that Valmont can manufacture in a round tube is 3.0 inches. A 90 foot long mast arm that tapers 0.14 inches per foot of length, and has a 3 inch small end diameter would result in a minimum large end diameter of 15.6 inches. The pole for this mast arm would then have to have a minimum base diameter of approximately 18 inches. This diameter will not fit on a 20 inch diameter anchor bolt circle with 2 inch diameter anchor bolts.

The 70-, 80- and 90-foot arms will be supported by pole Type C. As stated in the contract specifications, Page 33 (attached), the manufacturer shall design dimensions of the pole base plate, and determine the size and required number of anchor bolts for mast arm pole, Type C. Bolt circle diameter for Type C pole will be determined by the manufacturer as well. 20-inch B.C. is only required for poles supporting mast arms up to 60-foot in length.

The project specifications require the structure to be designed in accordance with the 2009 AASHTO specification, utilizing a fatigue category of 1, and incorporating galloping loads. Using the state specified minimum loading conditions, and the state specified design criteria, the 90 foot long mast arm would have to be 24 inches in diameter and 0.5 inches thick to meet the minimum requirements. The pole base diameter would then have to be 26 inches with a wall thickness of 0.5 inches.

The 90-foot mast arm pole structure will be designed in accordance with the 2009 AASHTO specification, utilizing a fatigue category of 1, and incorporating galloping loads. The 90-foot design loading on Contract Detail Sheet 5 of 7 (page 60) is the worst case scenario and shown for bidding purposes. We may order the 90-foot arms based on specific load case by case.

8. Round traffic signal mast arm structures: Will Delaware consider revising the required design criteria to utilize a fatigue category of 2 and exclude galloping from the design?
Due to the specified design criteria requirements outlined in section b, paragraph 1 above, the maximum mast arm length that can be manufactured to fit on the state specified anchor bolt circle diameter is 40 feet.

Signal poles Types A and B for 25- through 60-foot arms should retain the 20-inch B.C. as they are the most commonly used and interchangeable. Please provide calculations for 60-foot poles with 20-inch bolt circle (category I applies and galloping must be accounted for).

If the design requirements are modified, it would still not be possible to conform to the state specified requirements of a 20 inch diameter anchor bolt circle for all mast arm lengths, as described in section b, paragraph 1 above.

The 20-inch B.C. is only required for poles supporting mast arms up to 60-foot in length. Bolt circle diameter for Type C pole will be determined by the manufacturer.

9. 16 flute ornamental mast arms: Will Delaware consider revising the required design criteria to utilize a fatigue category of 2 and exclude galloping from the design?

Due to the specified design criteria requirements outlined in section b, paragraph 1 above, the maximum mast arm length that can be manufactured with a 16 flute ornamental shape is 25 feet.

Category I applies and galloping must be accounted for.

If the design requirements are modified, it would still not be possible to conform to the state specified requirements of a 20 inch diameter anchor bolt circle for all mast arm lengths, as described in section a, paragraph 1 above.

The 20-inch B.C. is only required for poles supporting mast arms up to 60-foot in length. Bolt circle diameter for Type C pole will be determined by the manufacturer.

10. Will Delaware allow the use of ASTM A572 grade 55 steel in the manufacture of the round and 16 flute ornamental structures?

Use of ASTM A572 grade 55 is acceptable.

All other terms and conditions remain the same.

If you have any questions, please contact me at scott.gottfried@state.de.us.