**POLE DESIGN LOADING**

<table>
<thead>
<tr>
<th>Load Component</th>
<th>Weight (lbs.)</th>
<th>Joe Area (sq. ft.)</th>
<th>Wind Area (sq. ft.)</th>
<th>Wind Area (wind. area)</th>
<th>Fatigue Area (bottom)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Luminous</td>
<td>8</td>
<td>8.1</td>
<td>0.8</td>
<td>1.0</td>
<td>2.5</td>
</tr>
<tr>
<td>Signal</td>
<td>4.5</td>
<td>5.4</td>
<td>0.7</td>
<td>0.8</td>
<td>1.4</td>
</tr>
<tr>
<td>Red Head</td>
<td>1.4</td>
<td>2.2</td>
<td>0.8</td>
<td>0.9</td>
<td></td>
</tr>
<tr>
<td>Sign</td>
<td>2.6</td>
<td>6.2</td>
<td>2.6</td>
<td>3.6</td>
<td>4.0</td>
</tr>
</tbody>
</table>

**NOTES:**

1. Provide pole assemblies designed, manufactured and installed according to 2013 ASME Standard Specifications for Structural Steel for Highway Bridges. Laminates and Structural Steel for Highway Bridges. All materials used shall be in accordance with the latest edition of the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code and shall be qualified by a nationally recognized laboratory. The design shall also be approved by the State of Alaska DOT&PF.

2. Provide poles to accommodate the maximum loads shown in the mastarm data with the given loads, dimensions, and material requirements.

3. This drawing shows loads (rigid elements) and is used by manufacturers when designing poles. It does not show actual loading of pole sections or individual products. The pole design may be used without further analysis if the following conditions are met:
   - The guys are sized for the maximum guy load.
   - No more than 3 traffic signals and/or signs are attached to the mastarm.
   - If these conditions are met, the standard pole design may be used if it is determined by calculations that demonstrate performance to design criteria (Table 1) using actual loads. Devices with less than 3 square feet of projected area may be added to the mastarm without causing a need for additional design computations.

4. The manufacturer is to determine the load size. All loads and wind shall conform to the latest edition of the structural welding code AWS D1.1. Provide visual testing (VT) of 100% of the welds. Provide radiographic testing (RT) of 100% of all welds and a random 50% of all welds on all plates and perforated panels. The welds shall be finished with a smooth surface.

5. Fabricate pole sections and mastarms from no less than 3 pieces of steel. When using 2 pieces, place the extruded weld seams adjacent to each other. Transverse weld seams prohibited.

6. Fabricate laminar area and connections according to the latest fabricating standard detail.

7. Provide permanent tags on all pole sections per section 104.3 Table 104.1 of the specifications. Provide a weatherproof rank key to all exposed sections of the pole.

8. The Department will reject damaged or defective pole sections. For the following: variations from approved shop drawings; variations from material requirements; sections more than 4 inches out of round; flanged sections with gusset dimensions greater than 0.030 in. sections boxed more than 1 inch throughout the length of the pole, or sections damaged or deformed in any way.

9. To allow for wiring, field drill a 1/4-inch diameter hole 2 feet below the finished road surface. Place the hole on the horizontal centerline of the mastarm.

10. Install pole sections from the ground position. Position the pole so that the side of the pole opposite the mastarm is vertical.

11. Clean and remove dirt, rust, mill scale, and excess galvanizing on all facing surfaces and threaded parts before assembly. Lubricate the threads of all bolts and nuts with lubricant containing a visible dye. Tighten all bolts according to section 504 of the specifications.
RING DETAIL

WASTARM BASE PLATE

MOUNTING PLATE

RING - STIFFENED BOX DETAILS

MATERIAL REQUIREMENTS

<table>
<thead>
<tr>
<th>Description</th>
<th>Requirement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sheet 1/2&quot; Thick</td>
<td>ASTM A36/2 or A307</td>
</tr>
<tr>
<td>Sheet 3/16&quot; Thick</td>
<td>ASTM A36/2 or A307</td>
</tr>
<tr>
<td>Flange</td>
<td>ASTM A103 &amp; A105</td>
</tr>
<tr>
<td>Wastarm bolts</td>
<td>ASTM F3128</td>
</tr>
<tr>
<td>Wastarm nuts</td>
<td>ASTM F439</td>
</tr>
<tr>
<td>Anchor bolts</td>
<td>See T-02</td>
</tr>
</tbody>
</table>

RING STIFFENED BOX

Top Ring Thickness: 0.375"  
Bottom Ring Thickness: 0.375"  
Gasket Plate Thickness: 0.375"

MATERIALS

Outside Dimension: 7" x 12.87"  
Reinforcing Material: 0.04" x 3"  
Net Weight: 0.135"

WASTARM


g = 35

Elyure Shape: Round  
Stiffen Diameter: 0.14/15  
Plate Opening Diameter: Wastarm Data (See Sheet 1)  
Wastarm Tube Thickness: Wastarm Data (See Sheet 1)  
Fixed End Diameter: Wastarm Data (See Sheet 1)  
Wastarm Flange: 3.5 Degrees  
Wastarm Dims: 20" x 20" x 3"  
Wastarm Nuts: 1.5" x 0.05 x 0.50"  

ISO VIEW

TUBE TO TRANSVERSE PLATE WELD DETAIL

(Show with tube and backing ring column for clarity)

State of Alaska DOT&PF
ALASKA STANDARD PLAN

SIGNAL POLE WITH 15 TO 35 MASTARM MASTARM & STIFFENED BOX

Adapted as an Alaska Standard Plan by Carolyn Warehouse, P.E.
Statewide / P.E.
Chief Engineer

Adoption Date: 7/30/2021

Last Code and Silt Review: Date: 5/13/2021

Next Code and Standards Review Date: 5/13/2021