HIGHMAST LIGHTING NOTES:

1. Poles are designed to support the following:
   A. One (1) cylindrical head assembly with a maximum effective projected area of 6 sf and 340 lbs (Max.)
   B. Eight (8) cylindrical luminaires with a maximum effective projected area of 1.5 sf and 77 lbs each.

2. Shop Drawings: This Index is considered fully detailed, only submit shop drawings for minor modifications.

3. High Mast Structure Materials:
   A. Poles and Bucking Rings:
      a. Less than 72": ASTM A1011 Grade 50, 55, 60 or 65
      b. Greater than or equal to 72": ASTM A653 Grade 55, 60 or 65
   B. Sheet Plates: ASTM A709 or ASTM A36
   C. Pole Caps: ASTM A1011 Grade 50, 55, 60, or 65 or ASTM B209
   D. Bolt Steel: C1024
   E. Stainless Steel Screws: AISI 316
   F. Anchor Bolts, Nuts and Washers:
      a. Anchor Bolts: ASTM F1554 Grade 5
      b. Nuts: ASTM A563 Grade A Heavy-Hex (5 per anchor bolt)
      c. Plate Washer, ASTM A307 (2 per anchor bolt)
   G. Nut Covers: ASTM B36 (319-F)
   H. Concrete: Class IV (Drilled Shaft)
   I. Reinforcing Steel: Specification Section 415

4. Fabrication:
   A. Welding: Specification Section 460-6.4
   B. Poles:
      a. Round or 16-Sided (Min.)
      b. Pole Taper: Diameter changing at 0.14 inches per foot.
      c. Two longitudinal seam welds (Max.)
      d. Longitudinal seam welds within 6" of pole to base must be complete penetration welds.
      e. Longitudinal seam welds at telescopic field joints must be complete penetration welds for the splice length plus 6".
      f. Circumferentially welded pole shafts, bolt splices and laminated pole shafts are not permitted.
   C. Holes for Anchor Bolts: Anchor Bolt diameter plus 1/2" (Max.), prior to galvanizing.
   D. Hot Dip Galvanize after Fabrication.
   E. Identification Tag (Submit details for approval)
      a. 2 1/4" x (Max.) aluminum identification tag
      b. Locate on the inside of the pole and visible from the handhole.
      c. Secure to pole with 3/8" diameter stainless steel rivets or screws.
      d. Include the following information on the ID Tag:
         1. Financial Project ID
         2. Pole Type
         3. Pole height
         4. Manufacturers' Name
         5. Fe of Steel
         6. Base Wall Thickness
   F. Anchor Bolts, Nuts and Washers:
      a. Less than 72": ASTM A595 Grade A (55 ksi yield) or Grade B (60 ksi yield)
      b. Greater than or equal to 72": ASTM A36
   G. Reinforcing Steel: Specification Section 415

5. Coating:
   A. Galvanize Anchor Bolts, Nuts and Washers; ASTM F2329
   B. Hot Dip Galvanize all other steel items: ASTM A123

6. Construction:
   A. Foundation: Specification Section 455 Drilled Shaft, except that payment is included in the cost of the Structure.
   B. After Installation: Place wire screen between top of foundation and bottom of baseplate in accordance with Specification Section 649-6.
POLE DESIGN TABLE

<table>
<thead>
<tr>
<th>Design Wind Speed</th>
<th>Pole Overall Height (ft)</th>
<th>Base Plate Diameter (in.)</th>
<th>Base Plate Thickness (in.)</th>
<th>No. Bolts</th>
<th>Bolt Diameter (in.)</th>
<th>Bolt Embedment (in.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>130 mph</td>
<td></td>
<td></td>
<td></td>
<td>8</td>
<td>1.75</td>
<td>38</td>
</tr>
<tr>
<td>150 mph</td>
<td></td>
<td></td>
<td></td>
<td>8</td>
<td>1.75</td>
<td>42</td>
</tr>
<tr>
<td>170 mph</td>
<td></td>
<td></td>
<td></td>
<td>8</td>
<td>1.75</td>
<td>47</td>
</tr>
</tbody>
</table>

BASE PLATE AND BOLTS DESIGN TABLE

SHALLOW DESIGN TABLE

<table>
<thead>
<tr>
<th>Design Wind Speed</th>
<th>Pole Overall Height (ft)</th>
<th>Shaft Diameter</th>
<th>Shaft Length</th>
<th>Longitudinal Reinforcement</th>
</tr>
</thead>
<tbody>
<tr>
<td>130 mph</td>
<td></td>
<td>4'-0&quot;</td>
<td>13'-0&quot;</td>
<td>[14- #11]</td>
</tr>
<tr>
<td>150 mph</td>
<td></td>
<td>4'-0&quot;</td>
<td>14'-0&quot;</td>
<td>[16- #11]</td>
</tr>
<tr>
<td>170 mph</td>
<td></td>
<td>5'-0&quot;</td>
<td>16'-0&quot;</td>
<td>[18- #11]</td>
</tr>
</tbody>
</table>

ADDITIONAL SHAFT DEPTH DUE TO GROUND SLOPE

<table>
<thead>
<tr>
<th>Ground Slope</th>
<th>Drilled Shaft Diameter (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>5H:1V</td>
<td>3</td>
</tr>
<tr>
<td>4H:1V</td>
<td>4</td>
</tr>
<tr>
<td>3H:1V</td>
<td>5</td>
</tr>
<tr>
<td>2H:1V</td>
<td>7</td>
</tr>
</tbody>
</table>

* Diameter Measured Flat to Flat

NOTE: Foundation are assumed to be in level ground. For Foundation with slopes 5H:1V and greater, increase the shaft depth in accordance with the additional shaft depth due to ground slope table. For slope or diameter values in between those shown in the table, use the higher value.
NOTES:
1. At all pull boxes and pole bases, ends of conduit shall be sealed in accordance with Section 630 of the Standard Specifications For Road And Bridge Construction.
2. Slabs to be placed around all Poles and Pull Boxes.
3. For Pull Boxes between Poles refer to Index 17500.

WIRING DETAILS
The contractor's attention is directed to those plan sheets detailing the mounting of luminaires at the pole top. Particular attention is directed to alignment of luminaire light distributions. Special attention must be exercised in the physical alignment of those luminaires to ensure that the approved photometric layout is physically produced at each lighting standard in the field. A marking shall be placed on the external face of the refractor to allow visual inspection of alignment. The marking shall correspond to the 0° axis of the refractor.

Luminaire support ring
Luminaires
Male Inlet
Lift cables
Pole cable
Power Cable Terminator
600 Volt rated Pole Cable. Size of conductors to be determined by luminaire load.

Pole cable & sheaves
Lift cable sheaves
Lift cables (2 minimum)
Cover
Head plate
See legend for number of luminaires, lamp wattage and light distribution.

High mast pole
Circuit Breaker Cable with Female Plug
Hand hole
Winch Lock nuts
Winch
Positive drive reversible winch

Supply cable receptacle
Receptacle
Remote control switch
Remote control switch
Step-down transformer provided with 120% grounded receptacle for electric drill & receptacle for supply cable (see schematics)

600 Volt rated Circuit Breaker Cable. Size of conductors to be determined by luminaire load.
600 Volt rated Pole Cable. Size of conductors to be determined by luminaire load.

All hardware for mounting heavy duty drill to pole shall be Stainless Steel.

2½ heavy duty reversible or 1 HP Portable Motor(s) per project.

Portion of remote auxiliary power unit

SCHEMATIC OF REMOTE AUXILIARY POWER UNIT

LOWERING DETAILS

FAOO
01/01/12

FY 2017-18
DESIGN STANDARDS

HIGH MAST LIGHTING

REVISION
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17502: 01/01/12

HIGH MAST POLE WIRING DIAGRAM

Cover
2" Slip Fitter Assembly (equally spaced around ring)
Luminaire support ring
2" slip fitter

Ground to Winch Support Plate
Equipment Ground Conductor
Conduit
4/0 Ground
Grounding Array
#6 Bonding Ground
480V Phase to Phase
Pole Cable
Pull Box
Lift cables

Pole cable

Covered receptacle to power luminaires when in the lowered position with Male Inlet.

Winch cable
Female Plug
Power Cord With Male Inlet

Head plate

Winch

Positive drive reversible winch

A surge protector shall be located in the pole with the circuit breaker. The surge protector shall be mounted at the front near hand hole for easy access.

Luminaire support ring

Pole Cable

Lift cable sheaves

2 Volts supported Assembly

See legend for number of luminaires, lamp wattage and light distribution.
NOTES:

1. Use compacted select material in accordance with Index 505.
2. Concrete shall be Class NS with a minimum strength at 28 days of f'c=2.5 ksi.
3. Outside edge of slab shall be cast against formwork.
4. The pull box shown is 18" x 24"; others approved under Section 635 of the Standard Specifications may be used.
5. Slabs to be placed around all Poles and Pull Boxes. In urban areas or where space is limited slab dimensions may be adjusted as shown in the plans.
6. Concrete for slabs around poles and pull boxes shall be included in the price of pole or pull box.
7. The expansion joint shall consist of ½" of closed-cell polyethylene foam expansion material. The top ½" of expansion material shall be removed after pouring the slab and sealed with an APL approved Type A sealant meeting the requirements of Section 932.

Concrete for slabs around Poles and Pull Boxes:
- Section 635 of the Standard Specifications may be used.
- The pull box shown is 13" x 24"; others approved under Index 505.
- Pull Box location:
  - Slabs to be placed around all Poles and Pull Boxes. In urban areas or where space is limited slab dimensions may be adjusted as shown in the plans.

SLAB DIMENSIONS

SLAB DETAILS

SHAFT LOCATION

PULL BOX LOCATION

SECTION C-C

4" SELECT MATERIAL

½" Expansion Joint (Sealed)