HIGHMAST LIGHTING NOTES:

1. Poles are designed to support the following:
   A. One (1) cylindrical head assembly with a maximum effective projected area of 5 sf and 140 lbs (Max.)
   B. Eight (8) cylindrical luminaires with a maximum effective projected area of 1.5 sf and 71 lbs each.

2. Shop Drawings: This Index is considered fully detailed, only submit shop drawings for minor modifications not detailed in the Plans.

3. High Mast Structure Materials:
   A. Poles and Backing Rings:
      a. Less than 7.5: ASTM A1011 Grade 50, 55, 60 or 65
      b. Greater than or equal to 7.5: ASTM A572 Grade 50, 55, 60 or 65
      c. ASTM A595 Grade A (55 ksi yield) or Grade B (60 ksi yield)
   B. Steel Plates: ASTM A500 or ASTM A36
   C. Pole Caps: ASTM A1011 Grade 50, 55, 60, or 65 or ASTM B209
   D. Bolt Grades: C1091
   E. Stainless Steel Screws: AISI 316
   F. Anchor Bolts, Nuts and Washers:
      a. Anchor Bolts: ASTM F1554 Grade 55
      b. Nuts: ASTM A563 Grade A Heavy-Hex (5 per anchor bolt)
      c. Plate Washer: ASTM A36 (4 per anchor bolt)
   G. Nut Covers: ASTM B36 (319-F)
   H. Concrete: Class IV (Drilled Shaft)
   I. Reinforcing Steel: Specification 143

4. Fabrication:
   A. Welding:
      a. Specification Section 460-6.4 and
      b. AWS/D1.1OD Specification for Structural Supports for Highway Signs, Luminaires, and Traffic Signals Section 14.4.4
   B. Poles:
      a. Round or 16-sided (Min.),
      b. Pole base diameter at 0.14 inches per foot
      c. Pole shaft may be up to three sections (using telescopic field splices)
      d. Circumferentially welded pole shafts and laminated pole shafts are not permitted
      e. Fabricate Pole longitudinal seam welds (2 maximum) with 60 percent minimum penetration or fusion, except as follows:
         i. Use full-penetration groove welds on the female end section of telescopic (i.e., slip type) field splices for a minimum length of 42 inches.
         ii. Use full-penetration groove welds on the female end section of telescopic (i.e., slip type) field splices.
      f. Identification Tag: (Submit details for approval)
         a. 2"x 4" (Max.) aluminum tag
         b. Locate on the inside of the pole and visible from the handhole
         c. Secure with 1/8" diameter stainless steel rivets or screws.
      g. Pole Dimensions:
         a. Specifications for painted or galvanized poles:
            i. Circumferential tube-to-plate connection and female end section of telescopic field splices
            ii. Use full-penetration groove welds on the female end section of telescopic (i.e., slip type) field splices for a minimum length of 42 inches.
   C. Identification Tag: (Submit details for approval)
      a. 2" x 4" (Max.) aluminum tag
      b. Locate on the inside of the pole and visible from the handhole
      c. Secure with 1/8" diameter stainless steel rivets or screws.
   D. Fabrication:
      a. 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 649-6.
   E. Hot Dip Galvanize After Fabrication
   F. Coating:
      a. Galvanize Anchor Bolts, Nuts and Washers: ASTM F2129
      b. Hot Dip Galvanize all other steel items including plate washers: ASTM A123

6. Construction:
   A. Foundation: Specification 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 649-6.

7. Wind Speed by County:
   A. 130 MPH
   B. 150 MPH
   C. 170 MPH
      - Broward, Brevard, Charlotte, Collier, Escambia, Indian River, Lee, Martin, Miami-Dade, Monroe, Palm Beach, Sarasota and St. Lucie Counties.
### 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>Bolt Circle (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>80</td>
<td>30.0</td>
<td>3.00</td>
<td>23.0</td>
<td>8</td>
<td>1.75</td>
<td>38</td>
</tr>
<tr>
<td></td>
<td>100</td>
<td>34.0</td>
<td>3.00</td>
<td>27.0</td>
<td>8</td>
<td>1.75</td>
<td>42</td>
</tr>
<tr>
<td></td>
<td>120</td>
<td>38.0</td>
<td>3.875</td>
<td>30.0</td>
<td>8</td>
<td>2.00</td>
<td>48</td>
</tr>
<tr>
<td>150 mph</td>
<td>80</td>
<td>30.0</td>
<td>3.00</td>
<td>23.0</td>
<td>8</td>
<td>1.75</td>
<td>43</td>
</tr>
<tr>
<td></td>
<td>100</td>
<td>34.0</td>
<td>3.875</td>
<td>28.0</td>
<td>8</td>
<td>2.00</td>
<td>47</td>
</tr>
<tr>
<td></td>
<td>120</td>
<td>38.0</td>
<td>3.875</td>
<td>35.0</td>
<td>8</td>
<td>2.25</td>
<td>52</td>
</tr>
<tr>
<td>170 mph</td>
<td>80</td>
<td>32.0</td>
<td>3.00</td>
<td>25.0</td>
<td>8</td>
<td>1.75</td>
<td>47</td>
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<tr>
<td></td>
<td>100</td>
<td>37.0</td>
<td>3.00</td>
<td>29.0</td>
<td>8</td>
<td>2.00</td>
<td>54</td>
</tr>
<tr>
<td></td>
<td>120</td>
<td>46.0</td>
<td>3.875</td>
<td>37.0</td>
<td>10</td>
<td>2.25</td>
<td>58</td>
</tr>
</tbody>
</table>

* Diameter Measured Flat to Flat

### SHAFT 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>80</td>
<td>4'-0&quot;</td>
<td>13'-0&quot;</td>
<td>14'-11&quot;</td>
</tr>
<tr>
<td></td>
<td>100</td>
<td>5'-0&quot;</td>
<td>14'-0&quot;</td>
<td>16'-11&quot;</td>
</tr>
<tr>
<td></td>
<td>120</td>
<td>6'-0&quot;</td>
<td>16'-0&quot;</td>
<td>16'-11&quot;</td>
</tr>
<tr>
<td>150 mph</td>
<td>80</td>
<td>4'-0&quot;</td>
<td>14'-0&quot;</td>
<td>14'-11&quot;</td>
</tr>
<tr>
<td></td>
<td>100</td>
<td>5'-0&quot;</td>
<td>16'-0&quot;</td>
<td>16'-11&quot;</td>
</tr>
<tr>
<td></td>
<td>120</td>
<td>6'-0&quot;</td>
<td>18'-0&quot;</td>
<td>18'-11&quot;</td>
</tr>
<tr>
<td>170 mph</td>
<td>80</td>
<td>4'-0&quot;</td>
<td>15'-0&quot;</td>
<td>16'-11&quot;</td>
</tr>
<tr>
<td></td>
<td>100</td>
<td>5'-0&quot;</td>
<td>17'-0&quot;</td>
<td>16'-11&quot;</td>
</tr>
<tr>
<td></td>
<td>120</td>
<td>6'-0&quot;</td>
<td>20'-0&quot;</td>
<td>18'-11&quot;</td>
</tr>
</tbody>
</table>

NOTE:
- Shaft Design Table: Shaft Length is based on level ground (flatter than 1:5).
- Increase the shaft depth in accordance with the Additional Shaft Depth Due to Ground Slope if the slope is 1:5 or steeper.
- Use the higher value for slope or diameter values that fall between those shown on the table.

### ADDITIONAL SHAFT DEPTH DUE TO GROUND SLOPE

<table>
<thead>
<tr>
<th>Ground Slope</th>
<th>4'-0&quot; Shaft Diameter</th>
<th>5'-0&quot; Shaft Diameter</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/5</td>
<td>3'-0&quot;</td>
<td>4'-0&quot;</td>
</tr>
<tr>
<td>1/4</td>
<td>4'-0&quot;</td>
<td>5'-0&quot;</td>
</tr>
<tr>
<td>1/3</td>
<td>5'-0&quot;</td>
<td>6'-0&quot;</td>
</tr>
<tr>
<td>1/2</td>
<td>7'-0&quot;</td>
<td>8'-0&quot;</td>
</tr>
</tbody>
</table>

### POLE DESIGN TABLES

[Table for Pole Design, Base Plate and Bolts, Shaft Design, etc.]

[Diagram of Pole Design showing various components like Luminaire Head, Base Plate, Wire Screen, and Handhole Door.]
**BASE PLATE AND ANCHORAGE ELEVATION**

(Conduits Not Shown)

- **Base Diameter**
- **Drilled Shaft**
- **Handhole Ring**
- **Double Nuts (Typ.)**
- **Anchor Bolts**
- **6" Cover (Typ.)**
- **Wire Screen**
- **Finished Grade**
- **Seam Weld (Typ.)**
- **Center of Arm**
- **Shaft Diameter**
- **Center of Drilled Shaft**

**SECTION A-A**

(T = Wall Thickness)

**SECTION B-B**

(Conduits Not Shown)

**SECTION C-C**

**SECTION E-E**

**POLE FOUNDATION**

**FOUNDATION PLAN**

(Anchor Bolts and Conduits Not Shown)

- **Center of Drilled Shaft**
- **9/32" Tie Bars**
- **3/8" x 6" Ring**
- **CSL tube (Typ.)**
- **Full Pen.**
- **Padlock Tab**
- **Full Pen.**
- **1/4" Thick Handhole Door**

**HANDHOLE RING**

- **2" x Bolt Diameter**
- **1" Min.**
- **2" Max.**
- **1/2" Bolt Diameter**
- **6 Sp. @ 1'-0" (Max.)**
- **1/2" Sp. @ 4"**
- **45 deg.**
- **45 deg.**
- **1" Min.**
- **2" Max.**
- **1" Min.**
- **2" Max.**

**HANDHOLE DOOR**

- **1" x 1" Chamfer**
- **1/2" Min.**
- **2" Max.**
- **1/2" Thick**
- **4" X 1/8" Backing Ring**
- **Silicone Caulk**
- **1/2" Plate Washer**
- **Base Plate Thickness**
- **Leveling Nuts**
- **Anchor Bolt**

**HIGH MAST LIGHTING**

FY 2020-21

STANDARD PLANS

INDEX 715-010

SH 3 of 6
For Pull Boxes between Poles refer to Index 715-001.

1. Slabs to be placed around all Poles and Pull Boxes.
2. Interrod distances must be a minimum of 10'
3. NOTED

NOTES:
1. At all pull boxes and pole bases, ends of conduit shall be sealed in accordance with Specification 630.
2. Slabs to be placed around all Poles and Pull Boxes.
3. For Pull Boxes between Poles refer to Index 715-001.

Circuit Breaker Panel Box with Surge Arrestor mounted to Top of Circuit Breaker Panel Box for easy access. Service entrance fittings shall be used on all conductors entering Circuit Breaker Panel Box.

4/0 AWG stranded Cu bare ground wire connected to grounding lug inside pole.

Schedule 40 PVC conduit. Circuit conductors and conduit size as shown in plans (Typical).

Schedule 40 PVC conduit with 4/0 Cu bare ground wire.

Wire Screen see Spec. 649-6

Overall, this diagram illustrates electrical wiring details for high mast lighting systems, including conductor sizes, grounding methods, and component placement specifications.
The contractor's attention is directed to those plan sheets detailing the mounting of luminaires on the pole top. Particular attention is directed to the alignment of luminaire light distributions. Special attention must be exercised in the physical alignment of these 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.

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.

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.

2" slip fitter assembly (equally spaced around ring)

Luminaire support ring

Cover

Pole Cable

Female Plug

Circuit Breaker Cable

With Female Plug

Positive drive reversible winch

Winch Lock nuts

Hand hole

Base plate

Cover

Lift cable sheaves

Lift cables (2 minimum)

Power Cable Terminator

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

2" slip fitter assembly (equally spaced around ring)

Luminaire support ring

Cover

Pole Cable

Female Plug

Circuit Breaker Cable

With Female Plug

Positive drive reversible winch

Winch Lock nuts

Hand hole

Base plate

Cover

Lift cable sheaves

Lift cables (2 minimum)

Power Cable Terminator

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

2" slip fitter assembly (equally spaced around ring)

Luminaire support ring

Cover

Pole Cable

Female Plug

Circuit Breaker Cable

With Female Plug

Positive drive reversible winch

Winch Lock nuts

Hand hole

Base plate

Circuit Breaker Cable

With Female Plug

Positive drive reversible winch

Winch Lock nuts

Hand hole

Base plate

Cover

Lift cable sheaves

Lift cables (2 minimum)

Power Cable Terminator

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

3/4" heavy duty reversible or 1 HP portable motor(s) per project.

Step-down transformer provided with 320 Prime grounding receptacle for electric drill & receptacle for supply cable. (see schematics)

25' minimum remote control cable same as Pole Cable.

Supply cable receptacle

Remote control switch

Wiring Diagram:

SCHEMATIC OF REMOTE AUXILIARY POWER UNIT

LOWERING DETAILS

FY 2020-21

STANDARD PLANS

HIGH MAST LIGHTING

INDEX:

715-010

SHEET

5 of 6
NOTES:

1. Use compacted select material in accordance with Index 120-001.
2. Concrete shall be Class K5 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 13' x 24'; others approved under Specification 635 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 Specification 932.

Concrete shall be Class NS with a minimum strength at 28 days of f'c=2.5 ksi. Use compacted select material in accordance with Index 120-001.

Concrete for slabs around poles and pull boxes shall be included in the price of pole or pull box.