# SECTION 4
## MAINTENANCE

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I. High-Pressure Sodium Troubleshooting
   A. Photocell
      1. Light on in daylight, replace the photocell.
      2. Light off, cover photocell to block light.
         a) Light turns on, photocell is okay. If the photocell is older than five years, it is out of warranty, replace it anyway.
         b) Light does not turn on, replace photocell.
   B. Lamp
      1. Light is reported to be cycling on and off, first visit:
         a) Check the photocell orientation to make sure it is not aiming at a night-time light source.
         b) If this is the first visit replace the lamp.
      2. Light is reported to be cycling on and off, later visits:
         a) Visually inspect capacitor, ballast, socket and wiring. If there is any damage the luminaire may need to be replaced.
         b) Measure line voltage. Then, cover the photocell to switch on the light.

The 70 Watt to 150 Watt luminaires operate with input voltage as low as 114 V.
The 250 Watt and 400 Watt luminaires operate with voltage as low as 108 V.

If the voltage is lower than these minimums there may be service wire damage, loose or corroded connections in the luminaire, handhole, j-box or source. After these have been ruled out, there may be a design problem where the wire size may need to be increased.

NOTE: High-pressure sodium lamps shall be installed only in luminaires of the same wattage. They are not interchangeable.
3. BALLAST AND STARTER:
A. Remove the HPS lamp and install the mogul base adapter (SRP stock code 29-4800) with one of the following test lamps.

<table>
<thead>
<tr>
<th>HPS Lamp Size (watts)</th>
<th>Install for Test</th>
</tr>
</thead>
<tbody>
<tr>
<td>70 watt</td>
<td>100 watt incandescent bulb (5035002)</td>
</tr>
<tr>
<td>100 watt</td>
<td>100 watt incandescent bulb</td>
</tr>
<tr>
<td>150 watt</td>
<td>100 watt incandescent bulb</td>
</tr>
<tr>
<td>250 watt</td>
<td>250 watt mercury vapor lamp (5035128)</td>
</tr>
<tr>
<td>400 watt</td>
<td>400 watt mercury vapor lamp (5035130)</td>
</tr>
</tbody>
</table>

B. Cover the photocell, if the test lamp does not light, the ballast is bad and the entire luminaire should be replaced. If the test lamp turns on, the ballast is good. Replace the starter per the chart below.

### Existing Two-Wire Starter

<table>
<thead>
<tr>
<th>Watts</th>
<th>Replacement Starters</th>
</tr>
</thead>
<tbody>
<tr>
<td>70</td>
<td>5035003 (Univ.)</td>
</tr>
<tr>
<td>100</td>
<td>GE 35-987410-51</td>
</tr>
<tr>
<td>150</td>
<td>GE 35-987410-51 OR</td>
</tr>
<tr>
<td>250</td>
<td>Millbank SS-1</td>
</tr>
<tr>
<td>400</td>
<td></td>
</tr>
</tbody>
</table>

### Existing Three-Wire Starter

<table>
<thead>
<tr>
<th>Watts</th>
<th>Replacement Starters</th>
</tr>
</thead>
<tbody>
<tr>
<td>70</td>
<td>5035003 (West.)</td>
</tr>
<tr>
<td>100</td>
<td>220C173G11</td>
</tr>
<tr>
<td>150</td>
<td></td>
</tr>
<tr>
<td>250</td>
<td></td>
</tr>
<tr>
<td>400</td>
<td></td>
</tr>
</tbody>
</table>

* When replacing an existing three-wire starter with a two-wire starter, remove or cut and insulate the ballast wire.
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1. Dig 2" past the rust or the top of the foam or cement (no more than 18" total)
2. Inspect

1. Clean rust off and apply rust stabilizer
2. Let dry

1. Apply black tape start at top work down
2. Paint
3. Backfill

1. Apply gray tape, start at bottom work out (1/2 lap)

Maintenace
Tape and Re-paint Pole Base Repair

Outdoor Lighting Standards

MAINTENANCE
Tape and Re-paint Pole Base Repair

ISSUE DATE: 12/27/10
REV. DATE: 01/11/13
APPROVAL: W. LARAMIE
Handhole Placement

1. Drill and tap for 1/4-20 UNC threaded hole for 1/4" dia. stainless steel hex head bolt. (Typical only with steel poles).

2. All handhole cut edges shall be ground smooth with no sharp edges.

3. Personnel safety shall be observed when cutting fiberglass. Safety masks shall be worn to prevent fiberglass fines from entering the lungs. Safety masks shall be approved per OSHA (Occupational Safety and Health Administration).

<table>
<thead>
<tr>
<th>Pole Diameter (O.D.)</th>
<th>Approximate Pole Circumference</th>
<th>Handhole Cover Stock Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 1/2&quot;</td>
<td>11&quot;</td>
<td>5035016</td>
</tr>
<tr>
<td>4 1/2&quot;</td>
<td>14&quot;</td>
<td>5035014</td>
</tr>
<tr>
<td>5 9/16&quot;</td>
<td>17 1/2&quot;</td>
<td>5035014</td>
</tr>
<tr>
<td>6 5/8&quot;</td>
<td>20 1/2&quot;</td>
<td>5035014</td>
</tr>
</tbody>
</table>

Square Tube Steel Poles have the same size handhole cover.

All Fiberglass Poles have the same size handhole cover.

Handhole Opening Dimensions

Elevation View

Fabrication Notes:

1. Drill and tap for 1/4-20 UNC threaded hole for 1/4" dia. stainless steel hex head bolt. (Typical only with steel poles).

2. All handhole cut edges shall be ground smooth with no sharp edges.

3. Personnel safety shall be observed when cutting fiberglass. Safety masks shall be worn to prevent fiberglass fines from entering the lungs. Safety masks shall be approved per OSHA (Occupational Safety and Health Administration).
NOTE:

1. CONNECTOR WITH 2 HEAT SHRINKS (5071583).

2. FOR ALUMINUM GROUND WIRE FROM SOURCE USE CONNECTOR AND HEAT SHRINK (5071583) AND CONTINUE TO POLE GROUND LUG AT HAND-HOLE WITH #6 CU SOL.
NOTES:

1. THIS STANDARD POLE REPLACEMENT/REPAIR GUIDE IS INTENDED FOR EXISTING LIGHT POLES WITH NON-STANDARD HOLES DISCOVERED IN THE FIELD BY THE POLE MAINTENANCE CREWS.

2. HOLES IN THESE AREAS MUST BE DIRECTLY ABOVE OR BELOW THE HAND-HOLE OR ON THE EXACT OPPOSITE SIDE OF THE POLE FROM HAND-HOLE. MAINTENANCE CREWS TO REPLACE POLE IF HOLES ARE LARGER THAN INDICATED ABOVE.

3. REPLACE POLE IF HOLES ARE DISCOVERED IN THIS AREA (OTHER THAN THE HANDHOLE OPENING).

4. HOLE IS DEFINED AS THE COMPLETE OPENING IN THE WALL THICKNESS OF THE POLE. EXPOSING THE INSIDE OF THE POLE. COMPLETE CORROSION INTO THE WALL THICKNESS IS TO BE CONSIDERED A HOLE.

5. SOME HOLES OR OPENINGS IN THE STEEL POLE MAY BE OBLONG OR OTHER SHAPE. THIS SHALL ALSO BE CONSIDERED AS A HOLE OR OPENING.

6. SEE "MAINTENANCE, HOLE REPAIR" FOR METHODS TO REPAIR HOLES.
NOTES:
1. FOLLOW GUIDELINES ON "MAINTENANCE, SRP LIGHT POLE (WITH NON-STANDARD HOLES), REPAIR/REPLACEMENT GUIDELINES" TO DETERMINE IF HOLES CAN BE REPAIRED OR POLE MUST BE REPLACED.
2. IF THE HOLE EDGES ARE ROUGH, SMOOTH THEM (FILE) TO PREVENT DAMAGE OR DISTORTION TO HJ3 TAPE (5035552).
3. CLEAN AREA TO BE COVERED WITH BRUSH AND CLEANER (5003004).
4. FOLLOWING HJ3 INSTRUCTIONS, APPLY HJ3 STARTING 4" BELOW THE HOLE AND WRAPPING (1/2 LAP) TO 4" ABOVE THE HOLE, AND THEN, CONTINUE BACK TO 4" BELOW THE HOLE.
5. APPLY 10 MIL BLACK TAPE (5012311) STARTING 4" BELOW THE HJ3 AND WRAPPING (1/2 LAP) TO 4" ABOVE THE HJ3 AND THEN CONTINUE BACK DOWN TO THE STARTING POINT.
6. APPLY ONE WRAP BLACK TAPE 4" ABOVE AND BELOW THE BLACK TAPE TO ACT AS TEMPORARY PAINT MASKING TAPE.
7. PAINT THE AREA BETWEEN THE TEMPORARY MASKING TAPE WITH THE APPROPRIATE COLOR:
   - 5068360 BLACK
   - 5068361 BROWN
   - 5068366 GRAY
8. REMOVE TEMPORARY MASKING TAPE.
1. To replace a failed service cable when the inside of the pole is obstructed, as it is when the pole has been repaired by filling it with epoxy and a carbon fiber sleeve.

2. Drill 1/4" pilot hole and then ream out to 1 1/8" with Greenlee electrician's step bit (1 1/8") or equivalent.

3. Cut PVC to length and glue on 3/4" elbow to J-box.


5. One half overlap tape as shown from 6" above grade to just past the buried coupling where rigid steel elbow transitions to PVC.

6. Insert threaded nipple into pole and fasten with insulation of nuts facing pole.

7. Remove #8 AL TX from conduit (CIC) and install in riser.

8. Place warning sign 5039125 above hand hole.

* No stock code equivalent in SAP.