### SECTION 6
CONSTRUCTION STANDARDS

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Outdoor Lighting Standards

CONSTRUCTION STANDARDS INDEX

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SONG-TUBE INSTALLATION

1) DIG HOLE FOR TUBE IN STREET LIGHT STUB OUT TRENCH.
2) INSTALL TUBE FLUSH TO FINAL LANDSCAPE GRADE.
3) AS THE TUBE IS BEING INSTALLED, THE FLEXIBLE DUCT FROM THE J-BOX SHOULD BE INSERTED INTO THE TUBE THROUGH THE CABLE ENTRANCE HOLE. DO NOT MAKE SHARP BENDS IN THIS DUCT. COIL 4' OF FLEXIBLE DUCT INSIDE: SHOWN BELOW.
4) COMPACT THE TUBE BACKFILL BY TAMING THE EARTH FIRM.
5) BACKFILL THE INSIDE OF THE TUBE WITH NATIVE SOIL TO POLE EMBEDMENT DEPTH.
6) SECURE THE ELECTRONIC MARKER TO THE LID WITH THE TIE PROVIDED AND PLACE LID ON THE TUBE.
7) SRP LOCATOR WILL MARK THE LID LOCATION THROUGH BLUE STAKE NOTICE.

POLE INSTALLATION IN TUBE

8) LIGHT INSTALLER DIGS DOWN TO LID, REMOVES LID, PULLS DUCT FROM TUBE.
9) END OF DUCT IS INSERTED THROUGH LIGHT POLE CABLE ACCESS HOLE AND PUSHED UP TO HAND HOLE AS LIGHT POLE IS LOWERED INTO TUBE.
10) THE POLE HAS A 3/4" RED TAPE BAND TO MARK THE FINAL LANDSCAPE GRADE EMBEDMENT DEPTH. THIS TAPE SHOULD BE AT FINAL LANDSCAPE GRADE.
11) POLE IS HELD SECURELY VERTICAL IN CENTER OF TUBE WHILE BACKFILLING WITH POLE SET FOAM.
12) IF THE POLE IS FIBERGLASS, PLACE THE COLLAR AROUND THE BASE. SEE "FIBERGLASS OR STEEL POLE PROTECTIVE COLLAR" FOR INSTALLATION STANDARD.
NOTES

1. For private lights, served from an above ground j-box within 10’ of the pole, the flush mounted j-box is not required.

2. Insert approximately 4’ of flexible conduit, with polyester pull tape (0646900). Bend end of conduit over and insert down into tube as shown.

3. Fasten electronic mini-marker inside lid with tie wraps. This item is to be salvaged when street light pole is set.
NOTES

1. For private lights served from a transformer within 10’ of the pole, a flush mounted j-box is not required. The metal pole shall be bonded to the transformer ground bus. Compatible units ULF7 and ULF7G, install #6 AL Duplex, hot and neutral, and #6 copper ground wire to the transformer ground rod from pole handhole ground connection, and satisfy bonding requirements.

2. Insert approximately 4’ of flexible conduit, with polyester pull tape (0646900), up into tube bend end of conduit over and insert down into tube, as shown.

3. Fasten electronic mini-marker inside lid with tie wraps. This item is to be salvaged when street light pole is set.

4. If pole is placed within 6’ of transformer, see Design Section, “Municipal Pole Placement" "Dusk to Dawn Pole Placement" and Construction Standards Section, "Light Poles in Proximity of Metallic Apparatus, Bonding".
NOTE:
WHEN CENTERLINE OF HANDHOLE IS 26" ABOVE FINAL GRADE AND COLORED MARKING TAPE IS AT GRADE, THE POLE WILL BE SET TO THE PROPER EMBEDMENT DEPTH.
NOTE:
1. USE DIE J ON Y2MR BURNDY PRESS OR EQUIVALENT.

0631966 CONNECTOR AND 0611553 1/4"-20 X 3/4" STAINLESS HEX
NOTE 1.

CONNECTOR AND #6 SOL. CU WIRE MUST BE COVERED WITH HALF-LAPPED GRAY TAPECOAT H35 (068300) INNER LAYER (WITH ONE EXTRA LAP OVER THE CONNECTOR) AND TWO LAYERS, HALF-LAPPED 10 MIL BLACK PIPE WRAP TAPE 0131456 OUTER LAYER

8" MIN.
12" MAX.

6" MIN.
12" MIN. FROM SONO-TUBE OR POLE

8' COPPER CLAD GROUND ROD
8' #6 WIRE, POLE CONNECTOR AND SCREW

CONSTRUCTION STANDARDS
LIGHT POLE, NEW GROUND CONNECTION

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Outoor Lighting Standards
SRP®
PROPRIETARY MATERIAL
Outdoor Lighting Standards

CONSTRUCTION STANDARDS
J-BOX CONNECTIONS

NOTE 1) SECOND (UNUSED) HOT LEG OF 1/0 AL TX MUST BE INSULATED WITH MOLE ASSEMBLY.

NOTE 2) IF POLE IS PLACED WITHIN 6 FEET OF ANY ABOVE GROUND METALLIC POWER OR COMMUNICATIONS APPARATUS SEE DESIGN AND MISCELLANEOUS SECTION, "NON-MUNICIPAL LUMINAIRE POLE PLACEMENT", AND CONSTRUCTION STANDARDS SECTION "LIGHT POLES IN PROXIMITY OF METALLIC APPARATUS, BONDING".

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PROPRIETARY MATERIAL

OUTDOOR LIGHTING STANDARDS
### SECTION 6: CONSTRUCTION STANDARDS

**NOTES**

1. When triplex cable is installed, lights shall be connected to alternate 120V legs on each run. Load between each 120V leg shall be balanced as possible.

2. Three mole assemblies only required when j-box is served with triplex cable.

**OUTDOOR LIGHTING STANDARDS**

**CONSTRUCTION STANDARDS**

**POINT OF FEED J-BOX CONSTRUCTION**

**UL16D** Duplex
**UL16DG** Duplex Contractor
**UL110** Triplex (Note 1)
**UL110G** Triplex Contractor

H = 120V
N = Neutral

Source cable does not have ground conductor.

**UL26D** Duplex
**UL26DG** Duplex Contractor
**UL210** Triplex (Note 1)
**UL210G** Triplex Contractor

H = 120V
N = Neutral

Source cable does not have ground conductor.

**UL310** Triplex (Note 1)
**UL310G** Triplex Contractor

H = 120V
N = Neutral

Source cable does not have ground conductor.

**UL410** Triplex (Note 1)
**UL410G** Triplex Contractor

H = 120V
N = Neutral

Source cable does not have ground conductor.

**CONSTRUCTION POINT OF FEED J-BOX CONSTRUCTION**

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6-6-2
SECTION 6: CONSTRUCTION STANDARDS

NOTES

1. Bonding shall be provided between all above ground metallic power and communications apparatus (pedestals, terminals, apparatus cases, transformer cases, metal poles, etc.) that are separated by a distance of 6' or less.

2. A pad-mounted single-phase transformer is used in the upper detail where conduit exists between apparatus and j-box. If no conduit exists, as would be the case with a switch, capacitor etc., (lower detail) the #6 bare copper bond wire may be direct-buried to the first j-box, from where the #6 bare copper bond wire may be connected directly to the streetlight j-box via 2 1/2" conduit.

ULB
12' #6 Bare Copper Wire and Compression Connector 5035146

ULDB
Direct Buried

Outdoor Lighting Standards

CONSTRUCTION STANDARDS
LIGHT POLES IN PROXIMITY OF METALLIC APPARATUS, BONDING

6-7-1
NOTES
Make connections in the pole with wire nuts. Orient the wire nut openings downward to prevent water from entering. Place a small amount of inhibitor grease (5012038) in each wire nut before making the connection.

Source
1. The preferred source is a flush-mounted junction box (j-box) next to the pole.
2. Private lights may be served from an above ground j-box within 10' of the pole (ULF6) or a pad-mounted single-phase transformer within 10' of the pole (ULF7).
3. A flush-mounted j-box above high water level may be used to serve pedestal-mounted poles in the water retention area via 2.5" rigid PVC. In water retention areas all connections shall be above the high water level.
4. In water retention areas poles may be served from another pole with connections made in the hand-hole.

Connections At Source
In-flush-mount or above ground j-box*:
• #6 Al Dx w/bare #6 solid Cu in flex duct between pole and flush j-box.
• Ground - From the steel pole ground connector in the hand-hole, run the ground wire to the j-box ground rod.
• Bare #6 solid copper may be connected directly to the rod. Use a pig-tail of bare #6 solid copper and a two-place mole bar (5034921) to connect aluminum conductor to the rod.
• 120 V Hot Leg - The black wire from the hand-hole is connected to the black wire from the transformer's X1 or X3 terminal. Verify voltage.
• Neutral - The black with white stripe wire from the hand-hole is connected to the black with white stripe wire from the transformer X2 terminal (neutral).
* For connection to 1/0 or 4/0 Tx streetlight secondary, successive lights are to be connected to alternate phase legs.

Series poles
• #6 Al Dx in 2.5" rigid PVC
• Ground - Each pole shall have a bare #6 solid copper from its own ground rod or plate, as well as a #12 solid copper connection from the luminaire. Connect these grounds together and then connect to the steel pole ground connector in the hand-hole.
• 120 V Hot Leg - The black wire from a source pole is connected to the luminaire black wire and the black wire to the next pole fed, if there is one. Verify voltage.
• Neutral - The black with white stripe wire from a source pole is connected to the luminaire white wire and the black with white stripe wire to the next pole fed, if there is one.

In pad-mounted single-phase transformer:
• #6Al Dx (5034032) between the pole and the transformer.
• Ground - #6 Cu wire is connected to the transformer ground.
• 120 V Hot Leg - The black (hot leg) is connected to the transformer X1 or X3 terminal ground.
• Neutral - The black wire with white stripe wire is connected to the X2 terminal.
TO LUMINAIRE

WIRE NUT OPENINGS POINT DOWN

PLACE A SMALL AMOUNT OF INHIBITOR GREASE (5012038) IN THE WIRE NUTS

CONSTRUCTION STANDARDS

CONNECTIONS

WIRE NUT ORIENTATION IN HAND HOLE
CONNECTIONS AT SOURCE

In flush mount or above ground J-box:
#6 Al Dx wire #6 solid copper in flex duct between pole and flush J-box.
Ground - From the luminaire green ground wire in the hand-hole run the ground wire to the J-box ground rod.
Bare #6 solid copper may be connected directly to the rod. Use a pig-tail of bare #6 solid copper and a two-place mole bar (5034021) to connect aluminum conductor to the rod.
120V Hot Leg - The black wire from the hand-hole is connected to the black wire from the transformer's X1 or X3 terminal. Verify voltage.
Neutral - The black with white stripe wire from the hand-hole is connected to the X2 terminal.
* For connection to 1/0 or 4/0 Tx street light secondary, successive lights are to be connected to alternate phase legs.

Series or radial poles in water retention areas
#6 Al Dx in 2.5" rigid PVC from pole to pole
Ground - Each pole will have a bare #6 solid copper from it's own ground rod or plate. Connect the bare #6 solid copper to the luminaire green ground wire in the hand-hole.
120V Hot Leg - The black wire from a source pole is connected to the luminaire black wire and the black wire to the next pole fed, if there is one. Verify voltage.
Neutral - The black with white stripe wire from a source pole is connected to the luminaire white wire and the black with white stripe wire to the next pole fed, if there is one.

In pad mounted single phase transformer
#6 Al Dx (5034032).
Ground - #6 Cu wire is connected to the transformer ground.
120V Hot Leg - The black (hot leg) is connected to the transformer X1 or X3 terminal.
Neutral - The black with white stripe wire is connected to the X2 terminal.

#6 DX (TO NEXT LIGHT ONLY ALLOWED ON WATER RETENTION POLES)
OVERHEAD SERVED LIGHT POLE

SEE "CONNECTIONS AT STEEL POLE HANDHOLE"

GROUND ROD

8" MIN.

16"

12" MIN. FROM SONO-TUBE OR POLE

#6 SOLID COPPER

NOTE: GROUND PLATE (UBGRDP) MAY BE USED FOR POLE REPLACEMENTS.
NOTES

1. Collar material item number are on page 5-15-1.
2. All fiberglass poles require ground line protection and it is provided as part of the pole by the manufacturer. Shakespeare provides a collar as appears on this page. Whatley poles have an integral layer of elastomeric urethane 1' foot above and below ground line.
3. New steel poles do not need a collar but one may be installed by maintenance if ongoing ground-line damage is expected.
4. If the space between the collar and pole is 1/4" or less, the foam is not required. wrap tape (5035527) around the pole at the collar contact point to tightly fill the space. Make sure collar embedment is always 2".
5. Fill inside collar with pole set foam (5012018).
6. Foam is mixed 2 parts "A" with 1 part "B".
7. Foam mixing bucket is 5071383.
NOTES:
1. ALL UN-METERED LOADS, LIGHTS SERVED BY SRP, WILL BE NUMBERED. THE NUMBER IS ASSIGNED BY SRP FOR CUSTOMER OWNED LIGHTS FOR BILLING PURPOSES ONLY AND NOT FOR MATERIAL OR ACCOUNTING PURPOSES (DO NOT GRID A COMPATIBLE UNIT). SRP CREW SHALL PLACE STREETLIGHT NUMBERS ON THE POLE.
2. SRP CREW IS TO NUMBER MUNICIPAL OR NON-MUNICIPAL POLES AT TIME CONDUCTOR IS TERMINATED IN THE JUNCTION BOX. MUNICIPAL OR NON-MUNICIPAL NUMBER WILL BE INDICATED ON THE WORK ORDER SKETCH.
3. MUNICIPAL LIGHT NUMBERS TO BE PLACED ON SIDE OF POLE FACING STREET. NON-MUNICIPAL NUMBER IS TO BE PLACED IN THE MOST VISIBLE LOCATION.
4. SURFACES TO WHICH NUMBERS AND STICKERS (5076537) ARE APPLIED MUST BE CLEAN AND FREE OF DIRT. USE CLEANER (5003004). NUMBERS AND STICKERS FOR WOOD POLES ARE TO BE APPLIED TO I.D. PLATE (5035695) WHICH IS THEN TO BE NAILED TO POLE. NUMBERS AND STICKERS FOR STEEL OR FIBERGLASS POLES ARE TO BE APPLIED DIRECTLY TO POLE.
5. NUMBERS WILL BE ATTACHED TO CUSTOMER OWNED STEEL OR FIBERGLASS POLES AND SRP WOOD POLES WHICH HAVE JOINT USE ATTACHMENT OF CITY LIGHTS. THE NUMBER TO BE INSTALLED IS SHOWN ON THE MEC ORDER OR JOB ORDER AND WILL HAVE THE FOLLOWING PREFIX:

- CITY OF PHOENIX = PH-
- CITY OF PEORIA = PE-
- CITY OF GLENDALE = GL-
- CITY OF CHANDLER = CH-
- CITY OF GILBERT = GI-
- CITY OF TEMPE = TE-

6. SRP OWNED STREETLIGHT POLE NUMBERS HAVE NO PREFIX LETTER. SRP NON-MUNICIPAL LIGHT POLE NUMBERS HAVE PREFIX LETTER "A".

7. PLACE NUMBER AT 8' ON DEDICATED LIGHT POLES (AS SHOWN) AND AT 12' ON SHARED POLES.
**WARNING**

Hazardous voltage inside.
Can shock, burn, or cause death.
Keep out.
If open or unlocked immediately call Salt River Project (602) 236-8811

**ADVERTENCIA**

Contiene voltaje peligroso.
Puede producir choques electromecánicos, quemaduras, o causar la muerte.
Manténgase alejado.
Si se encuentra abierto o sin llave llame a Salt River Project (602) 236-8811

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**Construction Standards**

"A" Lights - Underground
Cities of Phoenix and Tempe
Connections at Handhole

**Issue Date:** 09/03/99
**Rev. Date:** 11/01/13
**Approval:** W. Laramie