These SRP standards are subject to update and modification at any time. Printed copies may not include the most up-to-date standards, references, or requirements. If you have questions or need support email:

Engineering_Standards@srpnet.com

These standards are provided for general information only and are based on assumptions and criteria that may not be appropriate for or applicable to every circumstance or electrical system. SRP encourages each user to consult with its own technical advisor concerning the applicability of these standards to the user’s specific situation. The user assumes all risk associated with the use of these standards.

SRP makes no representations or warranties, express or implied, with respect to any use of or reliance on these specifications. All representations and warranties are expressly disclaimed.

Submit questions, comments or suggestions to:

Policy, Procedures & Standards

Engineering_Standards@srpnet.com
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I. Purpose and Scope
   A. The following Outdoor Lighting Standards address the majority of construction issues.

   B. It is imperative to maintain standardization and that completed Job Orders reflect any changes on the completed "Installation Records" to assure that all record systems reflect the actual location and facilities as they have been constructed. The accuracy of construction to standards will allow SRP to expedite future locating, rebuilding or repairing of these facilities to improve Customer service.

II. How to Use This Book
   A. Revisions are indicated by red text or graphics.

   B. Title blocks are used to hold information about the book, section, and standard and are located at the bottom of the page.

      1. “Approval” refers to the engineer responsible for that standard.

      2. “Issue Date” is when the standard was originally created.

      3. Revision Date (“Rev Date”) is the date the standard was last updated. Note that standards are reviewed periodically by the responsible engineer, and if no updates are necessary in that review, the Rev Date will remain unchanged.

      4. Revision statements are a summary of the changes made on the page and are located at the top of the title block.

      5. If a revision results in the complete removal of a diagram or an entire section of a diagram or a complete section of text, a brief explanation of the removal will be entered in the revision statement location of the title block.

      6. Revisions to formatting and corrections to typographical errors and/or page numbers will not be noted as a revision date change, however, it will be entered as a change in the Standards Revision Log.

   C. Utilizing SRP Standards

      1. When utilizing SRP’s standards in design projects, modification of said standards is NOT permitted.

      2. Details or images may be extracted and used in design projects when they do not include the title block of the standard and are not presented as a standard.

   D. Watermarks

      1. Standards

         a) For Reference Only – Standards that are not for new construction. Existing facilities may be maintained or replaced as like for like. Replaces Reference Only, Obsolete for Reference Only, Obsolete for Replacement Only, Obsolete Reference Only, Reference Only Do Not Construct, and Remove or Replace Only.
b) For Removal Only – Standards that are not for new construction. Existing facilities not maintained or replaced. Replaces Obsolete for Removal Only and Reference Only Remove When Located.

2. Compatible Units (CUs)
   a) Replacement Only – CUs that are to be used in situations where a like for like replacement is required. These CUs are related to a piece of equipment that is no longer being used for new construction, but is able to be maintained in the field.
   b) Removal Only – CUs that are to be used to remove existing equipment in the field. These CUs are not to be used to construct new equipment.

To access the “General Compatible Unit User Guide for Dist and Trans Line CUs”, visit: https://insrpteams/community/dc/standards/CU%20Documentation/GeneralCUUsersGuide.pdf

III. Changes to Standards

These standards are subject to update and modification at any time. Printed copies of this manual are provided as a courtesy, but may not include the most up-to-date standards, references, or requirements. To access current standards, visit: https://insrpteams/community/dc/standards/Pages/default.aspx

IV. Contact Information

A. Business and Residential

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<th>Contact Information</th>
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<tbody>
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<td>Blue Stake</td>
<td>Within Maricopa County, General Information, Billing Inquiries</td>
<td>(602) 263-1100</td>
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<td></td>
<td>Outside of Maricopa County, General Information, Billing Inquiries</td>
<td>(800) 782-5348</td>
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<tr>
<td>Business Center</td>
<td>General Information, Billing Inquiries, Inspections, Municipal Customers,</td>
<td>(602) 236-8833</td>
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<tr>
<td></td>
<td>Public Agency Customers, Temporary Disconnect</td>
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<tr>
<td>Electrical Emergencies</td>
<td>NOTE: Call 9-1-1 first for medical emergencies.</td>
<td>(602) 236-8811</td>
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<td>Fallen Power Lines, Arcing, Electric Shock,</td>
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<td></td>
<td>Damage to SRP Facilities</td>
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<tr>
<td>Residential</td>
<td>General Information, Billing Inquiries, Power Outages, Maintenance of SRP</td>
<td>(602) 236-8888</td>
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<td></td>
<td>Facilities, Temporary Disconnect, Inspections</td>
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<tr>
<td>Spanish</td>
<td>La Linea – servicio en español</td>
<td>(602) 236-1111</td>
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<tr>
<td>SRP EarthWise Solar</td>
<td>Main Line</td>
<td>(602) 236-4448</td>
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<tr>
<td></td>
<td>Residential Photovoltaic</td>
<td>(602) 236-4661</td>
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<td>Residential Solar Water Heaters</td>
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<td>Inquiries</td>
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<tr>
<td>Location of Underground Facilities</td>
<td>National “Call Before You Dig” (“One Call” Office)</td>
<td>811</td>
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B. Additional Resources

<table>
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<tr>
<th>Graphic Records:</th>
<th>Contract construction companies can request printing services online at srpnet.com/electric/business/graphicrequest.aspx</th>
</tr>
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<tbody>
<tr>
<td>Shop Drawings:</td>
<td>Customers are required to supply shop drawings for service entrance sections with non-pre-approved meter pedestals (single or double), non-pre-approved 320 amps, and all 400 amps and above. Email <a href="mailto:shopdraw@srpnet.com">shopdraw@srpnet.com</a> (PDF files are preferred).</td>
</tr>
<tr>
<td>Standards-related questions or for historical copies or versions of Standards email:</td>
<td><a href="mailto:Engineering_Standards@srpnet.com">Engineering_Standards@srpnet.com</a></td>
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V. Area Business Office Locations

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<th>Location</th>
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<tbody>
<tr>
<td>East Valley Service Center</td>
<td>7050 E. University Dr., Mesa 85207</td>
<td></td>
</tr>
<tr>
<td>Project Administration Building</td>
<td>1500 N. Mill Ave., Tempe 85281</td>
<td></td>
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<tr>
<td>Pinal County Customer Service Center</td>
<td>3735 E. Combs Rd., Queen Creek 85242</td>
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<tr>
<td>West Valley Service Center</td>
<td>221 N. 79th Ave., Tolleson 85353</td>
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</tbody>
</table>

VI. References

There are numerous documents and standards that were used in developing these guidelines. Many of these documents are modified and updated over time; the equipment of an interconnected generator shall conform to the most recent versions of these documents. A partial list of documents used is included below:

- Electric Utility Service Equipment Requirements Committee (EUSERC) Manual
- Institute of Electrical and Electronics Engineers (IEEE)
- International Building Code (IBC)
- National Electric Code (NEC)
- National Electrical Manufacturers Association (NEMA)
- National Electric Safety Code (NESC)
- Underwriter Laboratories (UL)
- Various state and municipal requirements
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</tr>
<tr>
<td>Additional References</td>
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</table>
Acronyms and Definitions

ATP: Authorization to Proceed

Ballast: An iron core and copper coil designed to limit the electric current through and control the voltage to the lamp

CIAC: Contribution In Aid of Construction

Circuit, Streetlight: The streetlights and one or more branches of conductor served from a single electrical source, preferably a single phase transformer

Collector Roadway: Generally one-half mile roadways

Cutoff Style: A luminaire from which light rays emitted either directly from the lamp or indirectly from the fixture are projected below the horizontal plane of the lowest point of the fixture; legally required by the Dark Sky Ordinance

Dark Sky Ordinance: Primarily Bill 2347 passed by the state of Arizona in 1986 but also various other bills which require SRP, and others installing outdoor lighting, to discontinue use of mercury vapor and install only cutoff style lighting. All MV and non-cutoff lighting must be removed by 2011.

Footcandle: One lumen per square foot

Fully Shielded Lighting: Luminaires with a flat glass refractor.

IES: The Illuminating Engineering Society publishes lighting standards

Junction Box (J-Box): Flush mounted box is where the connection to the light is made; it is the contractual point of delivery. Above ground junction box is where service to the flush mounted junction box is connected to secondary from the transformer, if not served directly from the transformer.

LOA: Letter of Authorization

Local or Minor Roadway: Roadways within residential

Lumen: A unit of measure used to rate the total usable light output of electric lamps; usable light being light at wavelengths visible to the human eye.

Major Roadway: Generally mile roads (there are exceptions), expressways and similar streets

Minimum Average Maintained Footcandles: Average illumination on the roadway when the reflector and refractor are dirty and the lamp is at its lowest output

Mole Assembly: The submersible connector used inside the j-box to make the electrical connection from the transformer to the luminaire

PHOENIX Customer Relationship System (CRS): Customer information system. Generates Customer’s orders, trouble calls and billing.

Photocell: A small electronic device mounted on top of the luminaire for the purpose of switching the luminaire on at dusk and off at dawn. Specified to fail on so the light would be a day-burner.

Reflector: The mirror-like part of a luminaire behind the lamp that redirects light out to the area to be illuminated
Acronyms and Definitions

**Refractor**: The lens through which light passes from the lamp, or bulb, out to the area to be illuminated

**SLVD**: An Excel program on the Line Standards, Policies, Procedures web page that calculates voltage drop and conductor amp loading given luminaire wattage, conductor type and length, circuit configuration and additional amp loads modeled at chosen junction boxes.

**Starter**: An electronic device in a high-pressure sodium luminaire that delivers a high voltage pulse to the lamp with the purpose of starting the lamp

**Uniformity Ratio**: The ratio of the average maintained foot-candle value to the lowest maintained foot-candle value at any point on the pavement.
SECTION 1: SRP OUTDOOR LIGHTING OVERVIEW

SRP Outdoor Lighting Contracts

SRP offers the following lighting contracts:

1. Municipal Rights-of-Way (Public): Available to all municipal districts within SRP territory. These are used on public thoroughfares and publicly owned lighted street signs.
   
   A. Foreign Lighting: Equipment owned by the SRP municipal Customer. These are mapped for the purpose of outage tracking and maintenance if maintained by SRP. Design to POD. Post all unmetered served lights to SmallWorld.
   
   B. Public: Customer owned and maintained. (Exception: Queen Creek to 2019, Maricopa County – Ongoing)

2. Non-Municipal: Non-Municipal lighting (Private or Security) is not to be used to light public thoroughfares.
   
   A. Private Private streets, parking lots, drives and alleys, thoroughfares and common areas. Used in PUE or SRP easement. Requires a 10 year contract (Private and Security lighting, check Private E50 option on Private and Security Leasing Contract, on JET; see copy page 1-12-1). Compatible units for this category end with the code letter P. Example: ULHC2609P
   
   B. Security: Private residences and commercial applications such as parking lots. Used on private property. This service is not intended for activities requiring illumination higher than an average of two foot-candles. Requires a 10 year contract. (Private and Security lighting, check Security E57 option on Private and Security Leasing Contract, on JET; see copy page 1-12-1.) Compatible units for this category end with the code letter D. Example: ULHC2609D
   
   C. Customer Owned and Maintained Private Lighting: Design to POD and post all unmetered served lights to SmallWorld. Requires a 10 year contract. Check Customer E51 option on Private and Security Leasing Contract (Underground served only).

See the Distribution Design Policies and Procedures Manual for costing, contracting, permits, paper flow, notification and billing.
Municipal Design Procedures

The general design procedures for municipal street lighting is listed below. For municipal street lighting there are two additional outlines on the following pages, titled “MIDBLOCK” and “SUBDIVISION/ROAD WIDENING/AESTHETICS”. These illustrate steps occurring outside the design process and are provided for added understanding. For individual cities requirements, refer to Section 2, Municipal Lighting Flowcharts in the Distribution Design Policies and Procedures Manual.

NOTE: Since SRP does not own municipal street lighting, generally the foreign compatible unit codes ending with “F” and found in the Reference Only sections in the back of sections 7 and 8, should be used as the billing code on the DX22 screen on UNSS (Unit Number Sub System). Private and Security light compatible units, ending in P or D, should not be used for municipal street lights. If you have questions regarding the billing code, contact Unmetered Services.

If a Customer requires municipal street lighting:

1. SRP receives approved streetlight plan from municipality.
2. Design determines the POD requirements.
3. Design determines costs.
4. Design prepares the contract and submits it to the municipality.
5. Design for POD and energization only (Customer owned streetlight).
6. Municipality submits the payment or signs authorizing SRP to bill the city.
7. City sends Letter of Authorization (LOA), if required by municipality, for monthly billing to Design.
8. Design releases job to Construction.
9. Design sends Unmetered Services the job package.
10. Unmetered Services bills for monthly energy to Customer.
11. Design posts lights to SmallWorld.
12. Unmetered Services and Design retains all documentation.
Municipal

Midblock
1. Customer requests light(s) from City.
2. City obtains signatures from neighborhood via petition.
3. City obtains easement to install pole and associated equipment.
4. City submits a letter requesting service and costs to SRP describing type of light and location of proposed light(s). SRP Design for POD only, calculates costs on Amp, prepares contract and submits contract to the City.
5. City signs contract and returns to SRP with payment or requests to be billed for CIAC. City submits LOA, if required by municipality, to Design for monthly billing.
6. Miscellaneous Accounts Receivable enters ATP and invoices City. Design is notified of ATP.
7. Design releases job to Construction.
8. Job is scheduled, constructed, and closed.
10. Unmetered Services and Design (JPC) bills for monthly energy to Customer.
11. Unmetered Services and Design retains all documentation.

Subdivision / Road Widening / Aesthetics

Lighting requests for subdivisions, road widening and aesthetics are processed the same by all divisions, except for the final billing. For subdivisions, the subdivision contractor will submit a request for lighting to the municipality prior to contacting SRP. For lighting requests from a municipality involving road widening or aesthetics, the municipality will contact SRP directly.

1. Municipality/Developer contacts SRP and submits approved light plan to SRP.
2. Design assigns streetlights POD locations and subdivision street light numbers on the subdivision/road widening/aesthetics job.
3. Draft job - for Road Widening and Aesthetics Only:
   A. Designer prepares construction cost proposal and may collect connection fees. Designs for POD only
   B. After the municipality approves the costs and payment is received, the Designer receives the ATP, and LOA, if required by municipality, for monthly billing responsibilities.
5. Release job package to SRP Construction, Customer.
6. Job is scheduled, constructed and closes.
7. Unmetered Services authorizes billings for monthly energy to Customer.
8. Design posts lights to SmallWorld.
9. Unmetered Services and Design retains all documentation.
Non-Municipal Procedures
Lighting Not Associated With Other Projects

If a Customer requires non-municipal lighting (10 year contracts):

1. The Customer contacts SRP through Residential Customer Services (RCS), Business Contact Center (BCC), or Construction Contact Center (CCC).

2. RCS, BCC, or CCC generates an Unmetered Service Memo Order on Phoenix CRS and transmits it to Unmetered Services via AMP.

3. Unmetered Services schedules a meeting between the Designer and Customer.

4. Unmetered Services meets with Customer.

5. Unmetered Services and Customer determine the lighting needs of the Customer.

6. Unmetered Services opens Work order number.

7. Unmetered Services draws up a contract for CIAC charges and monthly equipment charges.

8. Customer signs contract and pays applicable fees.

9. MARS enters ATP and scans in the signed contract.

10. Unmetered Services drafts and grids the job.

11. Unmetered Services releases the job to Construction and SRP Inspection as applicable and provides copies to the Customer.

12. SRP Inspection is involved if any construction is done by the Customer, typically any underground work, i.e. trench, conduit, and j-box.

13. The Customer should call Unmetered Services Inspections at (602)236-0436 for a pre-construction meeting with SRP Inspection, Design and the Customer’s contractor. At this meeting SRP answers any of the Customer’s questions about what work the Customer must perform.

14. When the Customer has completed his work, a final inspection is required.

15. After SRP Inspection has given final approval they send the Inspection and Communication Record, the “Pink Sheet” as it is called, to SRP Construction for completion of the work.

16. Job will be scheduled, constructed and closed.

17. Unmetered Services initiates billing.

18. Unmetered Services posts lights to SmallWorld.

19. Unmetered Services retains all documentation.
Non-Municipal Procedures
Lighting Associated With Other Projects

If a Customer requires non-municipal lighting (10 year contracts):

1. The Customer typically contacts SRP by plan submittal.
2. Design schedules a meeting with the Customer and requests the customer to contact the municipality and ask for their outdoor lighting criteria.
   
   Example: In the City of Phoenix, the mounting height is restricted to 15 ft. when located within 150 ft. of a residential district, and 25 ft. in a non-residential district. Mounting heights greater than this will require the Customer to obtain a zoning variance issued by the City of Phoenix.

3. Design meets with the Customer and determines lighting needs of the Customer.
4. Design provides proposal to Customer.
5. Design requests a work order number from the Job Processing Coordinator (JPC).
6. Calculate charges
7. Design draws up a contract. \srpusr20\vbinstalls\DDLC\publish.htm
8. Customer signs contract and pays applicable fees.
9. Design drafts and grids the job.
10. Job is released to Construction and SRP Inspection as applicable.
11. Design provides copies to the Customer.
12. Design sends the job package to Unmetered Services.
13. SRP Inspection is involved if any construction is done by the Customer, typically any underground work (i.e., trench, conduit, j-box).
14. Customer contacts East Valley (EV) (602) 236-6300 or West Valley (WV) (602) 236-0676 to schedule a pre-construction meeting with SRP Inspection, Design and the Customer’s contractor. At this meeting, SRP answers any of the Customer’s questions about what work the Customer must perform.

15. When the Customer has completed their work, they contact EV or WV for a final inspection.
16. After Inspection has given final approval, they send the Inspection and Communication Record (aka “pink sheet”), to SRP Construction for completion of the work.
17. The job is scheduled for construction.

   A. The city inspector will be advised of the construction schedule. This inspection is intended to verify zoning compliance (conformity to approved site plan) and spot check conformity to the installation standards. The city has advised this inspection requirement will not delay energization. The facility may be energized following completion of construction, whether or not the inspector was on site during construction.

   B. Construct the job

   C. Z-code the job when complete
18. Unmetered Services initiates billing and posts lights to exhibit maps
19. Unmetered Services and Design retains all documentation for one to two years and then forwards the documentation to Graphic Records to be stored permanently
Additional References

1. See the Customer Charges section of the Distribution Design Policy and Procedures Manual for information regarding:
   - Customer street lighting services
   - Customer charges
   - The lighting request process
   - Customer responsibilities
   - SRP Lighting Policy
   - Lighting conflicts with trees
   - SRP outdoor lighting options
   - Job Types section for information regarding streetlight connection blanket numbers.
   - Forms section for examples of the various forms mentioned in this book.
# SECTION 2
## CUSTOMER DATA

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## SECTION 2
### CUSTOMER DATA

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I. General Notes

A. Charges

1. Connection fees apply for Customer-owned lights; refer to Distribution Design Policies and Procedures, chapter 2.

2. For Private/Security light installation, CIAC may apply; refer to Distribution Design Policies and Procedures, chapter 2.

3. Charges are based on a 30-day billing cycle and adjusted monthly for variances in the length of the billing cycle.

4. Monthly bills will not be reduced due to lamp outages. The Customer is responsible for notifying SRP when lamp outages occur on SRP-maintained lights. To report light outages, contact Customer Service or go to SRP’s website at www.srpnet.com/electric/streetlightout.aspx.

5. Monthly charges include all maintenance and repairs on SRP-owned lights.

6. All rates are subject to change without notice.

B. Construction

1. The Customer shall provide and install all trench, backfill and landscape, 2-1/2 inch conduit, sonotube, electronic marker, ground rod and clamp, one-inch diameter flexible duct with pulling tape installed and junction box. All material must be SRP approved; refer to “Contractor-Supplied Material”.

C. Replacement luminaire styles may vary in appearance as a result of manufacturer design changes and variations in style from one manufacturer to another.

D. The iso-footcandle charts on the following pages are an approximation. Actual field measurements will vary due to luminaire manufacturer variations, other lighting in the area, shading and reflections of surrounding surfaces, and age of the lamp.

E. Spill light levels greater than one foot-candle are undesirable.
SECTION 2: CUSTOMER DATA

- HIGH PRESSURE SODIUM FIXTURE
- ROUND, GREY, STEEL POLE
- FOR PRIVATE AND SECURITY LIGHTING
- SERVED UNDERGROUND OR OVERHEAD
- ULHC2609D  LHC2609D
- ULHC2609P  LHC2609P

SEE GENERAL NOTES PAGE 2-0-2.

CUSTOMER DATA
SINGLE STREAMLINED LUMINAIRE
9,500 LUMEN, 100 WATT LAMP/26 FOOT MOUNTING HEIGHT

ISSUE DATE: 01/20/00
REV. DATE: 01/03/13
APPROVAL: W. LARAMIE

Outdoor Lighting Standards
PROPRIETARY MATERIAL

8518E165.DGN
- HIGH PRESSURE SODIUM FIXTURE
- ROUND, GREY, STEEL POLE
- FOR PRIVATE AND SECURITY LIGHTING
- SERVED UNDERGROUND OR OVERHEAD
- ULHC2616D LHC2616D
- ULHC2616P LHC2616P

SEE GENERAL NOTES PAGE 2-0-2.
OUTDOOR LIGHTING STANDARDS

CUSTOMER DATA

SINGLE STREAMLINED LUMINAIRE
9,500 LUMEN, 100 WATT LAMP/32 FOOT MOUNTING HEIGHT

- HIGH PRESSURE SODIUM FIXTURE
- ROUND, GREY, STEEL POLE
- FOR PRIVATE AND SECURITY LIGHTING
- SERVED UNDERGROUND OR OVERHEAD
- ULHC3109D LHC3109D
- ULHC3109P LHC3109P

SEE GENERAL NOTES PAGE 2-0-2.
Outdoor Lighting Standards

SECTION 2: CUSTOMER DATA

- HIGH PRESSURE SODIUM FIXTURE
- ROUND, GREY, STEEL POLE
- FOR PRIVATE AND SECURITY LIGHTING
- SERVED UNDERGROUND OR OVERHEAD
- ULHC3116D LHC3116D
- ULHC3116P LHC3116P

SEE GENERAL NOTES PAGE 2-0-2.

CUSTOMER DATA
SINGLE STREAMLINED LUMINAIRE
16,000 LUMEN, 150 WATT LAMP/32 FOOT MOUNTING HEIGHT

ISSUE DATE: 01/31/00
REV. DATE: 01/03/13
APPROVAL: W. LARAMIE

2-1-4
High Pressure Sodium Fixture
Round, Grey, Steel Pole
For Private and Security Lighting
Served Underground or Overhead
ULHC3130D  LHC3130D
ULHC3130P  LHC3130P

See General Notes Page 2-0-2.
SECTION 2: CUSTOMER DATA

- HIGH PRESSURE SODIUM FIXTURE
- ROUND, GREY, STEEL POLE
- FOR PRIVATE AND SECURITY LIGHTING
- SERVED UNDERGROUND OR OVERHEAD
- ULHC3509D  LHC3509D
- ULHC3509P  LHC3509P

SEE GENERAL NOTES PAGE 2-0-2.
HIGH PRESSURE SODIUM FIXTURE
- ROUND, GREY, STEEL POLE
- FOR PRIVATE AND SECURITY LIGHTING
- SERVED UNDERGROUND OR OVERHEAD
- ULHC3516D   LHC3516D
- ULHC3516P   LHC3516P

SEE GENERAL NOTES PAGE 2-0-2.

Outdoor Lighting Standards

CUSTOMER DATA
SINGLE STREAMLINED LUMINAIRE
16,000 LUMEN, 150 WATT LAMPY 35 FOOT MOUNTING HEIGHT

ISSUE DATE: 01/31/03
REV. DATE: 01/03/13
APPROVAL: W. LARAMIE

8516E288.DGN
SECTION 2: CUSTOMER DATA

- HIGH PRESSURE SODIUM FIXTURE
- ROUND, GREY, STEEL POLE
- FOR PRIVATE AND SECURITY LIGHTING
- SERVED UNDERGROUND OR OVERHEAD
- ULHC3530D  LHC3530D
- ULHC3530P  LHC3530P

SEE GENERAL NOTES PAGE 2-0-2.

OUTDOOR LIGHTING STANDARDS

CUSTOMER DATA
SINGLE STREAMLINED LUMINAIRE
30,000 LUMEN, 250 WATT LAMP/35 FOOT MOUNTING HEIGHT

ISSUE DATE: 01/31/00
REV. DATE: 01/03/13
APPROVAL: W. LARAMIE

2-1-8
SECTION 2: CUSTOMER DATA

HIGH PRESSURE SODIUM FIXTURE
ROUND, GREY, STEEL POLE
FOR PRIVATE AND SECURITY LIGHTING
SERVED UNDERGROUND OR OVERHEAD
ULHC3116TP    LHC3116TP
ULHC3116TD    LHC3116TD

SEE GENERAL NOTES PAGE 2-0-2.

CUSTOMER DATA
DUAL STREAMLINED LUMINAIRE
16,000 LUMEN, 150 WATT LAMP, 30 FOOT MOUNTING HEIGHT

Outdoor Lighting Standards

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REV. DATE: 01/05/15
APPROVAL: W. LARAMIE

8518E186.DGN
HIGH PRESSURE SODIUM FIXTURE
• ROUND, GREY, STEEL POLE
• FOR PRIVATE AND SECURITY LIGHTING
• SERVED UNDERGROUND OR OVERHEAD
• ULHC3130TP LHC3130TP
• ULHC3130TD LHC3130TD

SEE GENERAL NOTES PAGE 2-0-2.
HIGH PRESSURE SODIUM FIXTURE
ROUND, GREY STEEL POLE
FOR PRIVATE AND SECURITY LIGHTING
SERVED UNDERGROUND OR OVERHEAD
ULHC3550TP    LHC3550TP
ULHC3560TD    LHC3560TD

SEE GENERAL NOTES PAGE 2-0-2.
HIGH PRESSURE SODIUM FIXTURE
SQUARE, BROWN, FIBERGLASS POLE
FOR PRIVATE AND SECURITY LIGHTING
SERVED UNDERGROUND
ULAHF1809P, ULAHF1809D

SEE GENERAL NOTES PAGE 2-0-2.

NOTE:
GROUND LINE PROTECTION MAY BE A COLLAR AS SHOWN OR A
1/2" THICK LAYER OF ELASTOMERIC URETHANE ONE FOOT ABOVE
AND BELOW GROUND LINE.
HIGH PRESSURE SODIUM FIXTURE
ROUND, GRAY, FIBERGLASS POLE
FOR PRIVATE AND SECURITY LIGHTING
SERVED UNDERGROUND
ULAHF2309D ULAHF2309P

SEE GENERAL NOTES PAGE 2-0-2.

NOTE:
GROUND LINE PROTECTION MAY BE A COLLAR AS SHOWN OR A 1/2" THICK LAYER OF ELASTOMERIC URETHANE ONE FOOT ABOVE AND BELOW GROUND LINE.
- HIGH PRESSURE SODIUM FIXTURE
- ROUND, GRAY, FIBERGLASS POLE
- FOR PRIVATE AND SECURITY LIGHTING
- SERVED UNDERGROUND
- ULAHF2318D ULAHF2318P

SEE GENERAL NOTES PAGE 2-0-2

GROUND LINE PROTECTION MAY BE A COLLAR AS SHOWN OR A 1/2" THICK LAYER OF ELASTOMERIC URETHANE ONE FOOT ABOVE AND BELOW GROUND LINE.
SECTION 2: CUSTOMER DATA

- HIGH PRESSURE SODIUM FIXTURE
- SQUARE, BROWN, STEEL POLE
- FOR PRIVATE AND SECURITY LIGHTING
- SERVED UNDERGROUND
- ULAH2809P  ULAH2809D

SEE GENERAL NOTES PAGE 2-0-2.
SECTION 2: CUSTOMER DATA

- HIGH PRESSURE SODIUM FIXTURE
- SQUARE, BROWN, STEEL POLE
- FOR PRIVATE AND SECURITY LIGHTING
- SERVED UNDERGROUND
- ULAH2816D, ULAH2816P

SEE GENERAL NOTES PAGE 2-0-2.
HIGH PRESSURE SODIUM FIXTURE
SQUARE, BROWN, STEEL POLE
FOR PRIVATE LIGHTING
SERVED UNDERGROUND
ULAH3600P

SEE GENERAL NOTES PAGE 2-0-2.
HIGH PRESSURE SODIUM FIXTURE
ROUND, GREY, STEEL POLE
FOR PRIVATE LIGHTING
SERVED UNDERGROUND
ULAH3118P

SEE GENERAL NOTES PAGE 2-0-2.
SECTION 2: CUSTOMER DATA

- HIGH PRESSURE SODIUM FIXTURE
- SQUARE, BROWN, STEEL POLE
- FOR PRIVATE AND SECURITY LIGHTING
- SERVED UNDERGROUND
- ULAH3630P
- ULAH3630D

SEE GENERAL NOTES PAGE 2-0-2.

STANDARDS

CUSTOMER DATA
SINGLE ARCHITECTURAL LUMINAIRE
30,000 LUMEN, 250 WATT LAMP, 32 FOOT MOUNTING HEIGHT

Outdoor Lighting Standards

SRP
PROPRIETARY MATERIAL
SECTION 2: CUSTOMER DATA

- HIGH PRESSURE SODIUM FIXTURE
- SQUARE, BROWN, STEEL POLE
- FOR PRIVATE AND SECURITY LIGHTING
- SERVED UNDERGROUND
- ULAH4008P

SEE GENERAL NOTES PAGE 2-0-2.
SECTION 2: CUSTOMER DATA

- HIGH PRESSURE SODIUM FIXTURE
- SQUARE, BROWN, STEEL POLE
- FOR PRIVATE LIGHTING
- SERVED UNDERGROUND
- ULH4016P

SEE GENERAL NOTES PAGE 2-0-2.
HIGH PRESSURE SODIUM FIXTURE
SQUARE, BROWN, STEEL POLE
FOR PRIVATE AND SECURITY LIGHTING
SERVED UNDERGROUND
ULAH4030P

SEE GENERAL NOTES PAGE 2-0-2

CUSTOMER DATA
SINGLE ARCHITECTURAL LUMINAIRE
30,000 LUMEN, 250 WATT LAMP/35'-4" MOUNTING HEIGHT

Outdoor Lighting Standards

CUSTOMER DATA
SINGLE ARCHITECTURAL LUMINAIRE
30,000 LUMEN, 250 WATT LAMP/35'-4" MOUNTING HEIGHT

ISSUE DATE: 04/10/12
REV. DATE: 12/25/12
APPROVAL: W. LARAMIE

2-3-11

8518E815.DGN
SECTION 2: CUSTOMER DATA

- HIGH PRESSURE SODIUM FIXTURE
- SQUARE, BROWN, STEEL POLE
- FOR PRIVATE AND SECURITY LIGHTING
- SERVED UNDERGROUND
- ULAH4050P ULAH4050D

SEE GENERAL NOTES PAGE 2-0-2.

Outdoor Lighting Standards

CUSTOMER DATA
SINGLE ARCHITECTURAL LUMINAIRE
50,000 LUMEN, 400 WATT LAMP/35'-4" MOUNTING HEIGHT

2-3-12
SECTION 2: CUSTOMER DATA

- HIGH PRESSURE SODIUM FIXTURE
- SQUARE, BROWN, FIBERGLASS POLE
- FOR PRIVATE AND SECURITY LIGHTING
- SERVED UNDERGROUND
- ULAHF1809TP ULAHF1809TD

SEE GENERAL NOTES PAGE 2-0-2.

NOTE:
GROUND LINE PROTECTION MAY BE A COLLAR AS SHOWN OR A 1/2" THICK LAYER OF ELASTOMERIC URETHANE ONE FOOT ABOVE AND BELOW GROUND LINE.
HIGH PRESSURE SODIUM FIXTURE
SQUARE, BROWN, STEEL POLE
FOR PRIVATE AND SECURITY LIGHTING
SERVED UNDERGROUND
ULAH2800TD ULAH2800TP

SEE GENERAL NOTES PAGE 2-0-2.
SECTION 2: CUSTOMER DATA

- HIGH PRESSURE SODIUM FIXTURE
- SQUARE, BROWN, STEEL POLE
- FOR PRIVATE AND SECURITY LIGHTING
- SERVED UNDERGROUND
- ULAH2816TD
- ULAH2816TP

SEE GENERAL NOTES PAGE 2-0-2.

Outdoor Lighting Standards

CUSTOMER DATA
DUAL ARCHITECTURAL LUMINAIRE
16,000 LUMEN, 150 WATT LAMP/25'-6" MOUNTING HEIGHT

2-4-3
SECTION 2: CUSTOMER DATA

CUSTOMER DATA
DUAL ARCHITECTURAL LUMINAIRE
9,500 LUMEN, 100 WATT LAMP; 32 FOOT MOUNTING HEIGHT

- HIGH PRESSURE SODIUM FIXTURE
- SQUARE, BROWN, STEEL POLE
- FOR PRIVATE LIGHTING
- SERVED UNDERGROUND
- ULAH3809TP

SEE GENERAL NOTES PAGE 2-0-2.
- High pressure sodium fixture
- Square, brown, steel pole
- For private and security lighting
- Served underground
- ULAH3616TP ULAH3618TD

See general notes page 2-0-2.
SECTION 2: CUSTOMER DATA

- HIGH PRESSURE SODIUM FIXTURE
- SQUARE, BROWN, STEEL POLE
- FOR PRIVATE AND SECURITY LIGHTING
- SERVED UNDERGROUND
- ULAH3630TP ULAH3630TD

SEE GENERAL NOTES PAGE 2-0-2.
SECTION 2: CUSTOMER DATA

- HIGH PRESSURE SODIUM FIXTURE
- SQUARE, BROWN, STEEL POLE
- FOR PRIVATE LIGHTING
- SERVED UNDERGROUND
- ULAH4009TP

SEE GENERAL NOTES PAGE 2-0-2.

Outdoor Lighting Standards

CUSTOMER DATA
DUAL ARCHITECTURAL LUMINAIRE
9,500 LUMEN, 100 WATT LAMP/35'-4" MOUNTING HEIGHT
SECTION 2: CUSTOMER DATA

- HIGH PRESSURE SODIUM FIXTURE
- SQUARE, BROWN, STEEL POLE
- FOR PRIVATE LIGHTING
- SERVED UNDERGROUND
- ULAH4016TP

SEE GENERAL NOTES PAGE 2-0-2.
SECTION 2: CUSTOMER DATA

- HIGH PRESSURE SODIUM FIXTURE
- ROUND, GREY, FIBERGLASS POLE
- FOR PRIVATE AND SECURITY LIGHTING
- SERVED UNDERGROUND
- ULCHCF1709D, ULCHCF1709P

SEE GENERAL NOTES PAGE 2-0-2.

NOTE:
GROUND LINE PROTECTION MAY BE A COLLAR AS SHOWN OR A 1/2" THICK LAYER OF ELASTOMERIC URETHANE ONE FOOT ABOVE AND BELOW GROUND LINE.
HIGH PRESSURE SODIUM FIXTURE
- ROUND, GREY, FIBERGLASS POLE
- FOR PRIVATE AND SECURITY LIGHTING
- SERVED UNDERGROUND
- ULCHCF2309D, ULCHCF2309P

SEE GENERAL NOTES PAGE 2-0-2.

NOTE:
GROUND LINE PROTECTION MAY BE A COLLAR AS SHOWN OR A 1/2" THICK LAYER OF ELASTOMERIC URETHANE ONE FOOT ABOVE AND BELOW GROUND LINE.
SECTION 2: CUSTOMER DATA

GROUNDED LINE PROTECTION MAY BE A COLLAR AS SHOWN OR A 1/2" THICK LAYER OF ELASTOMERIC URETHANE ONE FOOT ABOVE AND BELOW GROUND LINE.

NOTE:

HIGH PRESSURE SODIUM FIXTURE
ROUND, GREY, FIBERGLASS POLE
FOR PRIVATE AND SECURITY LIGHTING
SERVED UNDERGROUND
ULCHGF2318D, ULCHGF2318P

SEE GENERAL NOTES PAGE 2-0-2.
SECTION 2: CUSTOMER DATA

- HIGH PRESSURE SODIUM FIXTURE
- ROUND, BLACK, FIBERGLASS POLE
- FOR PRIVATE AND SECURITY LIGHTING
- SERVED UNDERGROUND
- ULEHCF1709D ULEHCF1709P

NOTE:
GROUND LINE PROTECTION MAY BE A COLLAR AS SHOWN OR A 1/2" THICK LAYER OF ELASTOMERIC URETHANE ONE FOOT ABOVE AND BELOW GROUND LINE.
SECTION 2: CUSTOMER DATA

Outdoor Lighting Standards

CUSTOMER DATA
FLOODLIGHT
50,000 LUMEN, 400 WATT LAMP/36 FOOT MOUNTING HEIGHT

ISSUE DATE: 12/22/99
REV. DATE: 01/08/13
APPROVAL: W. LARAMIE

8518E302.DGN
HIGH PRESSURE SODIUM FIXTURE
WOOD POLE
FOR PRIVATE AND SECURITY LIGHTING
SERVED UNDERGROUND OR OVERHEAD
ULFHC50D, LFHC50D

SEE GENERAL NOTES PAGE 2-0-2.

* Generally installed on existing pole.

CUSTOMER DATA
FLOODLIGHT
60,000 LUMEN, 400 WATT LAMP 34 +/- ONE FOOT MOUNTING HEIGHT
HIGH PRESSURE SODIUM FIXTURE
ROUND, GREY, STEEL POLE
FOR PRIVATE AND SECURITY LIGHTING
SERVED UNDERGROUND OR OVERHEAD
ULFHC3150TD, ULFHC3150TP    LFHC3150TD, LFHC3150TP

SEE GENERAL NOTES PAGE 2-0-2.
SECTION 2: CUSTOMER DATA

- HIGH PRESSURE SODIUM FIXTURE
- WOOD POLE
- FOR PRIVATE AND SECURITY LIGHTING
- SERVED UNDERGROUND OR OVERHEAD
- ULFHC50TD, LFHC50TD

SEE GENERAL NOTES PAGE 2-0-2.

CUSTOMER DATA
DUAL FLOODLIGHT
50,000 LUMEN, 400 WATT LAMP, 34 +/- ONE FOOT MOUNTING HEIGHT

* Generally installed on existing poles.
HIGH PRESSURE SODIUM FIXTURE
- SQUARE, GREY, FIBERGLASS POLE, PEDESTAL MOUNT
- FOR WATER RETENTION BASIN LIGHTING
- SERVED UNDERGROUND
- ULCHPF1009P, ULCHPF1009D

SEE GENERAL NOTES PAGE 2-0-2.
HIGH PRESSURE SODIUM FIXTURE
• SQUARE, GREY, FIBERGLASS POLE, PEDESTAL MOUNT
• FOR WATER RETENTION BASIN LIGHTING
• SERVED UNDERGROUND
• ULCHPF1209P, ULCHPF1209D

SEE GENERAL NOTES PAGE 2-0-2.
**SECTION 2: CUSTOMER DATA**

**HIGH PRESSURE SODIUM FIXTURE**
- SQUARE, GREY, FIBERGLASS POLE, PEDESTAL MOUNT
- FOR WATER RETENTION BASIN LIGHTING
- SERVED UNDERGROUND
- ULCHPF1216P, ULCHPF1218D

SEE GENERAL NOTES PAGE 2-0-2.

Outdoor Lighting Standards

CUSTOMER DATA
WATER RETENTION BASIN
CONTEMPORARY, 3 FOOT PEDESTAL
16,000 LUMEN, 180 WATT LAMP/15 FOOT MOUNTING HEIGHT

2-9-3

ISSUE DATE: 04/04/01
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8518E308.DGN
**Outdoor Lighting Standards**

**SECTION 2: CUSTOMER DATA**

- HIGH PRESSURE SODIUM FIXTURE
- SQUARE, BLACK, FIBERGLASS POLE, PEDESTAL MOUNT
- FOR WATER RETENTION BASIN LIGHTING
- SERVED UNDERGROUND
- ULEHPF1009, ULEHPF1009D

SEE GENERAL NOTES PAGE 2-0-2.
Outdoor Lighting Standards

SECTION 2: CUSTOMER DATA

CUSTOMER DATA
WATER RETENTION BASIN
EARLY AMERICAN 3 FOOT PEDESTAL
9,500 LUMEN, 100 WATT LAMP/ 15 FOOT MOUNTING HEIGHT

ISSUE DATE: 03/05/01
REV. DATE: 12/20/12
APPROVAL: W. LARAMIE

PROPRIETARY MATERIAL

- HIGH PRESSURE SODIUM FIXTURE
- SQUARE, BLACK, FIBERGLASS POLE, PEDESTAL MOUNT
- FOR WATER RETENTION BASIN LIGHTING
- SERVED UNDERGROUND
- ULEHPF1209P, ULEHPF1209D

SEE GENERAL NOTES PAGE 2-0-2.
- HIGH PRESSURE SODIUM FIXTURE
- SQUARE, BROWN, FIBERGLASS POLE, PEDESTAL MOUNT
- FOR WATER RETENTION BASIN LIGHTING
- SERVED UNDERGROUND
- ULSF1009D, ULSF1009P

SEE GENERAL NOTES PAGE 2-0-2.
• HIGH PRESSURE SODIUM FIXTURE
• SQUARE, BROWN, FIBERGLASS POLE, PEDESTAL MOUNT
• FOR WATER RETENTION BASIN LIGHTING
• SERVED UNDERGROUND
• ULSF1209D, ULSF1209P

SEE GENERAL NOTES PAGE 2-0-2.
CUSTOMER DATA
WATER RETENTION BASIN
DUAL ARCHITECTURAL, 3 FOOT PEDESTAL
9,500 LUMEN, 100 WATT LAMP/16 FOOT MOUNTING HEIGHT

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SECTION 2: CUSTOMER DATA
SECTION 2: CUSTOMER DATA

Some municipalities are replacing or installing luminaires, fed from the SRP system, that are non-standard luminaires. Non-standard meaning SRP does not have a compatible unit (CU) describing these luminaires. Examples: LED, metal halide, low pressure sodium and inductive.

SRP maps un-metered served lighting (streetlights, private/security) when served from its distribution system for billing purposes and to control loading on electrical circuits. Use the table below to map non-standard Customer-owned lighting in USMS when CUs are not available for the luminaire installed.

<table>
<thead>
<tr>
<th>Bill Code</th>
<th>Lumen</th>
<th>Type</th>
<th>Watt</th>
<th>kWh</th>
<th>City</th>
</tr>
</thead>
<tbody>
<tr>
<td>LC05S</td>
<td>5800</td>
<td>High Pressure Sodium</td>
<td>70</td>
<td>25</td>
<td>-</td>
</tr>
<tr>
<td>LC09S</td>
<td>9500</td>
<td>High Pressure Sodium</td>
<td>100</td>
<td>46</td>
<td>-</td>
</tr>
<tr>
<td>LC16S</td>
<td>16000</td>
<td>High Pressure Sodium</td>
<td>150</td>
<td>74</td>
<td>-</td>
</tr>
<tr>
<td>LC22S</td>
<td>22000</td>
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<td>200</td>
<td>92</td>
<td>Mesa</td>
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<td>LC27S</td>
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* Due to the present lack of standardized LED luminaire designs, bill codes for most wattages are not listed. Call 602-236-0459 for additional bill codes.
UnMetered Services has an online process for creating lighting contracts that can be installed by going to this link: `\srpusr20\vbinstalls\DDLC\publish.htm`

The online forms are for Commercial New Business (Commercial or Residential) and HMC (Residential New Business). By filling in the forms online the monthly charge and the construction and permit charges are calculated.
### SECTION 2: CUSTOMER DATA

#### PRIVATE AND SECURITY LIGHTING LEASING CONTRACT

**CUSTOMER NAME:**

**SUBDIVISION NAME:**

**LOCATION KEY ACCT #:**

**INSTALLATION ADDRESS:**

**COORDINATE LOCATION:**

**RIDER:**

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**COORDINATE LOCATION:**

**CARE OF NAME/DBA:**

**MAILING ADDRESS (Street Address, City, State, Zip Code):**

**PERMIT FEES:**

**MUNICIPALITY:**

**HANDLING:**

**TOTAL:**

**INSTALLATION CITY:**

**STATE:**

**ZIP CODE:**

**COMMERCIAL:**

### PROJECT LIGHTING STYLE

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**TOTAL SUMMER MONTHLY CHARGE:**

**(subject to change at time of any subsequent rate increase)**

Customer is advised to schedule a pre-construction mtg prior to trenching. All work must be inspected, to schedule pre-con and/or inspection call:

**EAST: 602-236-6300**

**WEST: 602-236-6765**

**IMC: 602-236-6029**

### UNDERGROUND APPLICATIONS:

The customer is responsible for all trenching, conduit installation, backfill & landscaping repairs. The customer will supply and install a j-box & conduit at each light location. Specific design criteria to be specified on the installation drawing. SRP will pull in the conductor and install the light in the conduit.

### OVERHEAD APPLICATIONS:

The customer is responsible for installing conduits for each light location. SRP will install the light and provide overhead electrical service.

Please sign and return this contract with the total amount due on or before 'DATE HERE'.

### TOTAL DUE FOR CONSTRUCTION AND PERMITS:

This agreement authorizes SRP to install, maintain, render billing, and remove unmotorized lighting services as indicated herein, in accordance with terms and conditions set forth with the Rule Schedules 56 and 57. Neither this agreement nor the service supplied thereunder, shall be transferable by the Customer without written consent of the District. This agreement is subject to change in the applicable rate schedule and/or standard adjustments. If the Customer revises or cancels the installation/modification of facilities, SRP will charge Customer for any additional costs incurred by SRP, including but not limited to design and engineering costs. Such costs may be retained by SRP from any previously collected from Customer, or billed directly to Customer, as appropriate. This agreement expires after 11/30/2012 if not executed.

**10/31/2012**

**SIGNATURE:**

**DATE:**

**SIGNATURE:**

**DATE:**

**PRINT NAME & TITLE:**

**RELATED JOB NUMBER:**

**COST CENTER:**

**CUSTOMER PHONE NUMBER:**

**WORKORDER NO.:**

Form Rev: 10/31/2012

Additional Terms Conditions on Page 2

Page 1 of 2

Outdoor Lighting Standards

CUSTOMER DATA

PRIVATE AND SECURITY LIGHTING

LEASING CONTRACT EXAMPLE

ISSUE DATE: 01/10/00

REV. DATE: 01/28/13

APPROVAL: W. Laramie

OL2-14-1.doc
SECTION 2: CUSTOMER DATA

A. This contract agreement between the Salt River Project Agriculture & Power Improvement District, hereinafter referred to as SRP, and the customer is a lease agreement. The customer is entitled to all the rights and privileges of the lease as stated herein.

B. Customer shall pay for such lighting service pursuant to the terms and conditions set forth in the Electric Rate Schedule, E-56 and any applicable rider(s), or any successor rate, this contract and the District Rules Regulations which are by reference incorporated herein. Copies of the Electric Rate Schedule and Salt River Project Rules and Regulations are available for inspection at the Business Office. Excerpts from the E-56 and any applicable rider(s), or any successor rate Electric Rate Schedule are listed below for the customer’s convenience and as such are not given greater or lesser weight than the complete schedule or the Salt River Project Rules and Regulations. The SRP Rules & Regulations is available at www.SRPNET.COM.

C. SRP will not do temporary light turn offs at customer request nor will monthly bills be reduced because of lamp outages. The customer must notify SRP when lamp outages occur by calling 602-236-8888.

D. A customer may cancel a lighting service agreement by payment of the monthly bill including the applicable tax adjustment, multiplied by the number of remaining months of the initial contract, or the "up and down" costs for the installation, whichever is lower. Call 602-236-8888 for information.

E. A guarantee deposit may be required for the installation of the light(s).

F. The point of delivery shall be at a junction box point or handhole of the pole for underground installations and at the overhead attachment point when lines are run overhead.

G. A customer may not make connections, attachments, or alterations to the electric lighting circuits or to the lighting equipment without SRP’s written consent.

H. A customer must pay for the cost of relocating a SRP owned security or private street lighting installation unless such relocation is made for the convenience of SRP.

I. Items for which no basic charge has been included in this schedule will be billed at a charge determined by SRP management, subject to ratification or retroactive adjustment by the SRP Board of Directors within one year from initiation of the charges.

J. Additions to or conditions relating to security or private street lighting other than those contained herein will be by supplementary agreement between the customer and SRP.

K. A customer shall pay for the cost of additions to the security or private street lighting system by a non-refundable contribution in aid of construction.

L. Where any installation of underground service must be made in difficult areas such as under paving, in rocky terrain, etc., SRP may require the customer to bear any additional costs of construction as determined by SRP field survey.

M. In the event it becomes necessary for either party to employ an attorney to enforce compliance with the terms of this contract, said party, if successful in enforcing its rights, shall be entitled to reimbursement from the other party for reasonable attorney's fees, as determined by the court, and costs and expenses incurred in such enforcement.

Legal description:

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

Underground

________________________________________________________________________

________________________________________________________________________
SECTION 2: CUSTOMER DATA

Information Needed For Private/Security Lighting Agreement

(All information must be complete, legible, and accurate otherwise this project may be delayed. Upon completion of filling out this form, please return to your DDC for processing).

SRP DDC providing this information: __________________________________________________________

Check one:  ___ SRP owned, maintained and installed

___ Customer owned, maintained and installed

Project Name/Number: ________________________________________________________________

Contract Legal Name: _______________________________________________________________

(Must be INC, LLC, or HOA)

Billing Name: (mgmt. co.): ______________________________________________________________

Billing Address: ______________________________________________________________________

Print name of Authorized Signer _________________________________________________________

Signer’s title: ___________________________ Phone #: ________________________________

If SRP Lights:

Style of Lights: __________________________ Number of Lights: ___________________________

Height of Pole: __________________________ Lumen/Wattage: _____________________________

Compatible Unit: _______________________

If Customer Lights:

Number of lights: ________________________ Lumen/Wattage: _____________________________

Name/phone number of person giving info: ________________________________________________

Fax number: __________________________________

Any additional information:

__________________________________________________________________________________

__________________________________________________________________________________

__________________________________________________________________________________

__________________________________________________________________________________

__________________________________________________________________________________
## Section 3
### Design and Miscellaneous

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<td>J-Box Requirements</td>
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<td>Non-Municipal Lighting, Special Municipal Restrictions</td>
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I. Non-Municipal
   
   A. Light Design

   The following steps are necessary to complete a non-municipal light design. The order in which these are completed will vary.

   1. Determine the mounting height requirements. For walk-ins (no bucket truck access) the maximum mounting height is 17 feet.

   2. Identify the luminaire placement.

   3. Municipal restrictions may apply.

   4. Private security light poles and their point-of-delivery junction boxes are not to be installed within public utility easements.

   5. Identify the electric service requirements and sources.

   6. Check for voltage drop limitations using the Streetlight Voltage Drop Calculation Program spreadsheet: https://insrpteams/community/dc/standards/Pages/default.aspx
I. Non-Municipal Luminaire

A. Pole Placement

The Customer usually has a preference in pole locations. The following are restrictions.

1. Place the pole where it can be reached by SRP bucket trucks. The circumstances may not allow this, but it makes a major impact on the cost to maintain the luminaire. If such a location is not possible, the location shall be in an area where it is easily accessible by a ladder and the mounting height shall be 17 feet or less.

2. If the luminaire is mounted on a wood pole, the luminaire must be either accessible by a bucket truck or the mounting arm shall be 24 inches or less to allow maintenance from the pole.

3. Avoid placing the pole in watered areas to reduce corrosive damage to the pole. Use the concrete pedestal mounted poles in water retention areas.

4. Attempt to place the pole in an area away from vehicle traffic.

5. Do not place poles within locked areas.

6. Choose a site where it will be convenient to access underground or overhead service.

7. 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 feet or less. See Construction Standards section, Light Poles in Proximity of Metallic Apparatus, Bonding.
I. Junction Box (J-Box) and Lighting
   A. Circuit Requirements
      1. Light poles shall be served from a flush-mounted streetlight j-box which serves as POD. See the Construction Standards section for details. If the pole is six feet or less from any metallic apparatus, bonding is required. See Construction Standards section, Light Poles in Proximity of Metallic Apparatus, Bonding.
      2. Above ground j-boxes are not an acceptable POD for street light circuits.
      3. See the Electric Service Specifications, Trenching and Conduit section, Customer Excavation Limits, for precautionary instructions concerning digging near SRP electrical facilities.
I. Non-Municipal Lighting

A. Special Municipal Restrictions

1. County – General

By law a county in Arizona cannot own street lighting. If a development, with private streets, wants street lighting, the HOA can request non-municipal lighting from SRP and may negotiate with the county to pay SRP for the service. SRP will not light major public roadways.

2. Maricopa County

All luminaires must be cutoff style with no more than 2% uplight. All SRP luminaires presently purchased conform to this standard.

3. Tempe

a) Light poles shall not exceed 18 feet in height within 50 feet of any residential zoning district, 25 feet in height within 50 to 150 feet of any residential zoning district, and 30 feet in all other locations. Height shall be measured from the top of a light fixture to the adjacent grade at the base of the support for that light fixture.

b) Floodlights are permitted only on industrial property.

c) All exterior light shall be directed downward and away from adjoining property.

4. Phoenix

a) Lighting should be shielded to prevent direct visibility of the source from adjacent property.

b) Projected light level at the property line should be limited to one foot-candle or less.

c) Luminaire mounting height shall be limited to 15 feet or less, within 150 feet of a residence.

d) Luminaire mounting height shall be limited to 25 feet or less adjacent to nonresidential districts.
I. Illumination Levels

A. Options

If the Customer has requested an approximate foot-candle illumination level there are two options:

1. Use the photometric pattern for the type, wattage and pole height for the specific luminaire in the Customer Data section of this book. A clear plastic “overhead projector” copy of the chart can be overlaid on top of a scaled drawing of the Customer’s property. Wherever the patterns overlay for two luminaires the foot-candle values are additive.

2. Contact Policy, Procedures & Standards (PP&S).

PP&S will need:

a) A dimensioned drawing of the area to be illuminated
b) The foot-candles of illumination requested
c) Pole height
d) Number of poles
e) Luminaire style and wattage
I. Voltage Drop Calculations

A. Streetlight Voltage Drop Calculation Program

1. The maximum number of lights served from a single source shall be limited by voltage drop calculations. These calculations are performed using the Excel program “Streetlight Voltage Drop Calculation Program”. For assistance with this program, contact Policy, Procedures & Standards. You can access the program here: http://insidesrp/elsyseng/electricsys/LineStd.html.

2. Before beginning data entry to the calculations program, read through the information on the tab marked “Instructions”. Next, go to the tab marked “Job Details” and fill in the information. Click either the “duplex” or “triplex” conductor and click the “Next” button to go to the tab for that conductor.

3. The Excel program is laid out as a series of ten j-boxes with branches off each j-box made up of ten J-boxes in a series. On overhead designs, the j-box represents the conductor connection at the pole. As data is entered, the program will send alerts that the design violates a limit if you exceed either minimum voltage for a luminaire or maximum current capacity for a conductor.

4. When all of the data is entered, click the “Go To Report” button and print out a paper copy.

5. The preferred service to a streetlight is directly from a single phase transformer via a flush-mounted j-box. (underground streetlight service shall be provided from an “all conduit”).

B. Voltage requirements for SRP’s Luminaires

1. SRP presently installs high pressure sodium style outdoor lighting. All high pressure sodium luminaires contain a ballast. The ballast is a coil of copper wire wrapped around an iron core, very similar to an electrical transformer. The function of the ballast is to control the electrical current supplied to the lamp. A ballast functions as long as it is provided the proper line voltage. All of SRP’s luminaires are rated for 120 volts nominal line voltage. This means they will function with an input line voltage of 120 volts, plus or minus some tolerance. These tolerances are listed below.

<table>
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<th>Luminaire Wattage (all styles)</th>
<th>% Voltage Deviation from 120 V Tolerated</th>
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<tr>
<td>70</td>
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<td>100</td>
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<tr>
<td>150</td>
<td>+/-5%</td>
</tr>
<tr>
<td>250</td>
<td>+/-10%</td>
</tr>
<tr>
<td>400</td>
<td>+/-10%</td>
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</table>

NOTE: The higher wattage luminaires allow for greater line voltage swings.
C. Light Emitting Diode (LED) Lighting

1. Presently SRP is not installing lighting using LED technology, however several Customers are beginning to install LED source lighting.

2. There are no LED luminaires in the drop-down selection boxes but the Customer’s lighting load can be modeled in the Streetlight Voltage Drop Calculation Program if the line Amps of the LED luminaire are known. Enter the service cable information and any HPS luminaires that may also be served at each j-box. Enter the load of the LED luminaires in Amps in the top entry box. The program will not automatically alert you when the voltage drop has exceeded the LED luminaire’s allowable limits, however the voltage drop in the second table to the right on the report page will appear. A typical LED luminaire will operate with as much as 25% voltage drop (down to 90 volts).

D. Remedies for Voltage or Current Violations

1. If a lighting circuit fails due to voltage drop or current overload, consider the following remedies.

   a) Possible solutions for a circuit design that violates the voltage drop requirements are:
      - Use 1/0 aluminum in place of #6 aluminum.
      - Add another circuit to reduce the total wattage of the luminaires served from the circuit.
      - Find a transformer closer to the luminaires to reduce the service length.

   b) Possible solutions for a circuit design that violates the current overload requirements of the conductor:
      - Use 1/0 aluminum in place of #6 aluminum.
      - Add another circuit to reduce the total wattage of the luminaires served from the circuit.
I. Electric Service Requirements and Sources

A. Additions to Existing Residential Areas

1. Light circuit voltage and thermal capacity, per the Streetlight Voltage Drop Calculation Program, shall be the limiting factors for long circuits, branched circuits and/or circuits with multiple luminaires.

2. Underground light circuits, which are to be installed in locations where a non-conduit distribution system already exists (one that uses secondary and buried J-boxes), should be fed from the existing secondary streetlight conductors (refer to the Construction Standards book, UWB8-UWB3). This will help to eliminate the necessity of trenching parallel to existing secondary streetlight conductors to obtain the feed from a pad-mounted transformer.

3. Light taps are not to be double lugged (more than one conductor per terminal hole) on mole assemblies.

4. Circumstances may require a transformer and associated equipment (tap enclosure) to be specifically dedicated for lighting (i.e., commercial or industrial parks) when single phase (1Ø) 120 V is not available.

5. Underground service shall be from a meter pedestal but cannot be tapped from a meter socket enclosure on a building.

6. Grounding is required for all steel poles and the luminaires on fiberglass poles.
   
   a) Steel Poles

   Steel light poles must be grounded. The ground connection can come from either the #6 Al triplex ground wire from the single phase transformer (some existing poles) or a ground rod in the j-box (see Construction Standards, J-box Connections).

   The connection to the pole is shown in the Construction Standards for Light Connections at Steel Pole Hand Hole.

   b) Fiberglass Poles

   The luminaire shall be grounded on all fiberglass poles. The ground connection can come from either the #6 Al triplex ground wire from the single-phase transformer (some existing poles) or a ground rod in the j-box (see Construction Standards, J-box Connections). A green #12 copper wire shall be run up the pole, from the pole handhole and connected to the luminaire grounding screw.

   The connection in the pole at the handhole is shown in the Construction Standards for Light Connections at Fiberglass Pole Hand Hole.

7. Bonding is required between all above ground metallic power and communication enclosures that are separated by a distance of six feet or less, in this case a steel light pole and any other above ground metallic power or communications enclosure. Bonding is an electrical connection designed to maintain a common electrical potential. See Construction Standards section.
SECTION 3: DESIGN AND MISCELLANEOUS

NOTES:

1. FOR CITY OWNED AND INSTALLED STREET LIGHTS TO BE SERVED BY SRP UNDERGROUND WIRE, THE POINT OF DELIVERY (P.O.D.) WILL BE AN SRP APPROVED JUNCTION BOX INSTALLED BY THE CITY. THE CITY IS TO PROVIDE THE LOCATION OF THE LIGHTS; HOWEVER, LIGHT POLES AND JUNCTION BOXES ARE NOT TO BE INSTALLED WITHIN PUBLIC RIGHT OF WAYS.

2. A 3 FT. PIGTAIL OF STREET LIGHT WIRE FROM THE CITY'S LIGHT POLE, VIA FLEXIBLE CONDUIT, IS TO BE INSERTED INTO THE JUNCTION BOX BY THE CITY. THE CITY MAY INCLUDE THEIR OWN IN-LINE FUSE IN THE JUNCTION BOX. SRP IS TO MAKE THE ELECTRICAL CONNECTION IN THE JUNCTION BOX (PHASE & NEUTRAL ONLY) (CHANDLER AND TEMPE HAVE AGREEMENTS TO CONNECT.)

3. THE CITY IS TO PROVIDE APPROPRIATE POLE GROUNDING IF METAL POLES ARE USED.

4. THE CITY MUST PROVIDE AND INSTALL AN SRP APPROVED JUNCTION BOX AS THE SRP DEDICATED POINT OF FEED. REFER TO THE ELECTRIC SERVICE STANDARDS FOR MINIMUM FAULT CURRENT DISTANCE REQUIREMENTS.
NOTES:

1. Base plate mounted lighting poles, on concrete pedestals, shall be utilized below the start-of-slope into a water retention basin.

2. Direct embed lighting poles may be used outside the start-of-slope into a water retention basin. The pole J-box must be set on the side of pole away from the water retention basin.

3. For areas of green-belt/multi-use having retention basins requiring lighting, developer to survey and stake high water mark. Lighting should be designed with consideration for the retention basin's high water mark (i.e. pedestal lighting in retention areas).
NOTES:

1. If the pole or sonotube must be closer to the curb than 4 feet, use the concrete pedestal mounted pole.

2. If the landscape slopes, such as near a water retention basin the J-box shall be installed on the opposite side of the pole from the slope. See Design Section, Water Retention Basin, Pole Placement, Note 2.
NOTES

1. CUSTOMER TO STAKE LIGHT LOCATION PER APPROVED MUNICIPAL PLAN.

2. GRADE STAKE TO BE WITHIN 2 FEET OF J-BOX LOCATION. CUSTOMER TO STAKE J-BOX LOCATION. AVOID CONFLICT WITH SIDEWALK, LANDSCAPING, ETC.

3. GROUND ROD TO BE INSTALLED FOR EACH STREET LIGHT LOCATION PER STANDARDS ON 6-1-1: STEEL POLE INSTALLATION TUBE.

4. SEE SONOTUBE INSTALLATION DETAIL, 6-1-1: STEEL POLE INSTALLATION TUBE, IF APPLICABLE.

5. #6 BARE COPPER GROUND WIRE TO BE ATTACHED FROM GROUNDING LUG ON STREET LIGHT POLE TO GROUND ROD IN J-BOX.

6. J-BOX MAY BE POSITIONED BEHIND THE POLE, EXCEPT IN THE CITIES OF CHANDLER AND GILBERT.

7. IF POLE IS IN PROXIMITY OF METALLIC APPARATUS SEE CONSTRUCTION STANDARDS SECTION, LIGHT POLES IN PROXIMITY OF METALLIC APPARATUS, BONDING. ALSO SEE SECTION 3 "ELECTRIC SERVICE REQUIREMENTS NOTE 6".

8. FOR PEDESTAL MOUNTED POLES THE J-BOX IS LOCATED ABOVE THE WATER LINE. SEE POLE PLACEMENT, WATER RETENTION BASIN.

9. SOME CLEARANCE RESTRICTIONS APPLY TO J-BOX LOCATIONS NEAR TRANSFORMERS, SEE DESIGN AND MISCELLANEOUS, CLEAR AREA FOR CUSTOMER EQUIPMENT, ADJACENT TO TRANSFORMER.

10. FOR MUNICIPAL OWNED STREETLIGHT RELOCATIONS, THE DISTANCE FROM J-BOX TO STREETLIGHT MAY BE INCREASED 'UP TO 15'.
1. No Telco or CATV pedestals, water boxes, poles, permanent obstructions or tripping hazards between lines. Clear area is from PUE (house side) to street or 12’ maximum in front of pad.

2. This 12” minimum dimension describes the space requirement between the SRP pad and the Telco or CATV pedestal. When stubbing up Telco or CATV conduit, allow additional space to ensure the Telco or CATV pedestal does not enter the 12” minimum space.

3. If a light pole or other utility is required in this area, it is preferred that it be installed a minimum of 18” from the property line.

4. 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. See page 6-7-1 Light Poles In Proximity Of Metallic Apparatus, Bonding.
SECTION 3: DESIGN AND MISCELLANEOUS

DISTRIBUTION LINE DEVICE NUMBER (RISER, RECLOSER, SECTIONALIZER, CAPACITOR BANK, SINGLE BLADE DISCONNECTS, FRINGE AREA INTERCONNECTION FUSE OR GANG OPERATED SWITCH) 1X1.5" ADHESIVE BACKED ALPHABET CHARACTERS AND 1-3/4" X 2-7/8" ADHESIVE BACKED NUMERIC CHARACTERS PLACED ON ALUMINUM SHEET (5035692)

NOTE: FOR POLE RISERS SEE UG12-7-7. NOT ALL RISERS ARE MARKED ON THE POLE.

STREET LIGHT NUMBER-1X1.5" CHARACTERS PLACED ON AN ADHESIVE BACKED 1-1/2" X 12" PLATE (5035695) (DISTRIBUTION USE ONLY)

MILE POST COORDINATES 1"X1-1/2" ALPHA, 1-3/4"X2-7/8" NUMERIC PSL ON ALUMINUM PLATE (5035692)

TRANSMISSION STRUCTURE NUMBER 1-3/4"X2-7/8" NUMERIC PSL ON ALUMINUM PLATE (5035692)

TRANSMISSION SWITCH NUMBER, 1"X1-1/2" ALPHA, 1-3/4"X2-7/8" NUMERIC PSL ON ALUMINUM PLATE (5035692)

POLE INSPECTION TAGS - ALL POLES (POLE INSPECTION CREW USE)

POLE TAG SHOWING SRP OWNERSHIP (5029151). (TRANSMISSION USE ONLY)

NOTES:

1. ANY POLE LOCATED AT A MILE COORDINATE POINT IN AN AREA LACKING AN INTERSECTION OF BOTH MILE ROADS IS TO BE LABELED WITH THAT COORDINATE POINT. THE COORDINATE LABELING IS TO READ IN A HORIZONTAL DIRECTION ON THE POLE, WITH ONE DIRECTION COORDINATE IMMEDIATELY BELOW THE OTHER.

2. ANY POLE HAVING A STREETLIGHT, RECLOSER, CAPACITOR BANK, SET OF SINGLE BLADE DISCONNECTS, GANGED LOADBREAK SWITCH, OR POLE RISER IS TO BE LABELED WITH THE PROPER LINE DEVICE NUMBER. THIS NUMBER IS TO BE READ IN A VERTICAL DIRECTION READING TOP TO BOTTOM ON THE POLE.

3. POLES ARE TO HAVE MARKINGS INSTALLED ON THE MOST VISIBLE SIDE OF THE POLE; e.g; A POLE ON A NORTHEAST CORNER OF AN INTERSECTION SHOULD HAVE MARKINGS FACING WEST, OR SOUTH. THE MARKINGS SHALL NOT COVER THE POLE BRAND.

4. THE ALUMINUM SHEETS ARE ATTACHED TO THE WOOD POLES WITH SPECIAL SCREW NAILS ITEM # 5006221. THE 1 INCH ADHESIVE LABELS FOR STREETLIGHTS ARE APPLIED TO A 10 INCH PLASTIC PLATE WHICH IS THEN ATTACHED TO THE POLE WITH THE SPECIAL SCREW NAILS. ON STEEL POLES, IF PLATE THICKNESS IS 1/2" OR LESS THE SELF DRILL/SELF TAPPING SCREWS (5028982) MAY BE USED. IF PLATE THICKNESS IS GREATER THAN 1/2" DRILL 3/16" DIAMETER HOLE FOR SELF DRILL/SELF TAP SCREWS (5028982).

5. THE OWNER OF THE LIGHT SHALL PLACE STREET LIGHT NUMBERS AT 12' ON SHARED POLES (AS SHOWN ABOVE) AND 8' ON DEDICATED "STREET LIGHT" POLES.

6. PLACEMENT OF POLE MARKINGS SHALL BE IN ACCORDANCE WITH FIGURE 1. IF THRU-BOLTS OR OTHER SRP HARDWARE IMPEDE THE SPECIFIED LOCATION OF THE POLE MARKINGS, PLACEMENT OF POLE MARKINGS MAY BE ADJUSTED. EVERY EFFORT MUST BE MADE TO LOCATE THE MARKINGS AS CLOSE AS POSSIBLE TO THE INDICATED POSITIONS.
Mid-block spacing shall be between 350ft. to 425ft. with a maximum of 600ft.

The maximum may be reduced on curvilinear streets or on sections of streets where lights are not perpendicular to the street due to intersections.

Provide a streetlight at the end of the cul-de-sac when the distance into the cul-de-sac is 150ft. or greater.

Some dimensions shown may change per the Municipality.

Arterial, Collector or Residential Streets

Streetlight pole locations in Tempe shall be installed at arterial intersections as indicated in the drawings above.
POLE PLACEMENT

SPECIAL REQUIREMENTS - CITY OF SCOTTSDALE

Streetlight & Streetlight Stub-Out
Location When Sidewalks Are Installed

Streetlight & Streetlight Stub-Out
Location When Bike Paths Are Installed
Or No Sidewalks Are Planned

Dimension varies, Estimator must specify.
(Use municipal R/W standard details to determine dimension)

CURB
GUTTER
EASEMENT
DIMENSION 'A'
See chart below
DIMENSION 'B'
See chart below

<table>
<thead>
<tr>
<th>R/W</th>
<th>STD.DETAIL</th>
<th>DIMENSION 'A'</th>
<th>DIMENSION 'B'</th>
<th>EASEMENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>60'</td>
<td>66'</td>
<td>9.5'</td>
<td>5.5'</td>
<td>4.0'</td>
</tr>
<tr>
<td>80'</td>
<td>67'</td>
<td>16.0'</td>
<td>10.5'</td>
<td>-</td>
</tr>
<tr>
<td>80'</td>
<td>68'</td>
<td>5.5'</td>
<td>0.0'</td>
<td>10-0'</td>
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<tr>
<td>110'</td>
<td>69'</td>
<td>20.5'</td>
<td>14.0'</td>
<td>-</td>
</tr>
<tr>
<td>130'</td>
<td>70'</td>
<td>20.5'</td>
<td>14.0'</td>
<td>-</td>
</tr>
<tr>
<td>130'</td>
<td>71'</td>
<td>17.0'</td>
<td>10.5'</td>
<td>-</td>
</tr>
<tr>
<td>130'</td>
<td>72'</td>
<td>17.0'</td>
<td>11.5'</td>
<td>-</td>
</tr>
<tr>
<td>130'</td>
<td>73'</td>
<td>30.5'</td>
<td>28.0'</td>
<td>-</td>
</tr>
</tbody>
</table>

*Estimator must specify dimension on job order sketch.
Exact Pole Placement

Once the layout and spacing are determined, the exact placement must be specified. Guidelines for placement of streetlight poles on the three categories of street are listed below.

MAJOR

Poles are to be placed back of the sidewalk where right-of-way is available. At street intersections place the pole at the break in the radius. Deviations from the break in the radius should not exceed 15°.

COLLECTOR

Poles are to be placed back of the sidewalk where it exists, or is planned. Where sidewalks do not exist and are not planned for, the poles are to be placed 2' behind the back of curb with 1'-6" being the minimum distance allowed from back of curb to pole.

LOCAL/MINOR

Poles should be placed at lot lines where possible. Spacing over 300' should only be used if absolutely necessary, such as in a subdivision with 175' frontage with poles on every other lot line.

Poles are to be placed back of sidewalk where the sidewalk exists or is planned. Where sidewalks do not exist and are not planned for, the poles are to be placed 2' behind the back of curb.

If the sidewalk is not poured against the back of curb, the streetlight poles should be placed midway between the sidewalk and back of curb, but not less than 1'-6" behind the curb; 2' is preferred.

If uniform spacing is not possible on a section of street between intersections, the slightly shorter spacing should be placed nearer the intersections rather than in the center of the block.

Wood poles shall be used to support luminaries on unimproved streets.

Steel poles shall be used on improved streets or in planned improvement areas.

GENERAL NOTE: Streetlight poles should not be installed at locations with a pad mounted transformer, switch, capacitor, fusing cubicles, etc. However, if a streetlight must be installed at the same location as pad mounted equipment or near the same location/lot line, the streetlight poles shall be located a minimum of 18" from either side of pad mounted equipment to allow for maintenance/operation as shown below. When a streetlight pole must be installed at the same location as a pad mount transformer, the streetlight pole should be installed on the secondary side whenever possible. 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 8 feet or less. See Construction Standards section, Light Poles in Proximity of Metallic Apparatus, Bonding.

**REFERENCE ONLY**

**POLE PLACEMENT**

**REFERENCE**

**OUTDOOR LIGHTING STANDARDS**

**SRP®**

**MUNICIPAL STREETLIGHTS**

**POLE PLACEMENT**

**ISSUE DATE: 02/10/04**

**REV. DATE: 01/20/13**

**APPROVAL: W. LARAMIE**

**3-16-1**

**510E195.DGN**
POLE PLACEMENT

TRENCH DETAIL WHERE STREET LIGHT CONDUCTOR IS IN COMMON TRENCH WITH IRRIGATION

TRENCH DETAIL WHERE STREET LIGHT CONDUCTOR IS IN TRENCH BY ITSELF

FINAL GRADE

GUTTER LINE AT STREET CROSSINGS

PROPOSED STREET LIGHT POLE

PROPOSED SIDEWALK

TRENCH

FINAL GRADE

PRIVATE IRRIGATION PIPE OR OTHER JOINT FACILITY

IRR SERVICE TAP

FLUSH MOUNT JUNCTION BOX

CONDUIT FOR STREET LIGHT 24" MIN. RADIUS

8518E137.DGN
TRENCH DETAIL WHERE EXISTING SIDEWALK IS TO REMAIN

NOTE
INSTALL CONDUIT UNDER EXISTING SIDEWALK BY TILTING TRENCHER STINGER ENOUGH TO END UP UNDER SIDEWALK.

TYPICAL DETAIL WHERE THERE IS AN ACCESS ROAD & MEDIAN WITH LIGHTING IN THE MEDIAN
THIS DETAIL TO BE USED WHERE INSIDE OF MEDIAN WILL BE USED AS A PLANTER
POLE PLACEMENT

TYPICAL DETAIL WHERE THERE IS AN ACCESS ROAD & MEDIAN WITH LIGHTING IN THE MEDIAN

NOTE: CONDUIT TO BE INSTALLED BETWEEN POLE & JUNCTION BOX PRIOR TO CEMENT POUR (BY S.R.P.D.)

OUTDOOR LIGHTING STANDARDS

DESIGN AND MISCELLANEOUS MUNICIPAL STREETLIGHTS

POLE PLACEMENT

ISSUE DATE: 01/24/00
REV. DATE: 01/25/13
APPROVAL: W. LARAMIE

3-16-4
<table>
<thead>
<tr>
<th>Description</th>
<th>Page No.</th>
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</thead>
<tbody>
<tr>
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<td>4-1-1</td>
</tr>
<tr>
<td>Tape and Re-paint Pole Base Repair</td>
<td>4-2-1</td>
</tr>
<tr>
<td>Handhole Relocation</td>
<td>4-3-1</td>
</tr>
<tr>
<td>Handhole Relocation Wiring (Radial Fed Light Poles)</td>
<td>4-4-1</td>
</tr>
<tr>
<td>SRP Light Pole (with Non-Standard Holes), Repair/Replacement Guidelines</td>
<td>4-5-1</td>
</tr>
<tr>
<td>Hole Repair</td>
<td>4-5-2</td>
</tr>
<tr>
<td>Light Pole Repair, Epoxy Bypass Riser (Reference Only)</td>
<td>4-5-3</td>
</tr>
</tbody>
</table>
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 29-4600) 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 (5032002)</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.

<table>
<thead>
<tr>
<th>Existing Two-Wire Starter</th>
<th>Replacement Starters</th>
</tr>
</thead>
<tbody>
<tr>
<td>Watts</td>
<td></td>
</tr>
<tr>
<td>70</td>
<td>5035003 (Univ.)</td>
</tr>
<tr>
<td>100</td>
<td>GE 55-97410-51 OR</td>
</tr>
<tr>
<td>150</td>
<td>Millbank SS-1</td>
</tr>
<tr>
<td>250</td>
<td></td>
</tr>
<tr>
<td>400</td>
<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Existing Three-Wire Starter</th>
<th>Replacement Starters</th>
</tr>
</thead>
<tbody>
<tr>
<td>Watts</td>
<td></td>
</tr>
<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.
SECTION 4: MAINTENANCE

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

1. Dig 2" past the rust or the top of the foam or cement (no more than 18" total).
2. Inspect.

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).

Maintenence Tape and Re-Paint Pole Base Repair
**HANDHOLE PLACEMENT**

PLACE NEW HANDHOLES DIRECTLY ABOVE EXIST. HANDHOLE (SAME SIDE OF POLE) OR ON OPPOSITE SIDE (180 DEGREES) OF POLE.

EXISTING HANDHOLE OPENING

DO NOT PLACE A NEW HANDHOLE OPENING IN AREA BELOW EXIST. HANDHOLE.

12" MINIMUM

**HANDHOLE OPENING DIMENSIONS**

ROUND STEEL POLE

PROJECTED CUT LINE PERPENDICULAR TO POLE, NOT MEASURED ALONG POLE. (TYPICAL)

SQUARE TUBE STEEL

SQUARE OR ROUND FIBERGLASS

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>
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</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>
<tr>
<td>SQUARE TUBE STEEL POLES</td>
<td>ALL SQUARE POLES HAVE THE SAME SIZE HANDHOLE COVER</td>
<td>5035020</td>
</tr>
<tr>
<td>ALL FIBERGLASS POLES</td>
<td>ALL FIBERGLASS POLES HAVE THE SAME SIZE HANDHOLE COVER</td>
<td>5035022</td>
</tr>
</tbody>
</table>
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.
1. Follow guidelines on "Maintenance, SRP Light Pole (with Non-Standard Holes), Repair/Replacement Guidelines" Section 8 to determine if holes can be repaired or pole must be replaced.

2. If the hole edges are rough, smooth them (file).

3. Clean area to be covered with brush and cleaner (5003004).

4. Following silicone (Permatax Clear RTV Silicone 5012185) instructions: Apply silicone in the hole. Smooth silicone around the outside edges of the hole.

Notes

Light Pole

Hole to be repaired

Note 1, 2

Section 8

1. If the hole edges are rough, smooth them (file).
2. Clean area to be covered with brush and cleaner (5003004).
3. Following silicone (Permatax Clear RTV Silicone 5012185) instructions: Apply silicone in the hole. Smooth silicone around the outside edges of the hole.
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.
SECTION 5
HARDWARE AND BASIC UNITS

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### Maintenance Chart

<table>
<thead>
<tr>
<th>Type</th>
<th>Luminaire Material Item</th>
<th>Wattage and Type</th>
<th>Compatible Unit Overhead</th>
<th>Compatible Unit Underground</th>
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<tbody>
<tr>
<td>Floodlight</td>
<td>5035136</td>
<td>400 W HPS. C.O.</td>
<td>LBF4</td>
<td>ULBF4</td>
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<tr>
<td>Contemporary</td>
<td>5035145</td>
<td>100 W HPS.</td>
<td>-</td>
<td>ULBC1</td>
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<tr>
<td></td>
<td>5035146</td>
<td>150 W HPS.</td>
<td>-</td>
<td>ULBC15</td>
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<tr>
<td>Early American</td>
<td>5035143</td>
<td>100 W HPS</td>
<td>-</td>
<td>ULBE1</td>
</tr>
<tr>
<td>Streamline</td>
<td>5035147</td>
<td>100 W HPS</td>
<td>LBS1</td>
<td>ULBS1</td>
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<td></td>
<td>5035148</td>
<td>150 W HPS</td>
<td>LBS15</td>
<td>ULBS15</td>
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<tr>
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<tr>
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<td>5035248</td>
<td>400 W HPS</td>
<td>LBS4</td>
<td>ULBS4</td>
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<tr>
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<td>5035250</td>
<td>100 W HPS</td>
<td>LBA1</td>
<td>ULBA1</td>
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<tr>
<td></td>
<td>5035251</td>
<td>150 W HPS</td>
<td>LBA15</td>
<td>ULBA15</td>
</tr>
<tr>
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<td>5035252</td>
<td>250 W HPS</td>
<td>LBA25</td>
<td>ULBA25</td>
</tr>
<tr>
<td></td>
<td>5035253</td>
<td>400 W HPS</td>
<td>LBA4</td>
<td>ULBA4</td>
</tr>
</tbody>
</table>

**NOTE:** These compatible units are for the maintenance replacement of luminaires of the same type and size. These units include luminaire, lamp and photocell.
### Maintenance Chart

<table>
<thead>
<tr>
<th>Type</th>
<th>Luminaire Material Item</th>
<th>Wattage and HPS Equivalent</th>
<th>Lumen Class</th>
<th>Mfg.</th>
<th>Compatible Unit</th>
<th>Voltage</th>
<th>Current Draw</th>
</tr>
</thead>
<tbody>
<tr>
<td>Floodlight</td>
<td>5088002</td>
<td>184 W 400 W HPS</td>
<td>25,000</td>
<td>Eaton</td>
<td>LBFL25EAN</td>
<td>120</td>
<td>1.53</td>
</tr>
<tr>
<td>Early American</td>
<td>5087988</td>
<td>31 W 100 W HPS</td>
<td>3,000</td>
<td>Eaton</td>
<td>LBEL3EAN</td>
<td>120</td>
<td>0.26</td>
</tr>
<tr>
<td>Streamline</td>
<td>5087994</td>
<td>32 W 100 W HPS</td>
<td>4,000</td>
<td>Eaton</td>
<td>LBSL4EAN</td>
<td>120</td>
<td>0.27</td>
</tr>
<tr>
<td></td>
<td>5087995</td>
<td>54 W 150 W HPS</td>
<td>6,500</td>
<td>Eaton</td>
<td>LBSL65EAN</td>
<td>120</td>
<td>0.45</td>
</tr>
<tr>
<td></td>
<td>5087941</td>
<td>101 W 250 W HPS</td>
<td>13,000</td>
<td>Eaton</td>
<td>LBSL13EAN</td>
<td>120</td>
<td>0.84</td>
</tr>
<tr>
<td></td>
<td>5087943</td>
<td>201 W 400 W HPS</td>
<td>22,000</td>
<td>Eaton</td>
<td>LBSL22EAN</td>
<td>120</td>
<td>1.675</td>
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<tr>
<td>Architectural</td>
<td>5088015</td>
<td>32 W 100 W HPS</td>
<td>4,000</td>
<td>Eaton</td>
<td>LBAL4EAN</td>
<td>120</td>
<td>0.27</td>
</tr>
<tr>
<td></td>
<td>5088008</td>
<td>54 W 150 W HPS</td>
<td>65,00</td>
<td>Eaton</td>
<td>LBAL65EAN</td>
<td>120</td>
<td>0.45</td>
</tr>
<tr>
<td></td>
<td>5087987</td>
<td>101 W 250 W HPS</td>
<td>13,000</td>
<td>Eaton</td>
<td>LBAL13EAN</td>
<td>120</td>
<td>0.84</td>
</tr>
<tr>
<td></td>
<td>5087998</td>
<td>201 W 400 W HPS</td>
<td>22,000</td>
<td>Eaton</td>
<td>LBAL22EAN</td>
<td>120</td>
<td>1.675</td>
</tr>
</tbody>
</table>

**NOTE:** These compatible units are for the maintenance replacement of luminaires of the same type and size (not new construction). LED streetlight mastheads are to be replaced as a whole.
## LUMINAIRE

<table>
<thead>
<tr>
<th>STOCK NO.</th>
<th>MANUFACTURER</th>
<th>WATTAGE AND TYPE</th>
<th>LAMP</th>
<th>LENS OR REFRACTOR</th>
<th>GLASS</th>
<th>PLASTIC</th>
</tr>
</thead>
<tbody>
<tr>
<td>5035136</td>
<td>COOPER</td>
<td>400w HPS</td>
<td>5035135</td>
<td>61-2923 *</td>
<td></td>
<td>NONE</td>
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</tbody>
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* NO STOCK CODE EQUIVALENT IN SAP.
### LUMINAIRE

<table>
<thead>
<tr>
<th>STOCK NO.</th>
<th>MANUFACTURER</th>
<th>WATTAGE AND TYPE</th>
<th>LAMP NO.</th>
<th>LENS OR REFRACTOR</th>
</tr>
</thead>
<tbody>
<tr>
<td>5035145</td>
<td>COOPER</td>
<td>100w HPS</td>
<td>5035132</td>
<td>NONE</td>
</tr>
<tr>
<td>5035146</td>
<td>GE</td>
<td>100w HPS</td>
<td>5035524</td>
<td>NONE</td>
</tr>
<tr>
<td>5035146</td>
<td>GE</td>
<td>150w HPS</td>
<td>5035525</td>
<td>NONE</td>
</tr>
</tbody>
</table>

**NOTE:**
The Cooper version of the Contemporary Luminaire and its replacement refractor 0615042 are obsolete.

![Diagram of Contemporary Luminaire](image)

**GLASS 0615042**

**9 3/4"**
# SECTION 5: HARDWARE AND BASIC UNITS

## LUMINAIRE

<table>
<thead>
<tr>
<th>STOCK NO.</th>
<th>MANUFACTURER</th>
<th>WATTAGE AND TYPE</th>
<th>LAMP</th>
<th>LENS OR REFRACTOR</th>
</tr>
</thead>
<tbody>
<tr>
<td>5035147</td>
<td>G.E. AMERICAN ELECTRIC</td>
<td>100w HPS CO</td>
<td>5035132</td>
<td>NONE</td>
</tr>
<tr>
<td></td>
<td>THOMAS &amp; BETTS</td>
<td></td>
<td></td>
<td>5035397</td>
</tr>
<tr>
<td></td>
<td>HUBBELL</td>
<td></td>
<td></td>
<td>NONE</td>
</tr>
<tr>
<td></td>
<td>COOPER</td>
<td></td>
<td></td>
<td>NONE</td>
</tr>
<tr>
<td>5035148</td>
<td>G.E. AMERICAN ELECTRIC</td>
<td>150w HPS CO</td>
<td>5035133</td>
<td>NONE</td>
</tr>
<tr>
<td></td>
<td>HUBBELL</td>
<td></td>
<td></td>
<td>5035397</td>
</tr>
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<td>COOPER</td>
<td></td>
<td></td>
<td>NONE</td>
</tr>
<tr>
<td>5035247</td>
<td>G.E. AMERICAN ELECTRIC</td>
<td>250w HPS CO</td>
<td>5035134</td>
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<td>COOPER</td>
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<td></td>
<td>NONE</td>
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<td>5035248</td>
<td>G.E. AMERICAN ELECTRIC</td>
<td>400w HPS CO</td>
<td>5035135</td>
<td>NONE</td>
</tr>
<tr>
<td></td>
<td>HUBBELL</td>
<td></td>
<td></td>
<td>5035398</td>
</tr>
</tbody>
</table>

### REPLACEMENT PARTS

- **GLASS**
  - 5035397
  - 5035398
- **POLYCARBONATE**
  - 5035408
- **EXPANDED METAL**
  - 5035508

### Diagrams

- **GLASS 5035397**
  - 11 3/4" x 12"
  - W/gasket, clips and screws

- **GLASS 5035398**
  - 13 1/4" x 14 1/8"
  - W/gasket, clips and screws

- **GLASS 5035396**
  - 16" x 16 1/2"
<table>
<thead>
<tr>
<th>STOCK NO.</th>
<th>MANUFACTURER</th>
<th>WATTAGE AND TYPE</th>
<th>LAMP</th>
<th>LENS OR REFRACCTOR</th>
</tr>
</thead>
<tbody>
<tr>
<td>6035143</td>
<td>AMERICAN ELECTRIC COOPER</td>
<td>70w HPS</td>
<td>5035131</td>
<td>GLASS 5035394 5035400 5035507</td>
</tr>
<tr>
<td></td>
<td>G.E.</td>
<td></td>
<td></td>
<td>PLASTIC 5035401 5035407</td>
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<td></td>
<td>NONE</td>
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<td></td>
<td>EXPANDED METAL 5035501</td>
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<td></td>
<td>OBSOLETE</td>
<td></td>
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<td>5035507</td>
<td>AMERICAN ELECTRIC COOPER</td>
<td>100w HPS</td>
<td>5035132</td>
<td>GLASS 5035399 &amp; POLYCARBONATE 5035404</td>
</tr>
<tr>
<td></td>
<td>G.E.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>NONE</td>
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<td></td>
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</tbody>
</table>

**Early American**

- **Luminaire**
  - **Stock No.**: 6035143
  - **Manufacturer**: American Electric Cooper
  - **Wattage and Type**: 70w HPS
  - **Replacement Parts**: Glass: 5035394, Polycarbonate: 5035400, Expanded Metal: 5035507
- **Refractors, Lamps, Covers**
  - **Glass**: 5035399
  - **Polycarbonate**: 5035404
  - **Expanded Metal**: 5035607

**Hardware and Basic Units**

- **Street Lights**
- **Refractors, Lamps, Covers**

(Additional information and diagrams as per the document)
### LUMINAIRE

<table>
<thead>
<tr>
<th>STOCK NO.</th>
<th>MANUFACTURER</th>
<th>WATTAGE AND TYPE</th>
<th>POWER DOOR AMERICAN ELECTRIC ONLY</th>
<th>LAMP</th>
<th>LENS OR REFRACTOR</th>
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<tr>
<td>5035240</td>
<td>AMERICAN ELECTRIC</td>
<td>70w HPS</td>
<td>5035138</td>
<td>5035131</td>
<td>5035394</td>
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<td>5035250</td>
<td>AMERICAN ELECTRIC</td>
<td>100w HPS</td>
<td>5035140</td>
<td>5035132</td>
<td>5035394</td>
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<td>AMERICAN ELECTRIC</td>
<td>150w HPS</td>
<td>5035141</td>
<td>5035133</td>
<td>5035394</td>
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<td>5035252</td>
<td>AMERICAN ELECTRIC</td>
<td>250w HPS</td>
<td>5035142</td>
<td>5035134</td>
<td>5075635</td>
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<td>5035253</td>
<td>AMERICAN ELECTRIC</td>
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<td>5035135</td>
<td>5075635</td>
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### REPLACEMENT PARTS

- **GLASS**
  - 5035394
  - 5035402
  - 5035406
- **POLYCARBONATE**
  - 5035406
- **EXPANDED METAL**
  - 5035507

### Hardware and Basic Units

- **Street Lights**
- **Refractors, Lamps, Covers**

### Issue Date: 01/18/00

### Rev. Date: 09/25/13

### Approval: W. Laramie
ALL LUMINAIRES, EXCEPT THE PREVIOUSLY INSTALLED CONTEMPORARY STYLE (COOPER), WILL USE PHOTOCELL STOCK NO. 5035009. THE PREVIOUSLY INSTALLED CONTEMPORARY STYLE (COOPER) WILL USE PHOTOCELL STOCK NO. 5035012.

THESE PHOTOCELLS ARE SOLID STATE AND RATED FOR LONG LIFE WITH A FIVE YEAR REPLACEMENT WARRANTY. TO REALIZE THE BENEFITS OF THESE PHOTOCELLS:

1. MARK THE DATE CODE DURING INSTALLATION BY SCRATCHING A MARK NEXT TO THE YEAR AND MONTH NUMBERS.
2. DO NOT REMOVE FROM SERVICE UNLESS KNOWN TO BE BAD ORDER OR OLDER THAN 5 YEARS WHEN BULB IS REPLACED.
3. PLACE ALL FAILED PHOTOCELLS IN THE FAILED MATERIAL BINS.
4. UPWARD FACING PHOTOCELL 5035010 TO BE USED WHERE ARTIFICIAL LIGHT SOURCE CAUSES THE NORMAL 5035009 TO SWITCH THE LUMINAIRE OFF.

HIGH PRESSURE SODIUM LAMPS HAVE A TWO YEAR WARRANTY. TO OBTAIN WARRANTY BENEFITS:

1. MARK THE DATE CODE DURING INSTALLATION BY SCRATCHING A MARK NEXT TO THE NUMBER WHICH IS THE LAST DIGIT OF THE YEAR AND ANOTHER MARK NEXT TO THE FIRST LETTER OF THE INSTALLATION MONTH.
2. PLACE ALL LAMPS THAT FAIL WITHIN TWO YEARS OF INSTALLATION IN THE FAILED MATERIAL BINS.
### Streetlight Luminaire Lamp Information

<table>
<thead>
<tr>
<th>Watts</th>
<th>Type</th>
<th>Lumens</th>
<th>Voltage</th>
<th>Operating Current</th>
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<tbody>
<tr>
<td>70</td>
<td>High Pressure Sodium</td>
<td>5,800</td>
<td>120</td>
<td>.89</td>
</tr>
<tr>
<td>100</td>
<td>High Pressure Sodium</td>
<td>9,500</td>
<td>120</td>
<td>1.25</td>
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<tr>
<td>150</td>
<td>High Pressure Sodium</td>
<td>16,000</td>
<td>120</td>
<td>1.8</td>
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<td>250</td>
<td>High Pressure Sodium</td>
<td>30,000</td>
<td>120</td>
<td>2.8</td>
</tr>
<tr>
<td>400</td>
<td>High Pressure Sodium</td>
<td>50,000</td>
<td>120</td>
<td>4.3</td>
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</tbody>
</table>

### NOTES

1. All luminaires have a photocell receptacle.
2. The standard practice shall be to use an individual photocell with each luminaire.
### Outdoor Lighting Standards

**SECTION 5: HARDWARE AND BASIC UNITS**

<table>
<thead>
<tr>
<th>Type</th>
<th>Size/Description</th>
<th>Material Item</th>
</tr>
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<tbody>
<tr>
<td>Streetlighting Arm Set Screws</td>
<td>1/2&quot; X 1&quot; NC (National Coarse Thread)</td>
<td>5069770</td>
</tr>
<tr>
<td>Streetlighting Arm Set Screws</td>
<td>3/8&quot; X 1&quot; NC</td>
<td>5069654</td>
</tr>
<tr>
<td>Streetlighting Arm Set Screws</td>
<td>5/16&quot; X 1&quot; NC</td>
<td>61-0556</td>
</tr>
<tr>
<td>Lighting Flush Mount J-Box Penta Head Bolts</td>
<td>3/8&quot; X 1 1/4&quot;</td>
<td>5034051</td>
</tr>
<tr>
<td>Lighting Flush Mount J-Box Penta Head Bolts</td>
<td>3/8&quot; X 1 1/2&quot;</td>
<td>5034052</td>
</tr>
<tr>
<td>Lighting Flush Mount J-Box Penta Head Bolts</td>
<td>3/8&quot; X 2 1/2&quot;</td>
<td>5034053</td>
</tr>
<tr>
<td>Pole Hand Hole Grounding Connector</td>
<td>Connector #14 Solid to #6 Stranded AL/CU</td>
<td>5035007</td>
</tr>
<tr>
<td>Pole Hand Hole Security Screw</td>
<td>Screw, Machine, 1/4-20 X 1/2&quot; LONG, Button Head, Allen Drive, Stainless</td>
<td>5035509</td>
</tr>
<tr>
<td>Pole Hand Hole Security Screw</td>
<td>Screw, Machine, 1/4-20 X 1/2&quot; LONG, Hex Head, Stainless</td>
<td>5069771</td>
</tr>
<tr>
<td>Pole Hand Hole Rubberized Washers</td>
<td>Washer 1/4&quot; X 9/16&quot; O. D.</td>
<td>5035124</td>
</tr>
<tr>
<td>Pole Hand Hole Rubberized Washers</td>
<td>Washer 5/16&quot; X 11/16&quot; O. D.</td>
<td>5035122</td>
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## Handhole Cover Replacement

<table>
<thead>
<tr>
<th>Pole Material Item</th>
<th>Pole Length</th>
<th>Pole Shape and Finish</th>
<th>Handhole Cover</th>
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<tbody>
<tr>
<td>SM-613492-5035263</td>
<td>17'-6&quot;</td>
<td>Round / Black</td>
<td>5035015 5035022</td>
</tr>
<tr>
<td>SM-613493-5035264</td>
<td>17'-6&quot;</td>
<td>Round / Galvanized/Gray</td>
<td>5035016 5035024</td>
</tr>
<tr>
<td>SM-613494-5035265</td>
<td>23'-6&quot;</td>
<td>Round / Galvanized / Gray</td>
<td>5035016 5035024</td>
</tr>
<tr>
<td>SM-613495*</td>
<td>23'-6&quot;</td>
<td>Round / Black</td>
<td>5035015 —</td>
</tr>
<tr>
<td>SM-613625-5035266</td>
<td>18&quot;</td>
<td>Square/ Bronze</td>
<td>5035019 5035023</td>
</tr>
<tr>
<td>SM-613627-5035267</td>
<td>25'-6&quot;</td>
<td>Round / Galvanized / Gray</td>
<td>5035014 5035024</td>
</tr>
<tr>
<td>SM-613628-5035268</td>
<td>25'-6&quot;</td>
<td>Square / Bronze</td>
<td>5035019 5035023</td>
</tr>
<tr>
<td>SM-613629-5035269</td>
<td>28'-6&quot;</td>
<td>Square / Bronze</td>
<td>5035019 5035023</td>
</tr>
<tr>
<td>SM-613631-5035270</td>
<td>36'</td>
<td>Square / Bronze</td>
<td>5035019 5035023</td>
</tr>
<tr>
<td>SM-613635-5035271</td>
<td>40'</td>
<td>Square / Bronze</td>
<td>5035019 —</td>
</tr>
<tr>
<td>SM-613685-5035279</td>
<td>14'</td>
<td>Round / Black</td>
<td>5035015 —</td>
</tr>
<tr>
<td>SM-613690-5035375</td>
<td>26'-6&quot;</td>
<td>Round / Galvanized / Gray</td>
<td>5035021 5035024</td>
</tr>
<tr>
<td>SM-613691-5035376</td>
<td>26'-6&quot;</td>
<td>Round / Galvanized / Gray</td>
<td>5035021 5035024</td>
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<tr>
<td>SM-613697-5035379</td>
<td>31&quot;</td>
<td>Round / Galvanized / Gray</td>
<td>5035021 5035024</td>
</tr>
<tr>
<td>SM-613695-5035378</td>
<td>35'</td>
<td>Round / Galvanized / Gray Rectangle Oval</td>
<td>5035021 5035024</td>
</tr>
<tr>
<td>SM-613698-5035380</td>
<td>35'</td>
<td>Round / Galvanized / Gray Rectangle Oval</td>
<td>5035021 5035024</td>
</tr>
<tr>
<td>SM-613696*</td>
<td>35'</td>
<td>Round / Pink</td>
<td>5035014 —</td>
</tr>
<tr>
<td>SM-613681-5035275</td>
<td>12&quot;</td>
<td>Square / Gray</td>
<td>5035019 —</td>
</tr>
<tr>
<td>SM-613682-5035276</td>
<td>10&quot;</td>
<td>Square / Gray</td>
<td>5035019 —</td>
</tr>
<tr>
<td>SM-613683-5035277</td>
<td>12&quot;</td>
<td>Square / Black</td>
<td>5035019 —</td>
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<td>SM-613684-5035278</td>
<td>10&quot;</td>
<td>Square / Black</td>
<td>5035019 —</td>
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<tr>
<td>SM-613701-5035381</td>
<td>12&quot;</td>
<td>Square / Brown</td>
<td>5035019 5035023</td>
</tr>
<tr>
<td>SM-613702-5035382</td>
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<td>Square / Brown</td>
<td>5035019 5035023</td>
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<td>SM-614092-5035391</td>
<td>17'-6&quot;</td>
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<td>— 5035022</td>
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<td>SM-614093-5035392</td>
<td>17'-6&quot;</td>
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<td>— 5035024</td>
</tr>
<tr>
<td>SM-614025-5035385</td>
<td>18&quot;</td>
<td>Square / Bronze</td>
<td>— 5035023</td>
</tr>
<tr>
<td>SM-614081-5035386</td>
<td>12&quot;</td>
<td>Square / Bronze</td>
<td>— 5035023</td>
</tr>
<tr>
<td>SM-614082-5035387</td>
<td>10&quot;</td>
<td>Square / Gray</td>
<td>— 5035019</td>
</tr>
<tr>
<td>SM-614083-5035388</td>
<td>12&quot;</td>
<td>Square / Black</td>
<td>— 5035018</td>
</tr>
<tr>
<td>SM-614084-5035389</td>
<td>10&quot;</td>
<td>Square / Black</td>
<td>— 5035018</td>
</tr>
<tr>
<td>SM-614001-5035383</td>
<td>12&quot;</td>
<td>Square / Brown</td>
<td>— 5035023</td>
</tr>
<tr>
<td>SM-614002-5035384</td>
<td>10&quot;</td>
<td>Square / Brown</td>
<td>— 5035023</td>
</tr>
</tbody>
</table>
SECTION 5: HARDWARE AND BASIC UNITS

HANDHOLE COVER

RADIUS = 2 1/2"

1/16" THICK EPDM RUBBER HANDHOLE COVER GASKET

5/16" W X 3/4" H (TYP)

GREY 5035014
BLACK 5035015

HARDWARE AND BASIC UNITS
REPLACEMENT
STREETLIGHT POLE HANDHOLE COVER

5-6-3
NOTE:
1. STOCK CODE 5035016

Outdoor Lighting Standards

HARDWARE AND BASIC UNITS
REPLACEMENT
STREETLIGHT POLE HANDHOLE COVER - GRAY

5-6-4
NOTES:
1. FOR SHAKESPEARE FIBERGLASS POLES.
2. SRP STOCK CODE 5035022, BLACK FOR ROUND POLE.
3. SRP STOCK CODE 5035024, GREY FOR ROUND POLE.
4. SRP STOCK CODE 5035023, BROWN FOR SQUARE POLE.
5. SRP STOCK CODE 5076418, GREY FOR SQUARE POLE.
6. BOLT IS CAPTIVE, STAINLESS STEEL.
NOTE 3
1 7/8"

NOTE 2
1 1/2"

2. STAINLESS HEX HEAD 1/4" X 20, 1 1/2" LONG BOLTS, NEOPRENE WASHER BACKING PLATE

1/8" STEEL PLATE

3/8" RADIUS TYP. ALL CORNERS

HARDWARE AND BASIC UNITS
REPLACEMENT
STREETLIGHT POLE HANDHOLE COVER - BROWN

NOTES:
1. 5035018 TO INCLUDE A 1/16" THICK EPDM RUBBER HANDHOLE COVER GASKET DIMENSIONS (4" X 6 1/4") .
2. THIS DIMENSION FOR RUBBER GASKET IS 1 5/8".
3. THIS DIMENSION FOR RUBBER GASKET IS 2".

SM-811505-5035018
NOTE:

1. 5036021 TO INCLUDE A 1/16" THICK EPDM RUBBER HANDHOLE COVER
   GASKET DIMENSIONS (3 1/4" X 5 1/4") WITH 9/32" HOLE IN CENTER. GASKET IS LARGER THAN HAND HOLE.

1-STAINLESS HEX HEAD 1/4" X 20, 2 1/2" LONG BOLT, NEOPRENE WASHER BACKING PLATE

WING NUT

DRILL AND TAP 1/4" X 20 NC

1/4" BAR 3/4" X 6"

1/4" RADIUS

1/8" HOLE

SM-811510-5036021

OUTDOOR LIGHTING STANDARDS

HARDWARE AND BASIC UNITS

REPLACEMENT 5036021

STREETLIGHT POLE HANDHOLE COVER - GRAY

ISSUE DATE: 01/21/00

REV. DATE: 03/28/14

APPROVAL: W. LARAMIE
RUBBER GASKET
NOTE 2

METAL COVER
NOTE 1

SM-611504-5071584
SECTION 5: HARDWARE AND BASIC UNITS

HAND HOLE COVER

GASKET
1/16 INCH THICK EPDM RUBBER

SM-0081-5075849

Outdoor Lighting Standards

HARDWARE AND BASIC UNITS
REPLACEMENT
STREETLIGHT POLE HANDHOLE COVER

ISSUE DATE: 02/07/14
REV. DATE: 0
APPROVAL: W. LARAMIE

5-6-13
1. Form two 1" gaps in the needle ribbons for hose clamps and one 2" gap at the end to connect to the luminaire by breaking the needles off the ribbon.

2. Bend the 2" gap at the end back to form a hook which will catch the lip of the luminaire. (Detail "A").

3. Place hook in luminaire and tension ribbons back toward arm on each side of photocell. Use black tape to temporarily hold until the two 4" hose clamps can be placed.

4. Safety glasses and leather gloves are recommended.
*See Available Shields table for material item number.
Street Side Light Shield (Note 3)

- Light/Glare cut off at 135.5° (Line 2)
- Light Projection Curb (line 2)

### Available Shields

<table>
<thead>
<tr>
<th>Material Item</th>
<th>Description</th>
<th>Associated Lights</th>
</tr>
</thead>
<tbody>
<tr>
<td>5087781</td>
<td>House Side (HSS), Early American LED, Lexington Style, Needs 1 HSS Per Head</td>
<td>Early American LED Type 2 - Lexington</td>
</tr>
<tr>
<td>5087763</td>
<td>Early American - Type 5, Traditionaire Style, Black Powder Coat Aluminum, Bracket, Rectangular Board, Short Side</td>
<td>Early American LED Type 5</td>
</tr>
<tr>
<td>5087762</td>
<td>Early American - Type 5, Traditionaire Style, Black Powder Coat Aluminum, Bracket, Rectangular Board, Long Side</td>
<td>Early American LED Type 5</td>
</tr>
<tr>
<td>5035517</td>
<td>Bullet Proof, Cobra Streetlight, Vandal Deterrent Lexan</td>
<td>Streamline HPS</td>
</tr>
<tr>
<td>5035512</td>
<td>0.01 To 0.025 IN THK Sheet, Aluminum, Streetlight For Streamline Cut Off</td>
<td>Streamline HPS</td>
</tr>
<tr>
<td>5035137</td>
<td>Streetlight, AEL Flood, Must Be Purchased and Issued W/0612940</td>
<td>Flood HPS</td>
</tr>
<tr>
<td>5035515</td>
<td>Bullet Proof, Streetlight, Lexan Flood, 61-2940, AEL ACP FLOD STYL</td>
<td>Flood HPS</td>
</tr>
<tr>
<td>5035513</td>
<td>100 to 150 W, Luminaire, Architectural Shoe Box, American Electric LHGTG</td>
<td>Architectural HPS</td>
</tr>
<tr>
<td>5035514</td>
<td>250 to 400 W, Luminaries, AMER ELEC LHGT ARCHTRL</td>
<td>Architectural HPS</td>
</tr>
<tr>
<td>5035511</td>
<td>0.01 IN THK, Luminaries, Aluminum, Streetlight, ARCHTRL CO</td>
<td>Architectural HPS</td>
</tr>
<tr>
<td>5089809</td>
<td>House Side (HSS), LED Polymer Shield, Need 1 HSS Per Head</td>
<td>LED Streamline/Architectural 32 Watt</td>
</tr>
<tr>
<td>5089810</td>
<td>House Side (HSS), LED Polymer Shield, Need 1 HSS Per Head</td>
<td>LED Streamline/Architectural 54 Watt</td>
</tr>
<tr>
<td>5089811</td>
<td>House Side (HSS), LED Polymer Shield, Need 2 for 101 Watt, Need 3 for 201 Watt Head</td>
<td>LED Streamline/Architectural 10 Watt, 201 Watt</td>
</tr>
<tr>
<td>5089812</td>
<td>Top Side, Floodlight Visor, Need 1 Per Head</td>
<td>LED Floodlight, 184 Watt</td>
</tr>
</tbody>
</table>

### NOTES

1. Light shielding may be used to prevent reflection onto Customer-owned property or to prevent glare reflected into a driver’s field of vision.
2. Shielding shall not restrict lighting on roadways as designed.
3. Shield may be customized to prevent reflection of light onto properties opposite to the roadway illuminated. Contact Lighting Maintenance for custom design work (see image above for Street Side Shield).
4. Street Side Shield to reduce glare on opposite side of road.
NOTE:

1. WILL FIT EXISTING CUT OFF TYPE COBRA HEAD LIGHTING FIXTURES OF GE AND AMERICAN LIGHTING WITH 70 TO 250 WATT BULBS.

2. WILL WITHSTAND REPEATED SMALL ARM FIRE FROM .22 CALIBER TO .44 MAGNUM.

3. A LEXAN REFRACTOR IS AVAILABLE FOR THE 100W HPS STREAMLINE AND EARLY AMERICAN THAT WILL WITHSTAND AIR RIFLES OR ROCKS. SEE HARDWARE AND BASIC UNITS, "STREETLIGHTS, LAMPS AND REFRACTORS".
### OVERHEAD CONDUCTORS

<table>
<thead>
<tr>
<th>Type &amp; Size</th>
<th>Weight lbs./ft. (Note 1)</th>
<th>Diameter Inches (Note 1)</th>
<th>Maximum Ampacity Conductor (Note 2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>#6AA XLP DX</td>
<td>0.078</td>
<td>0.548 Nom.</td>
<td>87</td>
</tr>
<tr>
<td>1/0AA XLP TX</td>
<td>0.446</td>
<td>0.986 Nom.</td>
<td>204</td>
</tr>
</tbody>
</table>

### UNDERGROUND CONDUCTORS

<table>
<thead>
<tr>
<th>Type &amp; Size</th>
<th>Weight lbs./ft. (Note 1)</th>
<th>Diameter Inches (Note 1)</th>
<th>Maximum Ampacity</th>
</tr>
</thead>
<tbody>
<tr>
<td>#6 TX AL (obsolete)</td>
<td>0.139</td>
<td>0.65 Nom.</td>
<td>95</td>
</tr>
<tr>
<td>#6 DX AL</td>
<td>0.091</td>
<td>0.62 Nom.</td>
<td>83</td>
</tr>
<tr>
<td>1/0 TX AL</td>
<td>0.388</td>
<td>1.06 Nom.</td>
<td>182</td>
</tr>
<tr>
<td>4/0 TX AL</td>
<td>0.678</td>
<td>1.35 Nom.</td>
<td>267</td>
</tr>
</tbody>
</table>

### NOTES

1. The diameter is for a single conductor except those marked "Nom". This diameter is over all conductors in duplex or triplex construction. Likewise, the weight is for single conductor except for duplex and concentric construction where it is the total of all conductors.

2. Ampacity basis
   a) Overhead
      
      | Type     | Conductor Temperature | Ambient Degrees | Ft./Second Wind | Emissivity | Solar Absorption |
      |----------|------------------------|-----------------|-----------------|-------------|-----------------|
      | Bare     | 90°                    | 40°C            | 2.5 ft.         | 0.5         | 0.5             |
      | Insulated| 90°                    | 40°C            | 2.5 ft.         | 0.91        | 0.95            |

   b) Underground: 90°C conductor temperature, 35°C ambient, earth RHO 120, 100% load factor. Buried depth is 36" with minimum 2.5" PVC conduit.

3. The weights shown do not include the weight of the conduit for "cable in conduit" assemblies.
Conductors for Light Circuitry

<table>
<thead>
<tr>
<th>Type</th>
<th>Description</th>
<th>Material Item</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overhead</td>
<td>#6 DX Alum</td>
<td>5028149</td>
</tr>
<tr>
<td>Overhead</td>
<td>1/0 TX Alum</td>
<td>5028375</td>
</tr>
<tr>
<td>Overhead</td>
<td>#6 Bare Copper</td>
<td>5033845</td>
</tr>
<tr>
<td>Underground</td>
<td>#6 DX Alum</td>
<td>5034032</td>
</tr>
<tr>
<td>Underground</td>
<td>1/0 TX Alum</td>
<td>5034035</td>
</tr>
<tr>
<td>Underground</td>
<td>4/0 TX Alum</td>
<td>5034038</td>
</tr>
<tr>
<td>Underground</td>
<td>#6 Bare Copper</td>
<td>5033845</td>
</tr>
</tbody>
</table>

NOTES

1. The #6 TX C-I-C, material item 5035033 (Obsolete).

2. The #6 DX conductor is used for all underground light installations when SRP is to install the entire system.

3. The #6 DX is to be used only for 120V (single-phase) underground light circuits serving one or more lights (as limited by voltage drop). The #6 DX consists of 1-phase conductor and a neutral. The ground, used for grounding steel light poles or the luminaire on fiberglass light poles, is supplied from a ground rod in the pole’s J-box.

4. The 1/0 TX aluminum is generally used to minimize voltage drop when serving multiple lights from the same cable run on overhead or underground light circuits. Light connections will be made on alternate legs (phases) along the circuit.

5. All steel light poles or the luminaire on a fiberglass pole served by 1/0 TX underground conductors will be grounded using #6 bare copper connected to a 5/8” x 8’ driven ground rod in the J-box.

6. All steel light poles served overhead will be grounded using #6 bare copper connected to a 5/8” x 8’ driven ground rod adjacent to each pole.

7. Existing C-I-C installations were not necessarily installed as a continuous conduit system. Therefore, the ability to pull out damaged conductor is dependent on the original installation of the C-I-C with respect to the length of run, previous fault repairs and number of turns.

8. The Compatible Units standards for underground risers do not include wire. The Designer must call for enough additional cable length to include the riser and make terminations to the overhead facilities.

9. When upgrading street light circuits, a maximum 4/0 TX shall be used in a flush mounted street light j-box.
NOTE:

TAKE CARE TO PROVIDE A SMOOTH, LEVEL AND WELL-COMPACTED BASE FOR PLACING THE BOX. COMPACT AROUND THE SIDES OF THE BOX TO PREVENT SETTLING.
4 PLACE MOLE

UWMB
SET OF 3 (5034923) #12 - 350 MCM

UWMB2
SET OF 2 (5034923) #12-350 MCM

CUTTING TO PROPER WIRE SIZE IS CRUCIAL TO PERFORMANCE

2 PLACE MOLE

UWMC
SET OF 2 (5034921) #12 - 350 MCM
## SECTION 5: HARDWARE AND BASIC UNITS

### RUN

<table>
<thead>
<tr>
<th>CONDUCTOR (DIAMETER INCHES)</th>
<th>CONDUCTOR SIZE</th>
<th>CONDUCTOR CONFIGURATION</th>
<th>RUN</th>
</tr>
</thead>
<tbody>
<tr>
<td>.184</td>
<td>8</td>
<td>7 STR.</td>
<td>1</td>
</tr>
<tr>
<td>.196</td>
<td>6</td>
<td>6/1 ACSR</td>
<td></td>
</tr>
<tr>
<td>.204</td>
<td>4</td>
<td>SOL.</td>
<td></td>
</tr>
<tr>
<td>.226</td>
<td>4</td>
<td>7 STR.</td>
<td></td>
</tr>
<tr>
<td>.242</td>
<td>2</td>
<td>7 STR.</td>
<td></td>
</tr>
<tr>
<td>.316</td>
<td>2</td>
<td>6/1 ACSR</td>
<td></td>
</tr>
<tr>
<td>.340</td>
<td>1/0</td>
<td>STR. COMP.</td>
<td></td>
</tr>
<tr>
<td>.356</td>
<td>1/0</td>
<td>7 STR.</td>
<td>2</td>
</tr>
<tr>
<td>.382</td>
<td>2/0</td>
<td>STR. COMP.</td>
<td></td>
</tr>
<tr>
<td>.398</td>
<td>1/0</td>
<td>6/1 ACSR</td>
<td></td>
</tr>
<tr>
<td>.414</td>
<td>2/0</td>
<td>7 STR.</td>
<td></td>
</tr>
<tr>
<td>.447</td>
<td>2/0</td>
<td>4/3 ACSR</td>
<td></td>
</tr>
<tr>
<td>.454</td>
<td>3/0</td>
<td>STR.</td>
<td></td>
</tr>
<tr>
<td>.481</td>
<td>4/0</td>
<td>STR. COMP.</td>
<td></td>
</tr>
<tr>
<td>.502</td>
<td>3/0</td>
<td>5/1 ACSR</td>
<td></td>
</tr>
<tr>
<td>.522</td>
<td>4/0</td>
<td>STR.</td>
<td></td>
</tr>
</tbody>
</table>

### NOTE:

With WR139, combinations of small tap conductors (i.e #12 to #8 STR.) can be made in "B" & "C" groove by using a short piece of 2AA filler wire in "A" groove.

### TAP

<table>
<thead>
<tr>
<th>CONDUCTOR (DIAMETER INCHES)</th>
<th>CONDUCTOR SIZE</th>
<th>CONDUCTOR CONFIGURATION</th>
<th>TAP</th>
</tr>
</thead>
<tbody>
<tr>
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<td></td>
<td>9</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>8</td>
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</tbody>
</table>

### RANGE NO. | STOCK NO. | APPROVED CONNECTOR | REQUIRED DIE | NO. OF CRIMPS
<table>
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</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>5033809</td>
<td>BLACKBURN WR9</td>
<td>BG DIE</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>BURNDY YPC2ABU</td>
<td>W-BG DIE</td>
<td>2</td>
</tr>
<tr>
<td>2</td>
<td>5033810</td>
<td>BLACKBURN WR139</td>
<td>D DIE</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td></td>
<td>BURNDY YPC2ABU</td>
<td>D DIE</td>
<td>2</td>
</tr>
<tr>
<td>3</td>
<td>5033811</td>
<td>BLACKBURN WR502</td>
<td>D DIE</td>
<td>4</td>
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</table>
### STREETLIGHT POLES

<table>
<thead>
<tr>
<th>Material Item</th>
<th>Length</th>
<th>Material</th>
<th>Finish</th>
<th>Style (See Legend)</th>
<th>Maximum EPA (sq. ft.)</th>
<th>Luminaire Weight (lb.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>5035391</td>
<td>17'-6&quot;</td>
<td>Fiberglass</td>
<td>Black</td>
<td>AR/ART</td>
<td>1.1</td>
<td>28</td>
</tr>
<tr>
<td>5035392</td>
<td>17'-6&quot;</td>
<td>Fiberglass</td>
<td>Galvanized/Gray</td>
<td>CONT</td>
<td>1.0</td>
<td>20</td>
</tr>
<tr>
<td>5035393</td>
<td>23'-6&quot;</td>
<td>Fiberglass</td>
<td>Galvanized/Gray</td>
<td>CONT</td>
<td>1.0</td>
<td>20</td>
</tr>
<tr>
<td>5035385</td>
<td>18'-0&quot;</td>
<td>Fiberglass</td>
<td>Brown</td>
<td>AR/ART</td>
<td>1.1/2.2</td>
<td>28/56</td>
</tr>
<tr>
<td>5035267</td>
<td>25'-6&quot;</td>
<td>Steel</td>
<td>Galvanized/Gray</td>
<td>SL/SLOH</td>
<td>0.9</td>
<td>30</td>
</tr>
<tr>
<td>5035268</td>
<td>25'-6&quot;</td>
<td>Steel</td>
<td>Brown</td>
<td>AR</td>
<td>2.1</td>
<td>42</td>
</tr>
<tr>
<td>5035269</td>
<td>28'-6&quot;</td>
<td>Steel</td>
<td>Brown</td>
<td>AR/ART</td>
<td>1.1</td>
<td>28</td>
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<tr>
<td>5035270</td>
<td>36'-0&quot;</td>
<td>Steel</td>
<td>Brown</td>
<td>AR/ART</td>
<td>2.1</td>
<td>42</td>
</tr>
<tr>
<td>5035271</td>
<td>40'-0&quot;</td>
<td>Steel</td>
<td>Brown</td>
<td>AR</td>
<td>2.1</td>
<td>45</td>
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<tr>
<td>5035386</td>
<td>12'-0&quot; (5)</td>
<td>Fiberglass</td>
<td>Galvanize/Gray</td>
<td>CONT</td>
<td>1.0</td>
<td>20</td>
</tr>
<tr>
<td>5035387</td>
<td>10'-0&quot; (5)</td>
<td>Fiberglass</td>
<td>Galvanize/Gray</td>
<td>CONT</td>
<td>1.0</td>
<td>20</td>
</tr>
<tr>
<td>5035388</td>
<td>12'-0&quot;</td>
<td>Fiberglass</td>
<td>Black</td>
<td>E.A.</td>
<td>1.8</td>
<td>21</td>
</tr>
<tr>
<td>5035389</td>
<td>10'-0&quot; (5)</td>
<td>Fiberglass</td>
<td>Black</td>
<td>E.A.</td>
<td>1.8</td>
<td>21</td>
</tr>
<tr>
<td>5035390</td>
<td>14'-0&quot;</td>
<td>Fiberglass</td>
<td>Black</td>
<td>E.A.</td>
<td>1.8</td>
<td>21</td>
</tr>
<tr>
<td>5035375</td>
<td>26'-6&quot;</td>
<td>Steel</td>
<td>Galvanized/Gray</td>
<td>AR/ART/OH</td>
<td>1.1</td>
<td>28</td>
</tr>
<tr>
<td>5035376 (2)</td>
<td>26'-6&quot;</td>
<td>Steel</td>
<td>Galvanize/Gray</td>
<td>SL</td>
<td>0.87</td>
<td>19</td>
</tr>
<tr>
<td>5035377 (1)</td>
<td>31'-0&quot;</td>
<td>Steel</td>
<td>Galvanized/Gray</td>
<td>AR/ART/OH</td>
<td>1.8</td>
<td>42</td>
</tr>
<tr>
<td>5035377 (1)</td>
<td>31'-0&quot;</td>
<td>Steel</td>
<td></td>
<td>FD/FDT</td>
<td>2.4</td>
<td>53</td>
</tr>
<tr>
<td>5035377 (1)</td>
<td>31'-0&quot;</td>
<td>Steel</td>
<td></td>
<td>SLOH/SLOHT</td>
<td>0.9</td>
<td>41</td>
</tr>
<tr>
<td>5035378</td>
<td>35'-0&quot;</td>
<td>Steel</td>
<td>Galvanized/Gray</td>
<td>SLOH/SLOHT</td>
<td>1.1</td>
<td>41</td>
</tr>
<tr>
<td>61-3696</td>
<td>35'-0&quot;</td>
<td>Steel</td>
<td>Black</td>
<td>AR/ART</td>
<td>1.8</td>
<td>45</td>
</tr>
<tr>
<td>5035379 (3)</td>
<td>31'-0&quot;</td>
<td>Steel</td>
<td>Galvanized/Gray</td>
<td>AR/ART/UG</td>
<td>2.1</td>
<td>42</td>
</tr>
<tr>
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<td>Steel</td>
<td></td>
<td>FD/FDT</td>
<td>2.75</td>
<td>37</td>
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<tr>
<td>5035379 (3)</td>
<td>31'-0&quot;</td>
<td>Steel</td>
<td></td>
<td>SLUG/SLUGT</td>
<td>0.9</td>
<td>41</td>
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<td>5035380 (4)</td>
<td>35'-0&quot;</td>
<td>Steel</td>
<td>Galvanized/Gray</td>
<td>SLUG/SLUGT</td>
<td>1.1</td>
<td>41</td>
</tr>
<tr>
<td>5035383</td>
<td>12'-0&quot; (6)</td>
<td>Fiberglass</td>
<td>Brown</td>
<td>AR</td>
<td>1.1</td>
<td>28</td>
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<tr>
<td>5035384</td>
<td>10'-0&quot; (6)</td>
<td>Fiberglass</td>
<td>Brown</td>
<td>AR</td>
<td>1.1</td>
<td>28</td>
</tr>
</tbody>
</table>

**Style Codes Legend:**
- AR ...................... Architectural
- ART ..................... Architectural Twin fixture, opposite sides of pole, same arm length each side
- CONT .................. Contemporary
- E.A..................... Early American
SECTION 5: HARDWARE AND BASIC UNITS

Style Codes Legend (cont’d.):
FD ....................Flood
FDT ....................Flood, Twin fixture, mounted opposite sides on top of 8’3” extension bracket
OH ....................Overhead
SL ....................Streamlined
SLOH .....................Streamlined, Pole Served Overhead
SLOHT .....................Streamlined, Pole Served Overhead, Twin fixture, opposite sides of pole
SLUG .....................Streamlined, Pole Served Underground
SLUGT .....................Streamlined, Pole Served Underground, Twin fixture, opposite sides of pole
UG .....................Underground

NOTES
1. This pole is used for architectural, flood and streamlined fixtures.
2. Underground equivalent of 5035375
3. Underground equivalent of 5035377
4. Underground equivalent of 5035378
5. Base Plate Mounted
The following material item numbers and compatible units in the “Steel or Fiberglass” columns are obsolete and replaced by those in the “Fiberglass Poles” columns.

<table>
<thead>
<tr>
<th>Steel or Fiberglass Pole Material Item</th>
<th>Fiberglass Pole Material Item</th>
<th>Steel or Fiberglass Pole Material Item</th>
<th>Fiberglass Pole Material Item</th>
</tr>
</thead>
<tbody>
<tr>
<td>Old Compatible Unit</td>
<td>New Compatible Unit</td>
<td>Old Compatible Unit</td>
<td>New Compatible Unit</td>
</tr>
<tr>
<td>5035263</td>
<td>5035391</td>
<td>5035279</td>
<td>5035390</td>
</tr>
<tr>
<td>ULAH1705D</td>
<td>ULAH1F1705D</td>
<td>ULAH1405D</td>
<td>ULAH1F1405D</td>
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<tr>
<td>ULAH1705P</td>
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<td>ULAH1405P</td>
<td>ULAH1F1405P</td>
</tr>
<tr>
<td>ULAH1705TP</td>
<td>ULAH1F1705TP</td>
<td>ULEHC1405D</td>
<td>ULEHC1F1405D</td>
</tr>
<tr>
<td>ULAH1709D</td>
<td>ULAH1F1709D</td>
<td>ULEHC1405P</td>
<td>ULEHC1F1405P</td>
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<td>ULEHC1409P</td>
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</tr>
<tr>
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<td>5035264</td>
<td>5035392</td>
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<td>5035386</td>
</tr>
<tr>
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<td>ULCCHCF1709D</td>
<td>ULAH1809P</td>
<td>ULAH1F1809P</td>
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<td>ULCCHCF1709P</td>
<td>ULAH1809D</td>
<td>ULAH1F1809P</td>
</tr>
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<td>ULCCHCF1716D</td>
<td>ULAH1809TD</td>
<td>ULAH1F1809TD</td>
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<td>ULCCHCF2309</td>
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</tr>
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<tr>
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<td>ULSF1209P</td>
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<td>5035277</td>
<td>5035388</td>
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<td>ULSF1209TD</td>
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<tr>
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<td>-</td>
<td>ULS1030P</td>
<td>ULSF1030P</td>
</tr>
</tbody>
</table>
The following material item numbers are set up to track repair functions for light maintenance.

**Lighting Repair Codes**

<table>
<thead>
<tr>
<th>Material Item</th>
<th>Maintenance Function</th>
<th>Code Material</th>
</tr>
</thead>
<tbody>
<tr>
<td>00-5810*</td>
<td>No Power to Light/Repaired</td>
<td>Blue wire nut</td>
</tr>
<tr>
<td>00-4259*</td>
<td>Bad Order Underground/Send Fault</td>
<td>Red tape</td>
</tr>
<tr>
<td>00-4260*</td>
<td>Duplicate Order</td>
<td>White tape</td>
</tr>
<tr>
<td>61-0911*</td>
<td>Vandalism</td>
<td>None</td>
</tr>
</tbody>
</table>

* No material item number equivalent exists in SAP.
1. See 6-12-1: Fiberglass or steel pole protective collar for installation.
2. On new fiberglass poles a collar, or other ground line protection, is included and does not need to be ordered.
Conduit Codes

<table>
<thead>
<tr>
<th>Conduit</th>
<th>Compatible Unit Code</th>
<th>Material Item</th>
</tr>
</thead>
<tbody>
<tr>
<td>Straight PVC</td>
<td>UK1</td>
<td>5035464</td>
</tr>
<tr>
<td></td>
<td>UK2</td>
<td>5035466</td>
</tr>
<tr>
<td></td>
<td>UK25</td>
<td>5035468</td>
</tr>
<tr>
<td>Polyethylene Spooled - Duct</td>
<td>UKF2</td>
<td>5031714</td>
</tr>
<tr>
<td></td>
<td>UKF25</td>
<td>5031713</td>
</tr>
</tbody>
</table>

To obtain the complete code number, select the appropriate suffixes. Do not leave blank spaces if suffix does not apply.

Example:

For a streetlight duct bank of two straight 2.5” PVC conduit concrete encased: UK252FL

NOTES

1. Number of conduits
   - Straight PVC = 2-2 ½” = 1 or 2
   - Spooled Duct = 2-2 ½” = 1 or 2

2. Conduit easement
   - E = lean mix backfill (1 1/2 sack 5075315).
   - F = 2,000 psi concrete (5075320) or MAG C may be used with 2, 2.5, 3 and 4” straight PVC conduit, developer or contractor installed.
   - FE = red concrete (El Paso Gas Crossing only, see Red Concrete, Trenching Special Codes)

3. Account (1 or 2 conduits only)
   - D = Private/Security
   - L = Streetlighting

4. Conduit supplied by SRP and installed by others
   - G = Developer or contractor installed (maximum conduits = same as Note 1)

Flexible Conduit (Corrugated)

<table>
<thead>
<tr>
<th>Compatible Unit</th>
<th>Conduit Size</th>
<th>Material Item</th>
</tr>
</thead>
<tbody>
<tr>
<td>UKX1L</td>
<td>1”</td>
<td>5033732</td>
</tr>
<tr>
<td>UKX1LG</td>
<td>1” installed by contractor (Note 4)</td>
<td>5033732</td>
</tr>
<tr>
<td>UKX1D</td>
<td>1” Private/Security</td>
<td>5033732</td>
</tr>
<tr>
<td>UKX1DG</td>
<td>1” Private/Security, installed by contractor (Note 4)</td>
<td>5033732</td>
</tr>
<tr>
<td>-</td>
<td>2”</td>
<td>5033733</td>
</tr>
<tr>
<td>-</td>
<td>2.5”</td>
<td>5033734</td>
</tr>
<tr>
<td>-</td>
<td>3”</td>
<td>5033735</td>
</tr>
<tr>
<td>-</td>
<td>4”</td>
<td>5033736</td>
</tr>
</tbody>
</table>
NOTE:
1) ALL HARDWARE SHOWN IS HOT DIP GALVANIZED.
### Section 5: Hardware and Basic Units

<table>
<thead>
<tr>
<th>Luminaire</th>
<th>Replacement Parts</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Stock No.</strong></td>
<td><strong>Manufacturer</strong></td>
</tr>
<tr>
<td>OBSOLETE</td>
<td>OBSOLETE <strong>G.E.</strong></td>
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<tr>
<td>OBSOLETE</td>
<td>OBSOLETE <strong>G.E.</strong></td>
</tr>
<tr>
<td>OBSOLETE</td>
<td>OBSOLETE <strong>WESTINGHOUSE</strong></td>
</tr>
<tr>
<td>OBSOLETE</td>
<td>OBSOLETE <strong>WESTINGHOUSE</strong></td>
</tr>
<tr>
<td>OBSOLETE</td>
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</tr>
<tr>
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<td>OBSOLETE <strong>G.E.</strong></td>
</tr>
<tr>
<td>OBSOLETE</td>
<td>OBSOLETE <strong>AMERICAN ELECTRIC</strong></td>
</tr>
</tbody>
</table>

* No stock code equivalent in SAP.

---

**Outlook Lighting Standards**

**Hardware and Basic Units**

**Street Lights**

**Refractors, Lamps, Covers**

**Reference Only**

**SAP**

**Issue Date:** 12/01/99

**Rev. Date:** 01/26/16

**Approval:** S.Duran

**Reference:** 5-18-1

---

**Diagram**

1. **Refractor 61-4740** and 61-5035 *
2. **Refractor 61-4800** and 61-5037 *
3. **Refractor 61-5025** and 61-5039 *

* No stock code equivalent in SAP.
<table>
<thead>
<tr>
<th>STOCK NO.</th>
<th>MANUFACTURER</th>
<th>WATTAGE AND TYPE</th>
<th>LAMP</th>
<th>LENS OR REFRACTOR</th>
</tr>
</thead>
<tbody>
<tr>
<td>OBSOLETE</td>
<td></td>
<td>175w MV</td>
<td>5035127</td>
<td>GLASS</td>
</tr>
</tbody>
</table>

**REFRACTOR 61-3460 ***

* NO STOCK CODE EQUIVALENT IN SAP.
NOTES:

1. HANDHOLE COVER AND BAR SHALL BE HOT DIP GALVANIZED PER SRP SPECIFICATION CE05.030 OR METAL SPRAYED PER SRP SPECIFICATION CE05.920 OR STAINLESS STEEL.

2. ALL BURRS AND ROUGH EDGES SHALL BE GROUND SMOOTH.

3. SRP STOCK CODE 5035020.
<table>
<thead>
<tr>
<th>Description</th>
<th>Page No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Steel Pole Installation Tube</td>
<td>6-1-1</td>
</tr>
<tr>
<td>Private Lights Served from an Above Ground J-Box, Steel Pole Installation Tube without Flush J-Box</td>
<td>6-2-1</td>
</tr>
<tr>
<td>Light Pole Setting Depth</td>
<td>6-4-1</td>
</tr>
<tr>
<td>Light Pole, New Ground Connection</td>
<td>6-5-1</td>
</tr>
<tr>
<td>J-Box Connections</td>
<td>6-6-1</td>
</tr>
<tr>
<td>Light Poles in Proximity of Metallic Apparatus, Bonding</td>
<td>6-7-1</td>
</tr>
<tr>
<td>Connections at Steel Pole Handhole</td>
<td>6-8-1</td>
</tr>
<tr>
<td>Connections, Wire Nut Orientation in Handhole</td>
<td>6-9-1</td>
</tr>
<tr>
<td>Connections at Fiberglass Pole Handhole</td>
<td>6-10-1</td>
</tr>
<tr>
<td>Overhead Served Light Pole Ground Connection</td>
<td>6-11-1</td>
</tr>
<tr>
<td>Fiberglass or Steel Pole, Protective Collar</td>
<td>6-12-1</td>
</tr>
<tr>
<td>Light Pole Numbering</td>
<td>6-13-1</td>
</tr>
<tr>
<td>“A” Lights – Underground, Cities of Phoenix and Tempe, Connections at Handhole Reference Only</td>
<td>6-14-1</td>
</tr>
<tr>
<td>“A” Lights – Overhead, City of Phoenix, Connections at Pole, Reference Only</td>
<td>6-15-1</td>
</tr>
</tbody>
</table>
SONO-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.
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".

### CONSTRUCTION STANDARDS

<table>
<thead>
<tr>
<th>Private Lights Served From A Transformer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Steel Pole Installation Tube Without Flush J-Box</td>
</tr>
</tbody>
</table>

**Issue Date:** 09/20/99

**Rev. Date:** 05/10/17

**Approval:** S. Duran
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.
**SERIES LIGHTS**

- **Source Cable**
  - H = 120V
  - N = Neutral
  - G = Ground

- **Pipe or Installation Tube**
  - H = 120V
  - N = Neutral
  - G = Ground ROD

**J-Box Connections**

- **NOTE 1**
  - Alternate connections to hot legs.

- **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.

---

**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."
SECTION 6: CONSTRUCTION STANDARDS

ONE CIRCUIT FED

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

\[ H = 120V \]
\[ N = \text{Neutral} \]

Source cable does not have ground conductor.

TWO CIRCUITS FED

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

\[ H = 120V \]
\[ N = \text{Neutral} \]

Source cable does not have ground conductor.

THREE CIRCUITS FED

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

\[ H = 120V \]
\[ N = \text{Neutral} \]

Source cable does not have ground conductor.

FOUR CIRCUITS FED

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

\[ H = 120V \]
\[ N = \text{Neutral} \]

Source cable does not have ground conductor.

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.
NOTES

1. Pole and any metallic power and communication apparatus spaced 6’ or less and shall be bonded using #6 bare copper.

2. When bonding to the source transformer, install the #6 bare copper with the secondary/streetlight conductors in conduit. When bonding to all other equipment, #6 bare copper shall be buried, installed jointly with other conduits or by itself.
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 copper 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

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

WIRE NUT OPENINGS POINT DOWN

SECTION 6: CONSTRUCTION STANDARDS

CONSTRUCTION STANDARDS
CONNECTIONS
WIRE NUT ORIENTATION IN HAND HOLE

ISSUE DATE: 12/12/04
REV. DATE: 11/01/13
APPROVAL: W. LARAMIE

PROPRIETARY MATERIAL
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 (5034921) 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.
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 eléctricos, quemaduras, o causará la muerte.
Mantengase alejado.
Si se encuentra abierto o sin llave llame a Salt River Project (602) 236-8811

---

- **Fuse Holder**: 5035125 With 10A 10000 AIC Fuse 5034354
- **tamper Resistant screws**: 5035509
- **120V #6 AL NeUTRAL FROM SOURCE**
- **BARE #6 CU FROM GROUND ROD IN J-BOX**
- **Green Ground needed on all poles**
- **Neutral/Ground wire bonding connector** #5035008
- **Black 120V**
- **White NeUT**
- **Green Ground**
- **To luminaire**
- **pole ground**
- **BARE #6 CU to POLE GROUND IF METAL POLE**
- **Sign see above**
- **Handhole see DETAIL TO RIGHT**
- **Tamper Resistant screws**: 5035509
- **Handhole Reference Only**

---

Outdoor Lighting Standards

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

CONSTRUCTION STANDARDS

ISSUE DATE: 09/03/99
REV. DATE: 11/01/13
APPROVAL: W. LARAMIE

6-14-1
POLE SHALL BE IDENTIFIED WITH SRP TAG (5039125)

120V

2'

NEUTRAL
<table>
<thead>
<tr>
<th>Description</th>
<th>Page No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Special Compatible Units</td>
<td>7-1-1</td>
</tr>
<tr>
<td>LED Streamlined</td>
<td>7-2-1</td>
</tr>
<tr>
<td>LED Twin Streamlined</td>
<td>7-3-1</td>
</tr>
<tr>
<td>LED Mast Arm Streamlined</td>
<td>7-4-1</td>
</tr>
<tr>
<td>LED High Rise Mast Arm Streamlined</td>
<td>7-5-1</td>
</tr>
<tr>
<td>LED High Rise Mast Arm Architectural</td>
<td>7-6-1</td>
</tr>
<tr>
<td>LED Architectural Square Pole</td>
<td>7-7-1</td>
</tr>
<tr>
<td>LED Architectural Round Pole</td>
<td>7-8-1</td>
</tr>
<tr>
<td>Streetlights – LED Twin Architectural</td>
<td>7-9-1</td>
</tr>
<tr>
<td>LED Early American</td>
<td>7-10-1</td>
</tr>
<tr>
<td>Streetlights – LED Shielded Floodlights</td>
<td>7-11-1</td>
</tr>
<tr>
<td>Water Retention Basin three Foot Pedestals Details</td>
<td>7-12-1</td>
</tr>
<tr>
<td>Steel Pole Guy Application</td>
<td>7-13-1</td>
</tr>
</tbody>
</table>
I. Special Compatible Units

A. LC Streetlight Installed by other than SRP

This compatible unit has been established to identify Customer-owned streetlights for which SRP provides power. This shall not be used for SRP-owned streetlights or lights installed by SRP. LC is to be used whenever Customer-owned streetlights are connected to or removed from SRP’s electrical system.

EXCEPTION: LC is not to be used when Customer-Owned Lights are installed, removed, or transferred by SRP.

1. Removal of SRP Streetlights

The following generic CU’s shall be used for removal of SRP streetlights:

<table>
<thead>
<tr>
<th>Compatible Unit</th>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>RULARMD</td>
<td>Private</td>
<td>Customer Private Dusk-to-Dawn/Security – Underground fed mast arm</td>
</tr>
<tr>
<td>RLARMD</td>
<td>Private</td>
<td>Customer Private Dusk-to-Dawn/Security – Overhead fed mast arm</td>
</tr>
<tr>
<td>RLPOLED</td>
<td>Private</td>
<td>Customer Private Dusk-to-Dawn/Security – Overhead fed steel light pole</td>
</tr>
<tr>
<td>RW30L, RW35L, RW40L, RW45L</td>
<td>Public</td>
<td>Streetlight – Wood light pole</td>
</tr>
<tr>
<td>RULARM</td>
<td>Public</td>
<td>Streetlight – Underground fed mast arm</td>
</tr>
<tr>
<td>RLARM</td>
<td>Public</td>
<td>Streetlight – Overhead fed mast arm</td>
</tr>
<tr>
<td>RLPOLE</td>
<td>Public</td>
<td>Streetlight – Overhead fed steel light pole</td>
</tr>
<tr>
<td>RULPOLE</td>
<td>Public</td>
<td>Streetlight – Underground fed steel light pole</td>
</tr>
</tbody>
</table>

2. Removal or Transfer of Foreign-Owned Streetlights

<table>
<thead>
<tr>
<th>Compatible Unit</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>RFL</td>
<td>Remove foreign light mast arm and luminaire</td>
</tr>
<tr>
<td>RFSL</td>
<td>Remove foreign steel pole and light</td>
</tr>
</tbody>
</table>

NOTE: To transfer these items, enter “T” with quantity on grid.

3. Foreign-Owned Wood Streetlight Poles

| W35LF | W40LF | To be used on wood streetlight poles with foreign-owned luminaries only (City of Phoenix and City of Glendale). Not to be used on any streetlight pole without foreign-owned luminaries (streetlight conductors only) |
### Underground

<table>
<thead>
<tr>
<th>CU</th>
<th>Mtg Height</th>
<th>Pole Depth</th>
<th>Lumens</th>
<th>Mast Arm</th>
<th>Rate Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>ULLC2609D</td>
<td>26'</td>
<td>4'</td>
<td>4,000</td>
<td>4'-6&quot;</td>
<td>Security</td>
</tr>
<tr>
<td>ULLC2616D</td>
<td>26'</td>
<td>4'</td>
<td>6,500</td>
<td>4'-6&quot;</td>
<td>Security</td>
</tr>
<tr>
<td>ULLC3109D</td>
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<td>5'-6&quot;</td>
<td>4,000</td>
<td>8'</td>
<td>Security</td>
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<tr>
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<td>8'</td>
<td>Security</td>
</tr>
<tr>
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<tr>
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<td>8'</td>
<td>Security</td>
</tr>
<tr>
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<td>6'-6&quot;</td>
<td>6,500</td>
<td>8'</td>
<td>Security</td>
</tr>
<tr>
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<td>6'-6&quot;</td>
<td>13,000</td>
<td>8'</td>
<td>Security</td>
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<tr>
<td>ULLC3550D</td>
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<td>8'</td>
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### Overhead

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<thead>
<tr>
<th>CU</th>
<th>Mtg Height</th>
<th>Pole Depth</th>
<th>Lumens</th>
<th>Mast Arm</th>
<th>Rate Type</th>
</tr>
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<tbody>
<tr>
<td>LLC2609D</td>
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<td>4'</td>
<td>4,000</td>
<td>4'-6&quot;</td>
<td>Security</td>
</tr>
<tr>
<td>LLC2616D</td>
<td>26'</td>
<td>4'</td>
<td>6,500</td>
<td>4'-6&quot;</td>
<td>Security</td>
</tr>
<tr>
<td>LLC3109D</td>
<td>26'</td>
<td>5'-6&quot;</td>
<td>4,000</td>
<td>8'</td>
<td>Security</td>
</tr>
<tr>
<td>LLC3116D</td>
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<td>5'-6&quot;</td>
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<tr>
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<td>5'-6&quot;</td>
<td>13,000</td>
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<td>Security</td>
</tr>
<tr>
<td>LLC3509D</td>
<td>26'</td>
<td>5'-6&quot;</td>
<td>22,000</td>
<td>8'</td>
<td>Security</td>
</tr>
</tbody>
</table>

**NOTES**
1. All poles and arms are round, grey (galvanized). Luminaires are grey.
2. All poles on this page are steel.
**NOTES**

1. All poles and arms are round, grey (galvanized). Luminaires are grey.
2. All poles on this page are steel.
SECTION 7: LIGHTING COMPATIBLE UNITS

Wood Pole Mounting

Steel Pole Mounting

Compatible Units

<table>
<thead>
<tr>
<th>CU</th>
<th>Max. Pole Diameter</th>
</tr>
</thead>
<tbody>
<tr>
<td>LBKS</td>
<td>4&quot; - 25&quot;</td>
</tr>
<tr>
<td>LBKM</td>
<td>25&quot; - 40&quot;</td>
</tr>
<tr>
<td>LBKL</td>
<td>40&quot; - 55&quot;</td>
</tr>
</tbody>
</table>

*For mounting on steel pole order band compatible unit based on pole diameter.

Underground

<table>
<thead>
<tr>
<th>CU</th>
<th>Mtg. Height</th>
<th>Lumens</th>
<th>Mast Arm</th>
<th>Rate Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>ULLC09D</td>
<td>29'-6&quot;</td>
<td>4,000</td>
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<td>Security</td>
</tr>
<tr>
<td>ULLC30D</td>
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<td>Security</td>
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<tr>
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<td>Security</td>
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<td>4'</td>
<td>Security</td>
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<td>13,000</td>
<td>6'</td>
<td>Security</td>
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<tr>
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<td>31'-2&quot;</td>
<td>22,000</td>
<td>6'</td>
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Overhead

<table>
<thead>
<tr>
<th>CU</th>
<th>Mtg. Height</th>
<th>Lumens</th>
<th>Mast Arm</th>
<th>Rate Type</th>
</tr>
</thead>
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<tr>
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<td>Security</td>
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<tr>
<td>LLC50D</td>
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<td>22,000</td>
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<td>Security</td>
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<td>Security</td>
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<td>Security</td>
</tr>
<tr>
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<td>13,000</td>
<td>6'</td>
<td>Security</td>
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<tr>
<td>LLC0650D</td>
<td>31'-2&quot;</td>
<td>22,000</td>
<td>6'</td>
<td>Security</td>
</tr>
</tbody>
</table>

NOTES
1. Mounting height shown is nominal, ± 1 foot.
2. Other heights may be specified by designer.
3. Place stainless steel band adjustment bolts on back of pole.
4. Remove 5/8" X 3" and replace with 5/8" X 2" bolt with lock washer.
5. Tighten band to compress pole bracket 1/2".
6. All poles and arms are round, grey (galvanized). Luminaires are grey.
SECTION 7: LIGHTING COMPATIBLE UNITS

Wood Pole Mounting

Steel Pole Mounting

Compatible Units

<table>
<thead>
<tr>
<th>CU</th>
<th>Max. Pole Diameter</th>
</tr>
</thead>
<tbody>
<tr>
<td>&quot;LBKS&quot;</td>
<td>4&quot; - 25&quot;</td>
</tr>
<tr>
<td>&quot;LBKM&quot;</td>
<td>25&quot; - 40&quot;</td>
</tr>
<tr>
<td>&quot;LBKL&quot;</td>
<td>40&quot; - 55&quot;</td>
</tr>
</tbody>
</table>

*For mounting on steel pole order band compatible unit based on pole diameter.

Underground

<table>
<thead>
<tr>
<th>CU</th>
<th>Mtg. Height</th>
<th>Lumens</th>
<th>Mast Arm</th>
<th>Rate Type</th>
</tr>
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Overhead

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<th>CU</th>
<th>Mtg. Height</th>
<th>Lumens</th>
<th>Mast Arm</th>
<th>Rate Type</th>
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</tr>
</tbody>
</table>

NOTES
1. Mounting height shown is nominal, ± 1 foot. Other heights may be specified by designer.
2. These units to be used only when required to maintain proper clearance to energized circuits.
3. Place stainless steel band adjustment bolts on back of pole.
4. Tighten band to compress pole bracket 1/2".
5. All poles and arms are round, grey (galvanized). Luminaires are grey.

Outdoor Lighting Standards

LIGHTING COMPATIBLE UNITS
LED HIGH RISE MAST ARM STREAMLINED

ISSUE DATE: 12/11/19
REV. DATE:
APPROVAL: N. Sabbah

8518E335.DGN
SECTION 7: LIGHTING COMPATIBLE UNITS

NOTES
1. All architectural style (shoe box) luminaires
2. Pole to be steel.
3. All poles are square and brown. Luminaires and arms are brown.

<table>
<thead>
<tr>
<th>CU</th>
<th>Mtg. Height</th>
<th>Pole Depth</th>
<th>Lumens</th>
<th>Rate Type</th>
</tr>
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<td>5'-6&quot;</td>
<td>13,000</td>
<td>Security</td>
</tr>
</tbody>
</table>
**NOTES**

1. All poles are square and brown. Luminaires and arms are brown.
2. On fiberglass poles, ground line protection is required and included in the compatible unit. Ground line protection may be the factory-installed 1/2" layer of elastomeric urethane, a foot above and below grade, or a factory supplied collar to be installed with the pole (see protective collar, page 6-12-1). Collars are not required on steel poles.

<table>
<thead>
<tr>
<th>Underground</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CU</strong></td>
</tr>
<tr>
<td>ULALF1809D</td>
</tr>
<tr>
<td>ULAL2809D</td>
</tr>
<tr>
<td>ULAL2816D</td>
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<tr>
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<td>ULAL4030D</td>
</tr>
<tr>
<td>ULAL4050D</td>
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<tr>
<td>ULAL4016D</td>
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</tbody>
</table>
SECTION 7: LIGHTING COMPATIBLE UNITS

NOTES
1. All poles are square and brown. Luminaires and arms are brown.
2. On fiberglass poles, ground line protection is required and included in the compatible unit. Ground line protection may be the factory installed 1/2" layer of elastomeric urethane, a foot above and below grade, or a factory-supplied collar to be installed with the pole (see protective collar, page 6-12-1). Collars are not required on steel poles.

<table>
<thead>
<tr>
<th>Underground</th>
<th>Mtg. Height</th>
<th>Pole Depth</th>
<th>Lumens</th>
<th>Rate Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>ULALF2309D</td>
<td>20'-3&quot;</td>
<td>4'</td>
<td>4,000</td>
<td>Security</td>
</tr>
<tr>
<td>ULALF2316D</td>
<td>20'-3&quot;</td>
<td>4'</td>
<td>6,500</td>
<td>Security</td>
</tr>
</tbody>
</table>
### NOTES

1. The luminaires and poles for all of these units are brown.
2. On fiberglass poles, ground line protection is required and included in the compatible unit. Ground line protection may be the factory installed 1/2" layer of elastomeric urethane, a foot above and below grade, or a factory-supplied collar to be installed with the pole (see protective collar, page 6-12-1). Collars are not required on steel poles.

### UNDERGROUND

<table>
<thead>
<tr>
<th>CU</th>
<th>Mtg. Height</th>
<th>Pole Depth</th>
<th>Pole Material</th>
<th>Lumens</th>
<th>Rate Type</th>
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<tbody>
<tr>
<td>ULALF1809TD</td>
<td>15&quot;</td>
<td>3'-6&quot;</td>
<td>Steel</td>
<td>4,000</td>
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<tr>
<td>ULAL2809TD</td>
<td>25'-6&quot;</td>
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<tr>
<td>ULAL2816TD</td>
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<td>4&quot;</td>
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<td>6,500</td>
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<tr>
<td>ULAL3609TD</td>
<td>32'</td>
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<td>Security</td>
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<tr>
<td>ULAL3630TD</td>
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<tr>
<td>ULAL4009TD</td>
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<td>5'-6&quot;</td>
<td>Steel</td>
<td>4,000</td>
<td>Security</td>
</tr>
<tr>
<td>ULAL4016TD</td>
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<td>5'-6&quot;</td>
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<td>6,500</td>
<td>Security</td>
</tr>
<tr>
<td>ULAL4050TD</td>
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<td>5'-6&quot;</td>
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<td>22,000</td>
<td>Security</td>
</tr>
</tbody>
</table>
NOTES

1. All poles are round, black fiberglass. luminaires are black.
2. On fiberglass poles, ground line protection is required and included in the compatible unit. Ground line protection may be the factory installed 1/2" layer of elastomeric urethane, a foot above and below grade, or a factory-supplied collar to be installed with the pole (see protective collar, page 6-12-1). Collars are not required on steel poles.
### NOTES
1. Shielded fixture must be mounted at 45° angle to meet the cutoff.
2. For A.E.L. floodlights the shield is material item 5035137.

### Table: Lighting Compatible Units

<table>
<thead>
<tr>
<th>Underground</th>
</tr>
</thead>
<tbody>
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<td>ULFHC3150D</td>
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<tr>
<td>ULFHL3150TD</td>
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<tr>
<td>ULFLC50D</td>
</tr>
<tr>
<td>ULFLC50TD</td>
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<table>
<thead>
<tr>
<th>Overhead</th>
</tr>
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<tbody>
<tr>
<td>CU</td>
</tr>
<tr>
<td>LFLC3150D</td>
</tr>
<tr>
<td>LFLC3150TD</td>
</tr>
<tr>
<td>LFLC50D</td>
</tr>
<tr>
<td>LFLC50TD</td>
</tr>
</tbody>
</table>
NOTES

1. Run #6 soft drawn bare copper to trench and connect to 5/8" x 8' copper clad ground rod with ground rod connector. Top of rod shall be buried when trench is filled. Leave minimum 2' of the #6 wire projecting from top center of pedestal to be fed into pole base. Also connect the #6 wire to the rebar cage with split bolt connector at any point to be embedded in concrete.

2. Customer to supply rebar cage, j-bolts, 8' of #6 wire, 5/8" x 8' copper clad ground rod, ground rod connector and construct foundation. J-bolts, nuts and washers to be hot dip galvanized.

3. SRP inspector can supply a j-bolt template SRP material item 5031855.

4. These poles shall not be placed within secured (locked) areas where maintenance crews do not have free access. These poles shall not be used for lighting swimming or wading pool areas.

5. On fiberglass poles, from the #6 CU ground wire in the pole hand hole, run #12 CU 5008590 to each luminaire ground bond screw, see Section 6, Connections at Fiberglass Pole Handhole.
NOTES
1. Overhead deadend streetlight poles must be guyed.