**General Streetlight Plan Notes** - APS

(To be included on the Streetlight Plan Cover Sheet.)

The following information is provided to emphasize critical work and is intended to supplement the specifications. Should there be a conflict with the specifications, this document shall take precedence.

Alternatives shall be pre-approved by the Transportation Director. Approval of alternative products shall be on an equal basis with the product specified and shall be submitted a minimum of ten (10) days prior to bid opening. Structural calculations shall be furnished for alternate products and certified by a structural engineer, registered in the state of Arizona. Luminaires and lamps shall meet or exceed the photometric, electrical, and mechanical requirements for the specified products.

The designer is responsible to design new streetlight poles to match the color, style, and profile of existing nearby public streetlight poles and arms.  If there are conflicts with matching the color, style, and profile of existing nearby poles and arms, this conflict shall be discussed with the city’s street lighting manager or the plan reviewer for resolution.  If poles and arms installed with the project do not match nearby poles and arms, the new installations will be required to be removed and replaced with poles and arms matching the nearby streetlights.

The contractor shall comply with State and City statutes along with the manufacturer’s recommendations.

Prior to submitting a proposal, the bidder shall examine all general construction drawings and visit the construction site to become familiar with existing conditions under which he will operate. No subsequent allowance will be made in connection with or on behalf of the contractor for any errors or negligence on his part.

Prior to ordering any materials or doing any work, the contractor shall verify dimensions at the site and immediately report any discrepancies to the Streetlight Management. The contractor shall not proceed with any work until the Transportation Director renders a decision. No extra charges or compensation will be allowed for the differences in actual dimensions and dimensions indicated on the drawings.

**General Information**

The electrical contractor shall comply with all licensing requirements set forth by the State Registrar of Contractors’ office to perform work relating to streetlight installation in the city right-of-way.

The contractor shall obtain the following permits prior to the installation of street lighting:

* One project underground utilities (right-of-way) permit.
* One street lighting permit for each installation.
* One electrical inspection permit for each installation.

*(See schedule for permit)*

All streetlights, including service line stubouts, within new planned developments or relocation projects, must be installed, inspected by the City of Glendale and city clearances issued before the utility company will install any wiring for the distribution system.

**Streetlighting As-builts Required**

As with other as-builts required by the City of Glendale, the developer must submit the Arizona Public Service’s street lighting electrical design showing streetlight pole locations with APS-assigned numbers. This information must be provided through both a scanned “TIF” or “PDF” file and a paper copy (24” x 36”) of a quality that allows for reproduction.

**Streetlighting AutoCAD DWG Base File Required**

A CD containing complete improvement base files in AutoCAD DWG format shall be submitted, including street lighting plans, at the time of City plan approval.

**Light Poles**

Light poles shall be installed plumb, adjusted to provide the proper alignment to the roadway being lighted and be properly grounded when the installation is complete.

If light poles are furnished by the city, the contractor shall pick up the poles from city storage and shall be responsible for their care until installed and accepted by the city (on City Projects).

**Dark Skies Compliance**

City of Glendale Code requires exterior LED lights of 1,100 lumens or more to use full cutoff luminaires. Please provide authoritative information showing such luminaires are full cutoff or exempt from this requirement. To demonstrate the selected luminaire is full cutoff, a manufacturer's cut/detail sheet shall be provided as part of the plan review sheets showing the fixture is "full cutoff" and/or International Dark Skies Association approved certified as "Nighttime Friendly", or has a BUG rating showing zero uplight*.* This cut/detail sheet information must be provided in the plans for review and approval.

**Light Emitting Diode (LED) Luminaires** (List only the luminaires required for specific projects.)

The City of Glendale is using the following specifications for streetlight installations.  These specifications are American Electric Lighting’s Autobahn LED luminaire (typical):

1. Residential Streets – Use 34 Watt, 4,500 lumens, 3000K CCT, 70 CRI Min. LED lighting product: ATBS P10 MVOLT R2 3K MP NL P7 RFD309346. Includes a standard 5-year warranty.
2. Collector Streets – Use 36 Watt, 4,800 lumens, 3000K CCT, 70 CRI Min. LED lighting product: ATBS P10 MVOLT R2 3K MP NL P7 RFD309347. Includes a standard 5-year warranty.
3. Arterial Streets – Use 84 Watt, 11,600 lumens, 3,000K CCT, 70 CRI Min. LED lighting product: ATBM P10 MVOLT R2 3K MP NL P7 RFD308954. Includes a standard 5-year warranty.

Luminaires shall be installed level and shall include a lamp and photocell. Contractor shall assure that the luminaires are free of dust, dirt or any other substance, which would impair the output of the light prior to leaving the site.

Luminaires furnished with multi-tap ballast shall be rewired or reconnected to match the voltage supplied by the electric utility company.

If luminaires are furnished by the city and supplied from stock with a lamp and photocell each may be furnished in separate cartons and assembled by the contractor. The contractor shall pick up the products from city storage and shall be responsible for their care until installed and accepted by the city. If a product furnished by the city is defective, it shall be replaced at no expense to the contractor. Products damaged or rendered non-working by the contractor shall be replaced at the contractor’s expense (on city projects).

**Photocell**

The City of Glendale is using the following specification for new photocells standard for new developments with all public streetlights:

Acuity Controls DTL DLL Elite Electronic Locking Type Photocontrol – DLL127 (for 120-277v), Fail On (blank), 1.5 ANSI Std, Standard Housing (blank), Filter Silicon Sensor (blank), Certification CUL, Cover Color Blue, JU (1 unit).

**Foundation or Embedment and Setback**

**Standard Minimum Street Light Pole Setbacks**

Arterial streets – Centered six feet from back of curb where there is a detached sidewalk or no sidewalk or one foot from back of sidewalk where there is an attached sidewalk.

Collector and residential streets – Centered three feet from back of curb where there is a detached sidewalk or no sidewalk or one foot back of sidewalk where there is an attached sidewalk.

Where there are utility conflicts, deviations may be allowed with approval of the Street Lighting Program. Street light pole setback along arterial streets shall not be less than three feet back of curb.

**Fire Hydrant Clearance**

International Fire Code requires a three-foot clear space around fire hydrants.

**Foundations**

Concrete foundations shall follow the specifications provided in detail F-1. The hole for the foundation shall be augured or hand dug, any exception shall be pre-approved by the City’s Streetlight Management Section. Anchor bolts installed in foundations shall be provided with double nuts and washers. Anchor bolts will be set in place and supported by the use of a template (supplied by the contractor) to maintain the true bolt circle before the concrete is poured.

Streetlight Management shall inspect the work before the concrete is poured and must be contacted 48 hours before the scheduled pouring. A ground rod shall be installed in the pull box or next to the excavated hole in undisturbed soil, per the utility company requirement. A lead-in copper bond wire (#6) shall be installed in a separate 1” conduit up through the excavation for pole grounding.

The top of the completed foundation shall be six (6) inches above finished grade, trowel finished and level. Any surplus excavation shall be legally disposed of by the contractor.

**Embedment**

Direct buried poles shall be set in a round hole, twelve (12) inch diameter, augured into undisturbed earth. Poles shall be set plumb in two directions 90 degrees apart.

Hand tamping of native soil with pneumatic or vibrating equipment is the acceptable method of compaction. Backfill shall be compacted to 85% of maximum density as determined by ASTM D698, D-2922 and D-3017. Using a backhoe is strictly prohibited for direct bury poles. Surplus excavation materials shall be legally disposed of by the contractor.

**Wiring**

**Arizona Public Service Area:**

Streetlight poles shall be wired for 120 volts, for up to and including 35 watts LED and 100 watts HPS fixtures. Fixtures over 35 watts LED and 100 watts HPS are to be wired 240 volts. APS can provide 277 volts on some commercial projects. It is the contractor’s responsibility to contact APS for the correct voltage to be supplied.

Wiring for fixtures shall be installed per Arizona Public Service requirements. Wiring color for power shall be properly identified. Conductors are to be installed from ballast of luminaire to J- box. Wiring between underground junction boxes, shall be provided and installed by the utility company supplying power. APS will make the connection in the J-box.

**APS Junction Boxes**

Junction boxes are furnished by APS. The contractor shall install all APS junction boxes. Excavation for junction boxes and material specifications shall be per the utility company standards.

**Grounding**

Each pole foundation shall have an 8' X 5/8" copper clad ground rod, driven outside the area excavated for the pole. Ground rods maybe located in the J-box when required by the utility company. A #6 bare copper lead shall be used between the ground rod and the landing lug.

**Trench**

Trench shall be installed per the utility company standards.

The use of a common electric utility company trench is permitted. It is the contractor’s responsibility to contact the utility company for coordination of trench and the installation of conduit.

**Conduit**

Conduit shall be installed at the depth specified on the plans. Conduit shall be per the utility company requirement. Each conduit shall terminate in each pull box and/or pole foundation. Elbows shall be the same size as the conduit.

All conduit which will not have circuit wire or cable pulled into it during construction shall have a #10 AWG. copper clad or aluminum clad pull wire installed in it and the ends sealed in a NEC approved manner to keep all moisture and foreign matter out of the conduit.

When required, the contractor shall encase conduits in concrete at street, railroad, and driveway crossings.

Concrete foundations require a rigid (inflexible) PVC conduit. Direct bury/embedded poles require flexible conduit.

**Connections**

**Arizona Public Service (APS) Service Area**

Fusing is to be located in the hand holes or bases of light poles. J-box fusing shall meet APS requirements. Quick disconnect type fuse holders shall be equal to or better than Bussman BK/HEB-AA 30 amp, 600 volt that will accept the 10-amp Thon time-delay fuses “FNQ 10", This cartridge fuse size is 13/32" X 1 ½".

Fusing is to be installed on each energized conductor of the circuit. Fuse holder shall be installed so that the exposed end shall be free of energized parts when disconnected. APS to make the connection in the J-box to its distribution system after city clearances have been issued. NEC approved grounding clamps or Cadweld fusion bonded connections shall be used for bonding bare bond wire and for connections to ground rods.

**Light Pole Identification**

The contractor shall furnish and install a number on each light pole. Streetlight pole identification and specifications will be provided by the utility company supplying power. The contractor will coordinate the installation of pole numbers with the utility company. Pole numbers will be on the plans provided by the utility company. Pole identification shall be yellow letters/numbers on black background, two inches (2”) high.

**Energization of New Streetlights**

The city street lighting program (623-930-2019) shall be notified when the contractor arranges for any street lights to be energized by the electric company (APS).

**Inspections**

The City of Glendale Inspection Management section shall be contacted 48 hours prior to starting the work of digging or installing street lights. Notify street light inspections at 623-930-3626. Construction work concealed without inspection by the city shall be subject to exposure and/or removal and replacement at the contractor’s expense. A geotechnical engineer’s report will be required if direct bury poles are installed without inspector involvement.

**Landscaping**

Trees with branches which may grow at maturity to block the light coming from a street light fixture shall not be planted near a street light pole. Such trees shall be removed from the plans or placed a minimum of 25 feet from the pole. Show street light locations on landscape plans with 25-foot clear zone (parallel to the right of way primarily).

**Removal of Existing Streetlight**

When an existing street light is removed, the pole, arm, luminaire, and photocontrol shall be delivered to the City of Glendale warehouse located at the city’s Field Operations yard, 6210 W. Myrtle, Bldg. N. This material shall be protected for re-use.

No direct bury street light poles are to be relocated due to rust potential which may not be known until pole removal.

Foundation-mounted poles may be relocated under city observation. Such poles need to be lifted by the pole with a stabilizing strap attached to the luminaire-end of the arm to prevent the arm from swinging as the pole rotates in mid-air. The strap must be secured from the ground. The arm swing makes the luminaire or arm subject to striking the crane or other object risking damage.

Jackhammer out the top 12” of the existing foundation that will be abandoned.

**Restoration**

It is the contractor’s responsibility to restore all property, landscaping, paving, and driveways that are disturbed during streetlight construction to their original condition in conformance with Maricopa Association of Governments Specifications, Section 107.9.

**Performance**

Prior to acceptance, the contractor shall energize and operate the entire roadway lighting system, from sunset to sunrise for two (2) consecutive days without interruption or failure. If a luminaire fails to operate normally, it shall be replaced immediately and retested.

**Pole Locations and Numbers to be provided to the City**

The contractor shall provide an electronic list in an Excel format of GPS coordinates and utility-assigned pole numbers for each new pole that will be maintained by the City. This information shall be provided to the City Engineering Inspector or new email address with website before final acceptance of the project by the City.

**Final Acceptance by City**

The City of Glendale staff shall perform visual inspection of work progress. Final acceptance of any street light shall be based on inspection. A problem identified within this period shall result in contractor notification for repair.

**Warranty**

The contractor shall guarantee all work for a period of one (1) year from the date of final acceptance by the Streetlight Management, against defects in workmanship, failure, malfunction of materials and/or equipment. This guarantee is to be in writing to the City at the time of issuing final acceptance. Work found to be defective within the warranty period shall be replaced without cost to the city.

**Street Lighting Specifications**

City of Glendale specification sheets for poles, arms, luminaires, and concrete foundations are available at: <https://www.glendaleaz.com/cms/one.aspx?portalId=15209085&pageId=15590882>

**Cell Tower Identification Tag**

Each cell tower installation shall have a one-inch by three-inch aluminum tag installed on the outside face of the pole opposite from the hand hole one foot above the hand hole. The tag shall be attached by rivets at each end and provide by etching the owner’s name and the job number reference that will be recognizable by the owner in the future.

**Cell Tower Re-use of Existing Material**

Each cell tower installation may re-use the existing mast arm where appropriate and approved by the city. The existing luminaire with photocell shall be re-used by moving this equipment to the newly installed cell tower pole. City equipment shall be protected for re-use.

**Cell Tower Disposal of Abandoned City Equipment**

Abandoned city equipment such as the old pole or mast arm (if not being re-used) shall be delivered to the City of Glendale warehouse located at the city’s Field Operations yard, 6210 W. Myrtle, Bldg. N. This material shall be protected for re-use.