

# STREET LIGHT MANUAL DESIGN CRITERIA AND STANDARDS

ENGINEERING DEPARTMENT

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Date



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## INTRODUCTION

This Street Light Manual for the City of Lake Elsinore has been prepared to establish guidelines for City standards and criterions for the design and installation of all new or relocated street lights located within the City right of way and boundaries. This document shall be used for all street lights on public streets in the City of Lake Elsinore. Deviations from these standards shall require specific approval of the City Engineer.

This Street Light Manual provides for forms, standard drawings, checklists and processes to create a streamline process and a guideline on what to expect from planning to construction and final acceptance of public street lights by the City of Lake Elsinore. This document is not intended or designed as, nor does it establish, a legal standard for lighting. The standards and criterions within this manual do not preclude the use of higher standards.

Title 24 of California Code of Regulation institutes a statewide lighting zone system. However, Title 24 alone does not restrict residential lighting or street lights. Riverside County is one of the first governing bodies to restrict outdoor lighting to preserve the dark night sky and to adhere to the American Medical Association (AMA) recommendations on Light-emitting diode (LED). This Street Light Manual will show compliance with dark night sky zones and AMA recommendations.

*Note: The term developer in this document is inclusive term and includes, but is not limited to developers, engineers, contractors and/or subcontractors concerning services and responsibilities addressed throughout this manual.*

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## **STREET LIGHTS REQUIRED**

Street lights shall be required for all lots and parcels being developed or constructed. In addition, street lights may be required for lots and parcels containing existing structures which are being improved or altered, depending on the nature and extent of work.

## **STREET LIGHTS NOT REQUIRED**

Developers shall be required to obtain a written approval from City Engineer prior to designing for the below scenarios where street lights are not required.

Street lights may not be required for single family residential subdivisions having an average lot street frontage of more than 125 feet, and will not be required to install a street light system along the streets, but shall as a minimum, be required to install street lights at all intersections, cul-de-sacs, and other locations deemed by the City Engineer to be essential. (e.g. pedestrian tunnel, pedestrians over-crossing, bridges, curves, etc.)

Street lights shall not be required for planned developments, residential, commercial, and industrial developments where the internal streets are not offered for dedication, a street lighting system will not be required for the internal non-dedicated streets, but shall be provided by the developer on the external public street frontage.

## **TEMPORARY LIGHTING:**

Alternate roadway lighting shall be provided during construction and the temporary street lighting system must be in operation prior to removing the existing street lighting system. If a project is constructed in phases the developer may need to complete a temporary lighting plan. This must meet the current lighting standards.

Temporary lighting systems are required for all public rights-of-way (roadways, sidewalks, walkways, underpasses, overpasses, detour roads, etc.) where existing street lighting systems are being replaced or new street lighting systems are being constructed. The second condition refers to areas with no existing lighting before construction begins – Utilitarian lighting is not considered a lighting system.

- The temporary street lighting system shall be in operation prior to removing the existing street lighting system or constructing the new street lighting system.
- The temporary street lighting system shall provide an average illumination and uniformity ratio (ave./min.). See Illumination Lighting Level method of this manual for minimum lighting values.
- The Contractor shall make arrangements with power utility company for service or shall provide an alternate power supply.
- The temporary street lighting system must be in operation from dusk to dawn.
- The contractor is responsible for restoring street lights out of service within 24 hours.
- The contractor shall be responsible (including all related costs) for the installation, operation, maintenance, removal, and liability of the temporary street lighting system (equipment).

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## **WIRELESS TELECOMMUNICATION FACILITIES (WTF)**

City of Lake Elsinore Municipal Code (LEMC) Chapter 17.415.140 established in order to enhance the ability of wireless communications service providers to effectively and efficiently provide new wireless communications services in the City; encourage the design and placement of wireless communications facilities in a way that minimizes their impact to the visual character, health, economic vitality and biological resources of the City; encourage and maximize the use of existing and approved wireless communications facilities, buildings and other structures while taking into account the use of concealment technology in order to reduce the number of facilities needed to serve businesses and residents in the City; ensure continuous maintenance of new and existing wireless communications facilities; and ensure the timely removal of any unused or outdated wireless communications facilities.

The City preferences for wireless telecommunication facilities to be located on City-owned street light poles within the Public Right-of-Way. Any proposed WTF installed on a street light poles will comply with all the Federal, State and City's requirements and standards.

When the street light is being installed for the purposes of telecommunication use, all telecommunication equipment electrical power shall be separated from street light connections. Separate circuits will be provided and any necessary pull box will be installed, to provide a point of connection.

Electrical connections will be metered separately from Public Street Lights. Wireless telecommunication facilities must utilize SCE wireless metering. If SCE wireless metering is not feasible, metering must be contained within available equipment enclosures.

Only one wireless installation will be allowed per street light pole, however, more than one carrier may be allowed to share the equipment of a neutral host provided. Priority to install on public street light poles will be given on a "first-come first-served basis".

Public street light poles not in compliance with the City's standards must be upgraded prior to the installation of the wireless telecommunications facility.

Signage on the pole base shall comply with all relevant provisions of ANSI C95.2, and must identify the owner of the attached equipment, equipment, equipment ID, and provide a 24 hour contact number to its network operations and center, and such telephone number shall be able to reach a live person who can exert transmitter power-down control over this site as required by the FCC.



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## UTILITY COMPANY AUTHORIZATION

Southern California Edison (SCE) is the electrical service provider in the City of Lake Elsinore. There are three (3) types of rate schedules or plans that SCE and City of Lake Elsinore will accept. These 3 rate schedules will establish design and construction, funding, ownership and operation and maintenance responsibilities. The developer should become familiar with the SCE schedules in order to expedite approval of plans. The developer must work with the City and get prior approval before moving forward with any of the three SCE rate schedules below.

Schedule LS-1 – This rate applies to un-metered street, highway, and public parking lot lighting that is owned, operated, and maintained by SCE. The City does not encourage this rate schedule for street lights that are within the public right of way or easement.

Schedule LS-2 – This rate applies to un-metered street, highway, road, and public parking lot lighting that City will own, operate, and maintain. Applicant may elect this schedule with prior approval from the City for both new and relocated street lights.

Schedule LS-3 – This rate applies to metered street, highway, road, and public parking lot lighting that City will own, operate, and maintain. Applicant may elect this schedule with prior approval from the City for both new and relocated street lights.

The Southern California Edition (SCE) rates and tables are available online, it shall be the responsibility of the developer to ensure the most current SCE applications and requirements are completed and complied with.

New street lights installation in the City maintained roadways may require the developers to install a meter street light electrical service. The use of metered vs. flat rate electrical billing shall be determined by the Developer's Engineer in consultation with SCE prior to submittal to the City.

A written notice from the serving utility company, stating that line clearance and service have been checked and are adequate, shall be submitted to the City Engineer for all developments requiring street lighting.

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## **CITY OF LAKE ELSINORE AUTHORIZATION**

Developer shall review the “Street Light Authorization, Design, Construction and Acceptance Process” of this manual for complete street light authorization process. The City has acquired almost all of its street lights from SCE and are currently, maintained and operated by the City or its contractors. All the street lights that were purchased from SCE are in the SCE Schedule LS-2, that is these lights are all un-metered street lights. Since most of the current City street lights are under the SCE Schedule LS-2 system, the City prefers all new street lights be design for LS-2 systems if possible and practical for the proposed development.

The City understands that SCE Schedule LS-2 may be not be practical for certain developments or utility provider, as such, Street light Authorization Form was developed to ensure the street light designs and SCE LS Schedule is determined early in the design phase to avoid any unnecessary design changes as the project progresses.

Street light Authorization Form via City Engineer approval will initially determine if the project is required to provide for street lights, further, it will determine which SCE Schedule LS-1, LS-2 or LS-3 are appropriate for each specific development.

Once the street lights SCE Schedules are approved for the proposed development, the developer shall comply with the requirements and processes as described in the “Street Light Authorization, Design, Construction and Acceptance” section of this manual.

It is important to note, there are at minimum three stakeholders in the design and construction of the street lights. It is recommended and highly advisable for all developers to have a separate or coordinated discussion with both the City and SCE at the initial stages of design. Starting the discussion with both agencies is highly recommended to ensure the projects move forward with all parties having equivalent understanding and expectations.



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## DEVELOPER'S RESPONSIBILITY

This document is subject to updates; therefore, developers and other interested parties contemplating any action or construction governed by this manual should ensure they are using the most recent revisions.

In addition to this manual, all applicable industry standards and rules and regulations of federal, state, and local governmental agencies are in effect. This manual should not be construed to change or modify the intent of other applicable codes or standards by any other governmental or utility agency serving the project area. Any and all questions regarding “areas of conflict” shall be decided in favor of the more stringent of the various rules and regulations in conflict.

All deviations and modifications from this manual must be approved by the City Engineer. No work may proceed which deviates from the requirements of this manual without written authorization from the City Engineer.

Existing street lights which must be relocated or repositioned as a result of the construction of new streets or driveways into a development shall be the responsibility of the developer.

Where a development abuts a collector street, primary residential street, or minor residential street, assume that street lights will be installed on alternate side of the street, and where the property on the opposite side of the street has developed without street lights, the City Engineer may require the developer to install additional street lights on the frontage of the development to maintain proper street light spacing.

A new service can with a step-down transformer, required as a result of the modification, replacement or relocation of an existing utility service pedestal shall be the responsibility of the developer. The developer shall also be responsible to ensure that power shall remain to existing street lights during the period of any such modification, replacement or relocation of an existing utility service pedestal.

It shall be the responsibility of the developer to ensure that the power shall remain to the existing street light system until the new street light system is completed and functioning correctly.

See below “Developer’s Checklist”, certain items shown in the list may not be required of the developer depending on the City approved SCE LS Schedule. Developer is advised to retain copies of all relevant and applicable items shown below to expedite the transfer of street lights for ownership, maintenance and operations post construction.

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## Developer's Checklist

### Checklist – City of Lake Elsinore

- \_\_\_\_\_ Obtain copy of City of Lake Elsinore Street light Manual
- \_\_\_\_\_ Retain professional engineer of appropriate discipline
- \_\_\_\_\_ Acquire Street light Authorization Form Approval
- \_\_\_\_\_ Acquire SCE approval
- \_\_\_\_\_ Developer prepares street light plans for City review and approval
- \_\_\_\_\_ Developer acquire Services Point Address from City Building Department
- \_\_\_\_\_ Developer Submit SCE approved design to City
- \_\_\_\_\_ Approved plans submitted for distribution to stakeholders
- \_\_\_\_\_ Developer complies with and meets all the project conditions required prior to construction
- \_\_\_\_\_ Developer obtains construction permits
- \_\_\_\_\_ Developer calls for inspections
- \_\_\_\_\_ Developer installs street lights
- \_\_\_\_\_ City authorizes SCE to energize lighting
- \_\_\_\_\_ Contractor warranty material and workmanship provided to City
- \_\_\_\_\_ Developer complies with and meets all the project conditions required post construction
- \_\_\_\_\_ Developer requests for transfer of street light ownership, operation and maintenance to City
- \_\_\_\_\_ City accepts new street lights and transfers utility billing to City

Note: The items shown above is not a complete list of items that may be required for all projects. Certain projects depending on the type SCE LS Schedule may require more or less items as the project progresses. See “Street light Authorization, Design, Construction and Acceptance Processes” section of this manual for more information.

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## **PEDESTRIAN PATHWAYS, TRAILS AND PARKING LOT LIGHTING**

The City of Lake Elsinore has not standardized lighting for Pedestrian Pathways, Trails, Parking Lots and other areas requiring lighting where standard lighting is not practical due to spacing and height irregularities. Per direction by the City Engineer, the minimum lighting for such areas shall be governed by the Illuminance Lighting Level Methods section of this manual. Developer will be required to provide City the complete system design, layout and photometric plan. Other system components such as pole types and pole foundation, LED luminaires and photoelectrical control unit, pull boxes, services cabinets and etc. may also require by City and when applicable and shall comply with the requirements of this manual.

### **STREET LIGHT DESIGN GUIDELINES**

Street lighting shall be designed in conformance with this manual, the current edition of the Greenbook and “American National Standard Practice for Roadway Lighting” of the American Standards Institute. Data and calculations supporting the satisfaction of the above requirements shall be submitted for review, or the predetermined design standards included herein shall apply.

#### **Industry Standards**

LED street light luminaires shall meet the applicable requirements of the following industry standards:

- ANSI/NEMA/ANSI C78.377-2011-Specifications for the Chromaticity of Solid-State Lighting (SSL) Products
- IES LM-79-08 – Approved Method: Electrical and Photometric Measurements of Solid-State Lighting Products.
- IESNA LM-80-08 – Approved Method measuring Lumen Maintenance of LED chips/Fixture Manufacturer must provide extrapolation for Lumen Maintenance derived from In-Situ testing upon request.
- IEEE C62.42.2-2002-IEEE Recommended Practice on Characterization of Surges in Low-Voltage (1000V and less) AC Power Circuits.
- IESNA TM-15-11 & Addendum A (replaces TM-15-07 and TM-15-07 Addendum A) – Luminaire Classification System for Outdoor Luminaire; Backlight, Uplight, and Glare (BUG) Ratings.
- ANSI/UL 1598-Poles & luminaires; UL
- ANSI/UL 8750: Additional requirements for LED luminaires as well as drivers and LED arrays

Test data that establishes compliance with the requirements of ANSI/UL 1598 and the other industry standards listed above shall be provided upon request.

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## Design Deviations

New or relocated street lights located within City R/W or City easement are required to include light emitting diode (LED) luminaires and shall be constructed per City Standards, Per Plan, and field inspected and approved prior to requesting energizing or acceptance. Deviations from these specifications shall be requested from the City Engineer for Approval prior to commencement of work.

## Street light Location and Spacings

See Standard Drawings 501 to 505 for Typical Street Light Location and Spacings.

Street lights shall be located as follows:

- vertical curves (crest and sag locations)
- Intersections – Intersections shall have at least one street light. Intersection street light locations and the number require shall conform to the Standard Drawing 501 and 502.
- If the project is conditioned for a signals and there is an existing street light at the intersection the plan has to call for its removal.
- Cul-de-Sacs and Stub-End Streets – All cul-de-sacs and stub-end streets exceeding 125 feet in length, measured from the street light location at the intersection to the right-of-way line at the end of the cul-de-sac or street, shall have a street light within the bulb, or in the case of a stub-end street, at the end of street barricade. Location shall conform to the Standard Drawings 502.
- Spacing – Maximum street light spacing, measured along the street centerline, shall conform to Standard Drawings 503 to 505, except on arterial streets with a 1,000-foot or smaller radius horizontal curve, in which case the maximum spacing is 170 feet. The actual constructed street type and right-of-way width shall be the controlling factor for determination of street light spacing rather than the street classifications (arterial, collector, etc.).
- Street light locations shall be adjusted to miss driveways, existing utility poles, and other obstructions by at least five feet.

## Poles

See Standard Drawing 506.

When telecom facilities are to be placed on a pole, the pole to be used will comply with the corresponding “telecom” pole standard as indicated by location adjacent to functional classification.

All poles shall be provided with a clear, factory applied Amersfield Anti-Graffiti coating.

For Minor, Local and Collector streets where the Right of Way is between 50' to 68'  
Use - Ameron 1C123 POLE

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For Residential Cul-de-Sacs and Stub End Street  
Use - Ameron 1C123 POLE

For Secondary and Major where the Right of Way is between 90' to 100'  
Use – Ameron 1C125 POLE

For Urban Arterial where the Right of Way is between 120' to 142'  
Use - Ameron 1C128 POLE

(Note: Use 8' arms on poles located adjacent to the sidewalk on residential, collector and arterial streets)

Concrete poles shall be tapered, centrifugally cast and pre-stressed. Poles shall be black and white marble aggregate or natural exposed aggregate. Pole shape and color shall be uniform for any one project. Replacement poles shall match existing.

Hand hole cover plates shall be aluminum and securing bolts shall be stainless steel tamper-proof bolts of the type installed with a pent-head wrench. Anti-seize shall be used.

The ultimate strength of a pole shall be calculated in accordance with the latest revision of American Concrete Institute (A.C.I.) standard 318. Under working loads (including wind loading, as specified in the latest edition of AASHTO standards), the pole must not be stressed beyond the cracking strength. The pole and mast arm must be capable of handling the EPA and weight of the luminaire.

### **Poles Identifications**

Pole Identification Tags must be provided for all City owned street lights. The Pole Identifications are City specific; it is further specific to the five-voting district with the City of Lake Elsinore. See Standard Drawing 506 for details. These Pole Tag shall be mounted by the Contractor and at the time of transfer to the City for ownership.

### **Poles Foundation**

See Standard Drawing 507

For nonstandard street lights the foundation shall be cast-in-place Portland Cement Concrete, the Concrete shall be 560-C-3250. Unless otherwise shown on the drawing, all street lights to be relocated shall be provided with new foundations and anchor bolts of the proper type and size. Foundations for street light poles shall be designed for one-hundred-mile-per-hour (100-mph) winds

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with gusts to one hundred-thirty-miles-per-hour (130 mph) in conformance with requirements of the AASHTO design criteria.

### **Mast Arm**

See Standard Drawing 506

Mast arms shall be minimum two-inch (2") I.P.S. galvanized steel or aluminum and shall be self-supporting without braces, scrolls or rods. Mounting shall be perpendicular to the street centerline unless otherwise directed by the City Engineer. They shall have a minimum of six inches (6") of horizontal straight section at the end of the arm to mount to a I.P.S. slip fitter type luminaire mount.

Mast arms shall be eight feet (8') long for all luminaires unless otherwise specified in the plans and shall be capable of handling the EPA and weight of the luminaire. Steel arms shall conform to ASTM A 120. Aluminum arms shall be corrosion resistant alloys such as Aluminum Association wrought alloys 6061 or 6062 or cast alloys 319 or 356.

All exposed hardware shall be stainless steel. All protected hardware not visible after installation shall be cast aluminum and / or stainless steel, hot-dipped galvanized. Anti-seize shall be used.

### **City Approved Luminaires**

See Standard Drawing 506.

Fixtures shall be LED, dimmable, and one of the following or as approved by City Engineer:

For Residential Cul-de-Sacs and Stub End Street  
Use – GE Evolve Catalog #: ERL1-0-03-D5-27-A-GRAY-L

For Minor, Local and Collector streets where the Right of Way is between 50' to 68'  
Use – GE Evolve Catalog #: ERL1-0-05-B5-30-A-GRAY-L

For Secondary and Major where the Right of Way is between 90' to 100'  
Use – GE Evolve Catalog #: ERL1-0-09-C5-30-A-GRAY-L

For Urban Arterial where the Right of Way is between 120' to 142'  
Use – GE Evolve Catalog #: ERL1-0-09-B5-30-A-GRAY-L

For Intersection Safety Lights  
Use – GE Evolve Catalog #: ERL1-0-13-D5-40-A-GRAY-L



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Light Emitting Diode Luminaires – All new street light installations shall utilize Light Emitting Diode (LED) luminaires. The luminaire wattages shown on Standard Drawings 506 and above are nominal wattages; system wattages, which include the electronic driver.

Each LED luminaire shall have the manufacturer's name, trademark, model number, serial number, date of manufacture (month-year), and lot number as identification permanently marked inside each unit and the outside of each packaging box. The operation characteristics such as rated voltage and rated power in watts and Volt-Ampere shall be permanently marked inside each LED luminaire unit.

General description of LED Street light – Standard fixture utilizes terminal block for power input suitable for #6 - #14 AWG wire operates at 700mA. Drive current is not field switchable. A three-pole terminal block capable of accepting #14 to #10 AWG shall be mounted to the housing inside the electrical compartment. Luminaire shall be provided with capability for optional backlight control. Complete assembly weight shall not exceed 45lbs. Fixture is designed to mount on a schedule 40, 2" nominal pipe size (NPS) horizontal tenon (minimum 8" in length) and is adjustable +/-5 degrees to allow for fixture leveling (includes two axis T-level to aid in this process). Fixture, including the LEDs, drivers and electrical components, shall carry a limited ten-year warranty and housing paint and finish shall carry a ten-year warranty.

## **Luminaires Specifications**

### **Optical Distribution Method & Configuration**

Optical configurations shall meet the following criteria:

1. Close contact refractors to be employed for optical distribution.
2. Refractors are to be polymeric material rated 5VA, f1 rating
3. Lumen maintenance at 50,000 hours of life to be no less than 88% of initial lumen output
4. Shall have 95% survival rate at 50,000 hours
5. Integral 10K surge suppressor for diode and entire system protection

### **Luminaire Housing**

Luminaire housing shall be furnished with an optical assembly, be powder-coated silver, include a level bubble to facilitate installation, allow for tool-less entry and shall include an integral twist-lock type receptacle for photoelectric cell control in accordance with the latest EEI-NEMA standards which is adjustable with respect to north and prewired to the terminal board. Photocell control shall be for a 7-pin receptacle per ANSI C136.41.

Luminaire external housing shall have a minimum rating of IP66 as specified in IEC 60529, with the ability to shed water from inside the housing (i.e. weep holes).

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The LED luminaire shall be designed for horizontal mounting. The LED assembly shall have a slip-fitted mounting bracket capable of attaching to a two-inch (2") pipe without the need for special mounting parts. They shall be installed in a horizontal position with leveling and clamping to the mast arm pipe accomplished by tightening mounting bolts, which are externally or internally accessible. Bolts shall be minimum 5/8" x2" size and stainless steel.

Luminaire circuitry shall include quick connect / disconnects to allow easy separation and removal of driver and power door. Grounding requirements: ANSI/UL Standards and NFPA 70.

The luminaire power unit assembly shall consist of an integral driver, capacitor, 10K surge suppressor, and heavy-duty terminal block. The power unit assembly shall be mounted on a separate component of the luminaire to facilitate replacement.

The luminaire optical chamber shall have a minimum rating of IP66 as specified in IEC 60529.

The luminaire housing cooling system shall consist of a passive heat sink with no fans, pumps, or liquids and shall be designed and constructed to accept a standard plug type, locking, three-pole, three-wire, street light photocontrol. The fixture and finish endurance tested to withstand 5,000 hours of elevated ambient salt fog conditions as defined in ASTM Standard B 117.

All fasteners shall be stainless steel and all polycarbonate components shall be UV stabilized.

An easily-viewable nameplate shall be permanently affixed to the inside of each luminaire housing. The nameplate shall contain the following information: manufacturer's name manufacturer's catalog number, date of manufacture (month and year), plant location, input power consumption, driver output current, IEC IP Rating, correlated color temperature (CCT), IES light distribution type, IESNA TM-15 BUG ratings, and serial number. Utility approved luminescent name plate with light source and wattage shall be permanently affixed on the exterior of the Luminaire to be visible from the ground.

The driver assembly shall be enclosed in a separate compartment from the optical assembly. The entire fixture shall be "wet listed" with the optical assembly compartment being rated at IP66. The LED Luminaire shall be constructed to provide the required light distribution with the lower edge of the Luminaire housing below the entire light source close contact refractors. The Luminaire must be Dark Sky Compliant with U0 bug rating.

### **Driver & Driver Specifications**

**Driver:** Light Emitting Diode (LED) drivers shall be component-type consisting of precision wound coils and welded magnetic steel laminations assembled together and impregnated with baked-on, insulating, weatherproof varnish; and metal-cased, hermetically-sealed capacitor, suitable for use on

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multiple distribution circuits with 60Hz, 120 or 240-Volt rating. The operating sound pressure noise level shall not exceed the ambient noise level by more than five (5) decibels at 30-feet when measured by a sound level meter conforming to the American Standards for Sound Level Meters. Where the ambient noise level is less, a minimum of 40 decibels shall be assumed.

Power supply / driver shall be field replaceable by means quick-disconnect connectors and easy access mounting hardware. Power supply / driver shall be wet-listed in the US and Canada, UL, ROHS compliant, meet Caltrans 611 vibration testing and GR-63-CORE section 4.4.1/5.4.2 earthquake zone 4.

**Driver Specifications:** Electronic; voltage range = universal 120 – 277 v +/- 10%; frequency = 50/60 Hz; power factor > 90% @ full load; THD < 20% @ full load; output ripple < 10%; output shall be isolated; case temperature rated for 6-40 to 60C; fully encased and potted; overheat protection, self-limited short circuit protection, and overload protected – minimum integral 10k surge protection tested in accordance with IEEE C62.41 and ANSI standard 62.41.2; Driver Life Rating not less than 100,000 hours.

### **Illuminance Lighting Level Methods**

Illuminance lighting level methods maybe used in certain cases for Street lights with prior approval from the City Engineer. The design values for Illuminance from AASHTO Roadway Lighting Design Guide shall be used for non-street lights and pedestrian areas such as sidewalks, pathway, bikeways and parking lots. Note: Parking Lot illuminance design values shall meet values similar to the value in the table for pedestrian ways.

Illuminance is a measurement of the amount of light that hits the pavement or pathway surface. Illuminance is measured in foot-candles. Illuminance layouts may be designed with lighting design software or with illuminance templates. The illuminance at any point will be the sum of illuminance from one or several contributing sources.

The level and uniformity of illuminance along a typical roadway, pedestrian paths, sidewalks, parks and parking lot depends on several factors, including the lumen output or the lights source, luminaire distribution, mounting height, luminaire position, pavement reflectance, and pole spacing and arrangement. The same average level can be obtained by different installation arrangement, such as a few high-output light sources or a greater number of low-output sources.

The proper light loss factor (LLF) should be used in all lighting calculations. LLF is depreciation factor applied to the calculated initial average illuminance. The recommended lighting levels for continuous lighting are in the table below. These values are based on Table 3-5a from the AASHTO Roadway Lighting Design Guide.

The table below contains the recommended illuminance value for continuous lighting of roadways based on roadway type and general land use for the City of Lake Elsinore.

### Illuminance Design Values

Roadway and Walkway Classification	Area Classifications/ General Land Use	Average Maintained Illuminance (Eavg)	Minimum Illuminance (Emin)	Illuminance Uniformity Ratio (Eavg/Emin)
		(foot-candles) (min)	(foot - candles)	avg/min (max)
Interstate and other freeways	Commercial	0.6 to 1.1	0.2	3:1 or 4:1
	Intermediate	0.6 to 0.9	0.2	3:1 or 4:1
	Residential	0.6 to 0.8	0.2	3:1 or 4:1
Urban Arterial	Commercial	1.6	As uniformity ratio allows	3:01
	Intermediate	1.2		3:01
	Residential	0.8		3:01
Secondary and Major	Commercial	1.4		4:01
	Intermediate	1		4:01
	Residential	0.7		4:01
Collector	Commercial	1.1		4:01
	Intermediate	0.8		4:01
	Residential	0.6		4:01
Local, Residential	Commercial	0.8		6:01
	Intermediate	0.7		6:01
	Residential	0.4		6:01
Alleys	Commercial	0.6		6:01
	Intermediate	0.4		6:01
	Residential	0.3		6:01
Sidewalks, Parking Lots	Commercial	1.3		3:01
	Intermediate	0.8		4:01
	Residential	0.4		6:01
Pedestrian Path, Bike Ways and Parking Lots	All	2		3:01

**Illumination for Intersections** - The recommended lighting levels for intersections of continuously lit roadway are in the table below. They are based on the functional classifications the intersecting roadways and level of pedestrian use. The values are taken from Table in ANSI/IES RP-8-14, Roadway lighting.

The functional classifications of roadways are based on the Institute of Transportation Engineers (ITE) Guidelines for Residential Subdivision Street Design:

Major - over 3,500 average daily traffic (ADT)

Collector - 1,500 to 3,500 ADT

Local - 100 to 1,500 ADT

### Illumination for Intersections

Functional Classification	Average Maintained Illumination at Pavement by Pedestrian Area Classification in fc			Uniformity $E_{avg}/E_{min}$
	High	Medium	Low	
Major/Major	3.4	2.6	1.8	3
Major/Collector	2.9	2.2	1.5	3
Major/Local	2.6	2	1.3	3
Collector/Collector	2.4	1.8	1.5	4
Collector/Local	2.1	1.6	1	4
Local/Local	1.8	1.4	0.8	6

**Safety Lighting** - Safety lighting includes lighting rural and urban interchanges, railroad crossings, pedestrian conflict areas, and other points of nighttime hazard.

**Lighting of Isolated Interactions and Interchanges** - The recommended lighting levels for isolated intersections are shown in the table below. These values are based Table 9 from ANSI/IES RP-8-14, Roadway Lighting. For roadway intersections and interchanges the road classifications with highest light level should be used. Roadway classifications in this table are defined the same as in the Illuminance Design Values table displayed earlier in this section.

### Illumination of Isolated Intersections

Road Classification	Average Illuminance (fc)	Uniformity Ratio ( $E_{avg}/E_{min}$ )
Arterial	0.9	3
Collector	0.6	4
Local	0.4	6

**Pedestrian Area** – Lighting for pedestrian areas should be designed using both horizontal and vertical illuminance. Horizontal illuminance levels help the pedestrian to see the walkway. Vertical

illuminance level helps the pedestrian to see and recognize other pedestrians in the walkway. The below contains the recommended value for pedestrian areas. The table is based on Tables 4, 5, 6, and 7 from ANSI/IES RP-8-14, Roadway Lighting.

### Illumination for Pedestrian Areas

Maintained Illuminance Values for Walkways				
Area Classification	Description	$E_{avg}$ (fc)	$E_{V_{min}}$ (fc)	$E_{avg}/E_{min}^*$
High Pedestrian Conflict Areas	Mixed Vehicle and Pedestrian	2	1	4
	Pedestrian Only	1	0.5	4
Medium Pedestrian Conflict Areas	Pedestrian Areas	0.5	0.2	4
Low Pedestrian Conflict Areas	Rural/Semi-Rural Areas	0.2	0.06	10
	Low Density Residential (2 or fewer dwelling units per acre)	0.3	0.08	6
	Medium Density Residential (2.1 to 6.0 dwelling units per acre)	0.4	0.1	4
Pedestrian Portion of Pedestrian/Vehicular Underpasses	Day	10	5	4
	Night	4	2	3

### Decorative Lights

The City Engineer may approve the use of Decorative poles and luminaires if warranted by the character of the surrounding neighborhood.

Decorative street lights of a post-top design with luminaires having a vertically mounted non cut-off light source will be discouraged. Street light luminaires of a full-cut off design mounted on a mast arm are preferred.

1. The developer shall submit design calculations for the pole spacing, including photometric calculations and plots from an appropriate computer program.
2. Decorative street light luminaires shall be fitted with house-side shields, if necessary, to prevent glare and light trespass on adjacent residential properties.
3. The materials and specifications used in the manufacture of the Decorative street lights must be approved by the City Engineer. Street light components manufactured of Aluminum alloys containing Silicon or Copper will not be permitted. Powder-coat finishes that cannot be refreshed by cleaning and painting in the field at a future date will not be permitted. A certification from the manufacturer that the above criteria are met may be required by the City Engineer prior to approval.
4. Decorative street light poles and decorative bases having a paint or powder-coat finish must be galvanized inside and out, then painted equipment must be factory finished and delivered



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wrapped in a protective layer that will prevent damage to the paint or powder-coat finish during shipping and handling.

5. Decorative street light equipment having a paint or powder-coat finish must be raised at least nine-inches above finished grade on a concrete pedestal. The developer shall supply street light foundation and pedestal details for approval by the City Engineer.
6. Installation details and equipment specifications for Decorative street lights, including the equipment manufacturer's name, model and paint numbers, shall be included on the street light plan sheets. The information shall include details for the foundation and pedestal construction and a note indicating the requirement for spare as detailed above.

## **Solar Lights**

Solar powered LED street lights have brought very promising opportunities for applications in street lighting with recent advances in LED and Battery technology. It is feasible in the future that the City will adopt standalone solar photovoltaic street lighting system for new and retro-fitted street lights. Since many manufacturers have come up with various luminaire styles, color temperature, wattages and other parameters, the City will accept Solar Street lights, Solar Parking Lot Lights and Solar Pathway Lighting on case by case basis and with prior approval from City Engineer.

Solar powered street light benefits include:

- No Line voltage, trenching, or metering;
- No power outages;
- Able to employ new battery backup for cloudy or rainy days
- No single point of failure
- Possible federal and state and utility incentives
- Reduced emissions from electricity production
- Contains daylight sensors or hour preset, no running or maintenance cost
- Safe 12 Volt/24volt circuit with little to no risk of electric shock.

Solar power street light on the other hand become inoperable should low-sun conditions persist beyond the storage capacity of the street light batteries. Due to the continued advances both in the LED and Batteries to power the Solar Luminaires, City will not adopt and make Solar street lights mainstream standards until Solar street lights are more reliable, efficient and standardized.

A basic solar powered LED street light system component are:

- Solar Panel
- LED Luminaire
- Battery
- Controller
- Pole and Foundation

Developers proposing Solar Lighting shall provide the following component information to City of Lake Elsinore prior to approving solar lighting for applicable projects, in addition, photometric plan will be required.

### **Solar Panel**

Manufacturer Name	
Brand/Model	
PV module Type	
Rating Power	
Maximum Power Voltage	
Maximum Power Current	
Open Circuit Voltage	
Short Circuit Current	
Frame	
Size	
Weight	
Test Temperature	
Junction Box	
Warranty	

### **LED Luminaires**

Manufacturer Name	
Brand/Model	
LED Type	
Luminaire input Voltage	
Power consumption	
Lumen Output	
Color temperature	
IES lighting type	
Material	
Lens	
Operation temperature	
CRI	
Warranty	

### **Battery**

Manufacturer Name	
Brand/Model	
Battery Type	
Operating Voltage	
Battery Efficiency	
Battery Life Cycle	
Capacity	
Max. discharge current	
Operating temperature range	
Self-discharge	
Dimensions	
Weight	
Warranty	

The following minimum information must be included on the label of the battery and label of battery must be fixed firmly on screen printed on the battery casing:

1. Brand and name of manufacturer
2. Model and type
3. Rated capacity in Ampere-hours
4. Nominal Voltage

### Controller

Manufacturer Name	
Brand/Model	
System Voltage	
Max. charge/load current	
Adjustment range:	
Evening/morning hours	
Night/day detection	
Type of Protection	

### Pole and Foundation

Height	
Diameter	
Thickness	
Material	
Finishing	

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The Pole foundation design shall be per pole manufacturer specifications, or at minimum per City Standard No. 507. The foundation design and details must be signed by a Professional Civil or Structural Engineer licensed in the state of California. The foundation shall be cast-in-place Portland Cement Concrete, the Concrete shall be 560-C-3250. Unless otherwise shown on the drawing, all street lights to be relocated shall be provided with new foundations and anchor bolts of the proper type and size. Foundations for street light poles shall be designed for one-hundred-mile-per-hour (100-mph) winds with gusts to one hundred-thirty-miles-per-hour (130 mph) in conformance with requirements of the AASHTO design criteria.

#### Solar Light General Notes:

1. All necessary Spare parts/Tools have to be provided by the contractor.
2. The complete set of materials shall be warranted by the contractor against any installation defects for a minimum period of 1 years from the date of installation.
3. After completion of the proposed work, clearances of all temporary works/ materials shall be the sole responsibility of the contractor and this shall be removed immediate after the requirement of such temporary work is completed.
4. The contractor will conduct on-site training of the City or it's contractor staff regarding the assembly, start-up, operation, maintenance and repairs of the materials.

#### Pull Boxes

See Standard Drawing 508

Pull Boxes shall be per Caltrans Standard ES-8, Pull Box No. 3-1/2. All pull boxes, including the size and type, shall be shown and identified on the street light plans. Pull boxes shall be installed at all locations as follows:

- Located within five feet (5') of each street light
- Where more than two conduit runs intersect
- where conduit runs are more than 200 feet long
- Located at the end of the conduit run
- at critical angle points
- and at such locations ordered by City Engineer

The pull box that feeds into SCE service point shall be a #5 pull box and be within 5' of the service pedestal.

The bottom of the pull box shall rest firmly on a six-inch (6") thick bed of three-quarter-inch (3/4") crushed rock extending six inches (6") beyond the outside edges of the box. Pull boxes shall be installed within the sidewalk, if possible, behind sidewalk or five feet (5') behind the face of curb or dike and, where practical, shall be installed with the short side parallel to the curb and near the street

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light. They shall not be installed in any part of a driveway or other traveled way. Pull box covers shall be inscribed "STREET LIGHTING" and shall be secured with bolts, cap screws or studs and nuts made of brass, stainless steel or non-corroding materials. Pull boxes shall be tamper resistant and utilize a special key tool for opening. Anti-seize shall be used.

### **Conduits:**

All conduit runs, including the size and type shall be shown and identified in the plans. see City of Lake Elsinore Standard Drawing 508 as a guideline for typical conduit layouts.

For a system designed using the 3-wire system, only 2 circuits (one set of 3 wires) shall be allowed in any conduit. Circuits based on the 2-wire system and the 3-wire system shall be mixed in any conduit. All circuits may, however, be mixed in the same conduit from the service enclosure to the first pull box.

The Design may include more than two circuits in a conduit if the conductors for each circuit (2 wire) or set of circuit (3-wire) are identified by conductor insulation which is a solid color or a basic color with a permanent colored striped. The identification stripe shall be continuous over the entire length of the conductor.

New development shall install minimum 2-inch conduit, or larger as required, with one No. 10 AWG stranded pull wire from the last light on each end of the system to the adjacent property line, where the adjacent property has no existing street lighting system.

- Conduit shall be two-inch (2") UL approved heavy wall polyvinyl chloride (PVC) pipe, Schedule 80.
- Larger conduit may be used, at the contractor's expense, provided the larger size is used for the entire run between pull boxes. Reducing coupling will not be allowed.
- Conduit shall be encased in a minimum of three inches (3") of sand on all sides.
- Conduit will have a minimum of 3" clearance horizontally from trench wall.
- Conduit shall be laid to a depth of not less than thirty inches (30") unless placed under sidewalk in which case only eighteen inches (18") shall be required
- Location tape shall be installed above the sand layer along the length of the conduit trench
- The minimum sweep radii shall be twenty-four inches (24").
- Conduit runs shall have a maximum length of 200 feet

Conduit laid in open trench shall not be covered nor shall trench or inspection hole be backfilled until accepted by the City Engineer or his designated representative.

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## **Conductors:**

All conductors, including quantity and size, shall be identified in the plans. Unless otherwise specified, conductors shall be stranded copper, sized in accordance with these standards and the National Electrical Code.

All conductors shall be stranded copper, XHHW-2, #8 AWG minimum. Maximum wire size shall be #6 AWG. Neither aluminum nor direct-burial cable shall be accepted. All street light system shall be provided with 240V metered service.

Wire shall conform to the applicable portion of ASTM B3 and B8. Wire connectors shall be approved by the City Engineer or his designated representative and shall bear the UL seal of approval. The installation procedure, connector size and crimping tools shall conform to the manufacturer's recommendations. Wire from the base of the pole to the luminaire shall be #10. For 120-volt installations (if approved by city engineer), the wires shall be black and white, with black being the hot wire and fused. For 240-volt installations, one hot wire shall be black and the other shall be red. Both hot wires shall be fused. Any ground wires shall be green and connected to a clamp attached to an anchor bolt.

Service runs parallel to the street shall be installed under the sidewalk where new sidewalk is being constructed or directly behind the existing sidewalk. Street light circuits shall alternate from light to light. Voltage drop shall not exceed five percent (5%).



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## **Splicing:**

Splices shall be permitted in pull boxes and lighting standard bases ONLY. All splices shall be waterproof with penatrox (or approved equal) and shall be used with butt splice and shrink tubing.

## **Fuses and Fuse-Holders**

**Fuses:** Fuses shall be slow blow 13/32" x 1 1/2" in-line type in 5-amp size (unless specified otherwise by the City). The fuse shall be installed in the hot leg of the lighting conductor. The circuit shall be fused in the base of the pole and not in the pull box. 240-volt installations require each leg to be fused using a double fuse holder and two fuses of appropriate size. Fuses shall be Bussmann Series type FNQ or approved equal.

**Fuseholders:** Fuse holders shall be completely waterproof, shall grip the fuse in the load side section when opened, and be able to take a 13/32" x 1 1/2" fuse, with crimp-type tubular terminals of a proper size for the cable in the particular light. Heat shrink both crimp ends. Fuse holders shall be Bussmann Series type HEB or HEX with insulating boots or approved equal.

## **Photoelectrical Control Unit**

Photo Cell and Receptacle – All Lighting Emitting Diode (LED) luminaires shall have a photocell receptacle. On multiple service systems where a photocell is not utilized on every individual luminaire, a rain tight shorting cap shall be installed on the unused receptacle.

Fisher-Pierce # TRS-2 105-305 VAC LED control or approved equal.

The photoelectric unit shall consist of a photoelectric cell in a weatherproof housing which plugs into an EEI-NEMA twist-lock receptacle integral with the luminaire and shall be installed with the clear UV stabilized photocell window facing north. The control unit shall contain a uniformly coated cadmium sulfide photoelectric cell suitable for operation with 120 or 240-volt line supply with surge protection to prevent damage and made to fail in the "ON" position. The unit shall have a HID load rating of 1,800 VA with a Tungsten load rating of 1,000 watts. The unit shall have time delay capabilities.

The response level of the unit to changing light levels shall remain stable throughout the life of the unit (5,000 operations). The "turn-on" level shall be nominal 1 foot-candle and the "turn-on: turn-off" ratio shall be 1.5.

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## **Connection to Service Point**

Contractor shall contact SCE for a service point. SCE will identify what service is available and where it is located. In rare cases, a new street light can be connected to an existing street light circuit, but not without written permission from the City Engineer. New voltage drop calculations shall be required to verify that existing circuit can handle additional load.

The service point shall be in the City's right-of-way; otherwise, the City will require an easement to the service point.

### **Service Cabinet:**

See Standard Drawing 509 for service cabinet information. All service cabinets shall be single meter service cabinets. City may require dual meter service with unmetered section at discretion of city engineer.

Service cabinets shall also meet the following specifications:

- All cabinets shall be stainless steel Myers or approved equal.
- Single meter service (Meyers Model USP16-M2200-112CTB or most applicable model number).
- Shall include a photoelectric socket and control unit with time delay capabilities.
- Shall include factory installed photocell shield.
- Shall include test block switches.
- Shall be anodized aluminum or stainless steel.
- Shall include branch circuits per project design plans.

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## STREET LIGHT PLAN SUBMITTALS

In order to obtain uniformity and allow easier review of street light plans, the following criteria shall apply to all street light plans submitted. The Developer preparing plans and specifications for street lights shall adhere to the following design and plan preparation criteria:

The plans shall show and identify all adjacent subdivisions, existing and proposed utilities and driveways, street lights to be installed, all existing lights in the immediate vicinity of the project, all conduits and conductor runs, service points and addresses, trees within 20' from street lights, and all applicable provisions and details specified in these standards or upon request by City Engineer.

### Plan Preparation and Requirements:

- All sheets must be 24" x 36" overall size, with a 1/2" margin on all sides except that the left margin to be 1-1/2". City CAD Title Blocks can be downloaded online via Engineering Department website.
- All plans shall be drawn to scale of 1" = 40' or 1" = 20'.
- North arrows shall point to the top of left of the sheet, if possible
- Project boundaries, tract limits, Right of Way lines, Easement and Utility Poles (Proposed vs. Existing must be clearly identifiable).
- All stationing shall refer to centerline of the street unless indicated on the plan and shall read from left to right, and shall increase from south to north or west to east. No negative station will be allowed.
- Dimensions to street lights from centerline, curb lines, and right of way lines
- Lot lines and Lot Numbers
- Minimum lettering size is 0.10"
- Plans are to be signed and stamped by the applicant professional engineer.
- Show existing street lights within the project limits, and 300' beyond. Show "future" street lights in a reasonable placement format to demonstrate that this design will work both now, and when future development occurs. Label signalized intersections.
- If any street light will be installed much later, they need to be shown and called out for assessment only.
- Avoid placing street lights on boundary lines, this can create problems for assessment and funding of the maintenance/energy charges if the street light is partially in one property line and partially in another.

Title Sheet shall include:

- Vicinity Map – showing project location, Major cross streets, City limits, North arrow and scale.
- Index Map
- Abbreviations
- Plan legend and symbols

- Quantity Tables – No. of poles, type, height, No. of fixtures, type, wattage, lumens
- General and Construction Notes
- Basis of bearing – shall be the same as the tract map
- Benchmark – number description, date (year of adjustment), and elevation to three (3) decimal places.
- Developer name, address and telephone number
- Engineering firm name, address, telephone number, date of plan preparation, signature and number of the Registered Applicant Engineer.
- Declaration of Responsible Engineer in Charge
- Certificate of approval of the City of Lake Elsinore Engineer shall appear on all sheets in the following form:

“These plans have been reviewed for compliance with the appropriate conditions of development and/or City and State laws, and have been found acceptable.”

City Engineer	RCE #	Expiration Date
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- Acceptance block for signature and date for all other agencies, as necessary.
- Revision block with revision number, date, initial of design engineer, description of plan changes, and spaces for City approval and date.

Design and details shall include the following information:

- Design submittals not containing full electrical designs signed by applicable professional engineer or SCE will be rejected.
- If non-standard street lights and fixtures are proposed by developer, prior approval from City Engineer will be required. Non-standard street lights will be required to provide structural pole foundation calculations, and photometric analysis along associated roadways. Design calculations shall be prepared by applicable professional engineer and shall be wet-stamped.
- The design plan sheets shall show and identify the complete street light system, including existing and proposed SCE point of services, all meter cabinets, fuses, conduit sizes, runs, wires and trench depths, pull boxes, street light poles and foundation, fixtures and other associated items to complete a street light system. Depending on the SCE LS-1, LS-2 or LS-3 design, developer may not be required to provide for some or most of the above items, certain items above are typically designed as part of the SCE design, and therefore will be not be required in the developer’s design.
- Depending on SCE LS design, developer’s design sheets will require information on each street light foundation, pole, fixture type, and information on street station, SCE service point (indicate serving voltage 240v), meter, cabinet and circuit information,

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- Voltage Drop calculations for wire sizing are required for every circuit run which has more than (2) street lights and whenever the service from the service point is more to the last (furthest) street light exceeds 500'. Street light circuits shall alternate from street light to street light. When laying conduits across a street, they shall be at right angles to the curb line.

## General Notes

1. Note to Contractors: The existence and location of any underground utility pipes or structures shown on these plans were obtained by a search of available records. Approval of these plans by the City of Lake Elsinore does not constitute a representation as to the accuracy or completeness of the location, nor the existence or non-existence of any underground utility, pipe or structure within the limits of the project. The Contractor is required to take all due precautionary measures for the protection of all utilities, pipes or structures, whether shown on these plans or not. Any utility(ies) damaged during the performance of the work shall be repaired or replaced to the satisfaction of the governing agency by the Contractor, at his expense.
2. All work shall conform to the most current requirement of City of Lake Elsinore's current improvement standards and specification and as indicated in this manual. It is the Contractor's responsibility to be familiar with these standards and codes at all times.
3. The Contractor shall notify the City Public Works Inspector, forty-eight (48) hours prior to beginning any work. Call for inspection at (951) 674-3124, extension 247, between the hours of 9:00 am and 4:00 pm, Monday through Thursday.
4. Contractor shall maintain traffic control in accordance with Caltrans Traffic Manual and Watch Manual at all times during construction, as approved by the City Engineer or his representative. Failure to do so shall require immediate work stoppage.
5. It shall be the Contractor's responsibility to have a dependable representative at the job site, at all times during construction.
6. It shall be the responsibility of the Contractor to arrange for the necessary relocation of any utilities. Contractor shall notify all utility companies involved, at least forty-eight (48) hours prior to beginning work. The Contractor shall also contact Underground Service Alert (U.S.A.) at 1-800-422-4133, at least forty-eight (48) hours prior to beginning work.
7. The Contractor shall be responsible for the clearing of the proposed work area and relocation and cost of all existing utilities.
8. An Encroachment Permit shall be required for all construction work done within Public Rights-of-way. Before issuance of said permit, the Contractor/Developer must provide the City Engineer with Certificate of Insurance and required bonding for public improvements. The encroachment permit must be present at the job site during the total time of the project construction along with an approved set of improvement plans.
9. If an Encroachment Permit is required through the District No. 8 office of Caltrans, please make reference to this fact in the "General Notes" section of the improvement plans.

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10. The Service point are subject to revision by final SCE plans, it shall be the developer's responsibility to provide the proper service to the street lights shown on this plan
  11. The developer shall be responsible for providing conduit and conductors from the street lights to approved service point furnished by SCE.
  12. It shall be the responsibility of the developer or contractor to apply for an encroachment permit for work performed within City right-of-way.
- SCE Service planner \_\_\_\_\_, Work order number \_\_\_\_\_
  - Energy charges paid by \_\_\_\_\_ (Developer, LMD, OTHER).

#### Other Notices/Precedence

These specifications are not complete – it is a supplement to the latest edition of the Standard Specifications for Public Works Construction “Green Book” and the City of Lake Elsinore’s Standard Special Provision. In case of conflict with the Green Book or City of Lake Elsinore Standard Special Provisions, these specifications shall take precedence.



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## STREET LIGHT AUTHORIZATION, DESIGN, CONSTRUCTION AND ACCEPTANCE PROCESSES

Note: Developer is encouraged to review the beginning of this manual to initially determine if the project is required to provide for street lights. Developer shall obtain authorization from City Engineer via Street light Authorization Form to determine whether the project is required or not required to provide for street lights.

If determined via this manual and Street light Authorization Form the project is required to provide for street lights, Developer will be required to utilize the below process and complete the necessary forms and applications.

### Street light Design Process

- Developer completes and submits to Engineering Department Street Light Authorization Form.
- City reviews and signs Street light Authorization Form, City determines project specific SCE Schedule type for electrical service LS-1, LS-2 or LS-3.
- Engineering Department determines responsible party for design, construction, operation and maintenance and associated fees of the required street lights.
- Upon City and Developer agreeing on SCE Schedule the following items will be required during design reviews.
- For LS-1
  - Developer prepares street light plans for the street light locations only. These street light locations can be part of other plan submittals such as improvement plans, if Engineering Department allows.
  - Developer submits street light/improvement plans to City for review and approval
  - Developer completes SCE Street light Authorization (SLA) Form for City review and approval. Developer completes SCE CSD272, if no existing account is provided in the SLA form.
  - Developer submits the street light/improvement plans, signed SLA form and if required CSD272 to SCE for design and approval of LS-1. *This will determine responsible entity for energy, maintenance and operation fees.*
  - Once street light plans and SCE designs are approved, Developer submits Mylars for the City Engineer signature, once the Mylar's are signed, Developer will make copy for the signed Mylar's and keep for record and potential As-Built changes.
- For LS-2
  - If existing street lights are being retro-fitted with new Fixtures, developer will prepare and complete SCE C503 form and submit to City for review and approval. Engineering Department will review for consistency in the LED Fixtures type and other required parameters. This will also initiate the SCE new charge rate.

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- If new street lights are proposed, developer maybe required to gain prior approval for LS-2 design from SCE. Developer hires professional electrical engineer, and submits 90% street light plans.
  - Following City comments, Developer submits 100% street light plans for approval
  - Developer submits to SCE the approved street light plan, and CSD272 form to initiate SCE design
  - Once street light plans and SCE designs are approved, Developer submits Mylars for the City Engineer signature, once the Mylar's are signed, Developer will make copy for the signed Mylar's and keep for record and potential As-Built changes
  - For LS-3
  - Developer submits 90% street light plans signed by a professional electrical engineer.
  - Concurrently, Developer requests for Meter Cabinet address from building department.
  - Following City comments, Developer submits 100% street light plans signed and stamped by professional electrical engineer.
  - Developer submits approved street light plans, meter cabinet address, and CSD272 form to SCE to initiate LS-3 design. *Note: the service point and address must be exactly the same in the SCE and Developer street light final design plans.*
  - Once street light plans and SCE designs are approved, Developer submits Mylars for the City Engineer signature, once the Mylar's are signed, Developer will make copy for the signed Mylar's and keep for record and potential As-Built changes.

### **Street light Construction Process**

- Developer Applies for Encroachment Permit and submits 3 copies of the signed street light plans and the associated bond and inspection fees to Engineering Department.
- Developer requests for Pre-Job meeting prior to construction with Engineering Inspector.
- Once approved by Engineering Inspector, Developer requests for construction inspection on the street light foundation, conduits, pull boxes, and the associated pole, fixture type and other associated materials per approved street light plans. Meter Cabinet and associated material are inspected by City Building Department.
- Once Street lights are constructed, Developer requests for walk thru with Engineering Inspector to verify Completion of Street lights per approved street light plan.
- Engineering Inspector approves the Street lights and requests for As-Built if changes were made to the approved street light plan, Developer signs and submit the As-Built to City for approval, City Engineer signs and approves the As-Built.

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## Street light Acceptance Process

- Developer submits Street Light Acceptance Form, and the associated required documents to Engineering Department for acceptance of street light improvements and requests for initiating associated bond releases.
- Engineering, Public Works, Building and Finance reviews and approves Street Light Acceptance Form. Once Street Light Acceptance Form is fully executed, City Council through regular meeting accepts public improvements, following Council Action Engineering initiate associated bond release.
- Developer Submits Street Light Transfer of Utility Service Form to initiates transfer of utility service to City, Developer submits the copy of signed SLA, CSD272, Billing account number and current SCE bill for the associated street lights.
- Engineering Department works with SCE and requests a transfer of utilities be initiated
- SCE contacts the Developer and fills out turn off/turn on form
- SCE transfers the Developer's account to the City account for payment
- City transfers street lights to City's O&M contractor for Street lights
- City and City O&M contractor updates street light maintenance inventory
- City and City O&M contractor updates GIS and other associated maps and web applications
- City updates fixed asset report for street lights
- City adds street light assets to the Special Tax Assessment for the subject properties
- Upon one year of street lights/street improvements acceptance from City, Developer requests for remaining bond retentions to be released.
- Engineering Inspector approves bond retention release after confirming the street lights are in good standing.

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## **STREET LIGHTS CONSTRUCTION**

### **Quality Assurance:**

- LED luminaire manufacturer shall provide a 10-year warranty on LED luminaires that includes LEDs, housing, drivers, and finish.
- LED luminaire manufacturer shall use IESNA LM-80 data to predict luminaire lifetime and shall demonstrate a suitable testing program incorporating high heat, high humidity and thermal shock test regimens to ensure system reliability and to substantiate lifetime claims.
- Electrical and light technical properties shall be recorded for each LED luminaire during manufacture.
- This should include lumen output, CCT, and CRI at a minimum. Each luminaire shall utilize a unique serial numbering scheme. Technical properties must be made available for a minimum of 5 years after the date of manufacture.
- Luminaires shall be fully assembled and individually electrically tested prior to shipment.

### **Delivery, Storage, and Handling**

- Deliver luminaires and components carefully to avoid breakage, bending and scoring finishes.
- Do not install damaged equipment.
- Store luminaires and accessories in original cartons and in a clean, dry space; protect from weather and construction traffic.

### **Pre-Installation**

- Contractor shall set up a pre-construction meeting prior to ordering of any materials or any work taking place.
- Contractor shall provide material submittal drawings for city review and approval prior to ordering of any material.
- Obtain a City R/W permit for any work performed within a City R/W or City easement. Attached to the R/W permit are the construction requirements applicable to all work performed within the City R/W.
- Call underground Service Alert at 800-422-4133 at least 48 hours before excavating.
- Where a street light installation is being installed for the purposes of telecommunication use the following approvals must be obtained:
  - Right-of-way Permit: For work in the public right of way
  - Building Permit: For foundation and Service Metering
  - Administrative Wireless Telecommunication Facility Permit (Planning): For approval of facility.

---

## Installation and Inspections

- Concrete and/or asphalt removal & replacement shall be per City of Lake Elsinore Standards or as directed by the City Engineer. A sidewalk extension may be required to meet ADA access requirements.
- Conduit depth shall be as described in the CONDUIT section. All trenches shall be compacted per the City of Lake Elsinore Standards or as directed by the City Engineer.
- Street Lights shall be located per City approved plan or per City of Lake Elsinore Standard, and shall not be relocated without prior City approval.
- Minimum Engineering Department Inspections Required:
  - All work performed within a Public Right-Of-Way
  - All conduit placement
  - Prior to and during any concrete foundation placement
  - Pole installation
- Construction "As-Built" drawings shall be submitted prior to final inspection
- Engineering inspection is required for final wiring and splicing prior to energizing.
- Pedestrian and vehicle traffic control and access shall be maintained per the Plans, Specifications, City Traffic Control Standards, CA MUTCD, and as otherwise required or directed by the City.
- Concrete and/or asphalt removal & replacement shall be per City of Lake Elsinore Excavation Ordinance as directed by the City. A sidewalk extension maybe required to meet ADA access requirements.

## Acceptance and Energizing

- Upon completion of all street light construction, the Contractor (on public projects) or Developer (on private development projects) shall submit two (2) sets of professionally drafted street light "As-Built" plans on 11" x 17" size mylar sheets to the Engineering Department,
- After "As-Built" plans have been accepted by the City, the Contractor or Developer shall anticipate a minimum of five (5) working days for the City to contact SCE for street light energizing. Release of a Building Occupancy requires that street lights be energized.
- As-Built Plans shall at minimum show the following information:
  - Layout of curbs, gutter, sidewalks, driveways and other improvements, drawn to scale
  - Location of street lights, with dimensions from the nearest cross street intersection and between street lights
  - Location of pull boxes dimensioned from the street lights, curbs or other features
  - Location of service point (power source) and SCE identification number
  - Location of conduit service runs dimensioned from face of curb, edge of pavement or back of sidewalk as applicable
  - Size and type of wire used

- 
- Size (wattage and voltage rating) and type (LED) of each lamp and number of lamps used
  - Contractor's name, address and telephone number
  - Identifying project name and number

#### Incomplete Submittals Will Not Be Accepted

- For private development projects, the Developer shall submit a one-year Street light Energy fee for each new street light, paid when street light "As-Built" plans are submitted. The fees shall be paid in accordance with the most recent Fee Schedule. All installations shall be guaranteed for a period of one year from the date of acceptance by the City for maintenance.

#### As-Built and Warranties

##### Construction As-Built Drawing Requirements (Street light Installations)

Two sets of "As-Built" drawings must be given to the Public Works Inspector before SCE will energize a light.

Maximum size of As-Built drawings shall be 11" x 17".

Please provide the following information in addition to As-Built Drawings:

##### POLE

- Manufacture's name
- Supplier's name and contact information
- Material
- Height
- Mast Arm Length
- Footing Type

##### FIXTURE

- Manufacture's name
- Supplier's name and contact information
- Wattage and Voltage
- Fuse size and type
- Photocell manufacturer

##### DISTRIBUTION

- Conduit type and size
- Wire type and gauge

- 
- Pull box manufacturer
  - Service point I.D. number

#### AS-BUILT DRAWINGS MUST INDICATE

- North arrow
- Streets referenced to nearest cross street
- Pole locations, pull box locations, conduit runs, and service point location
- Wattage/Lamp at each pole
- Pole's physical location in relation to corners or cul-de-sac

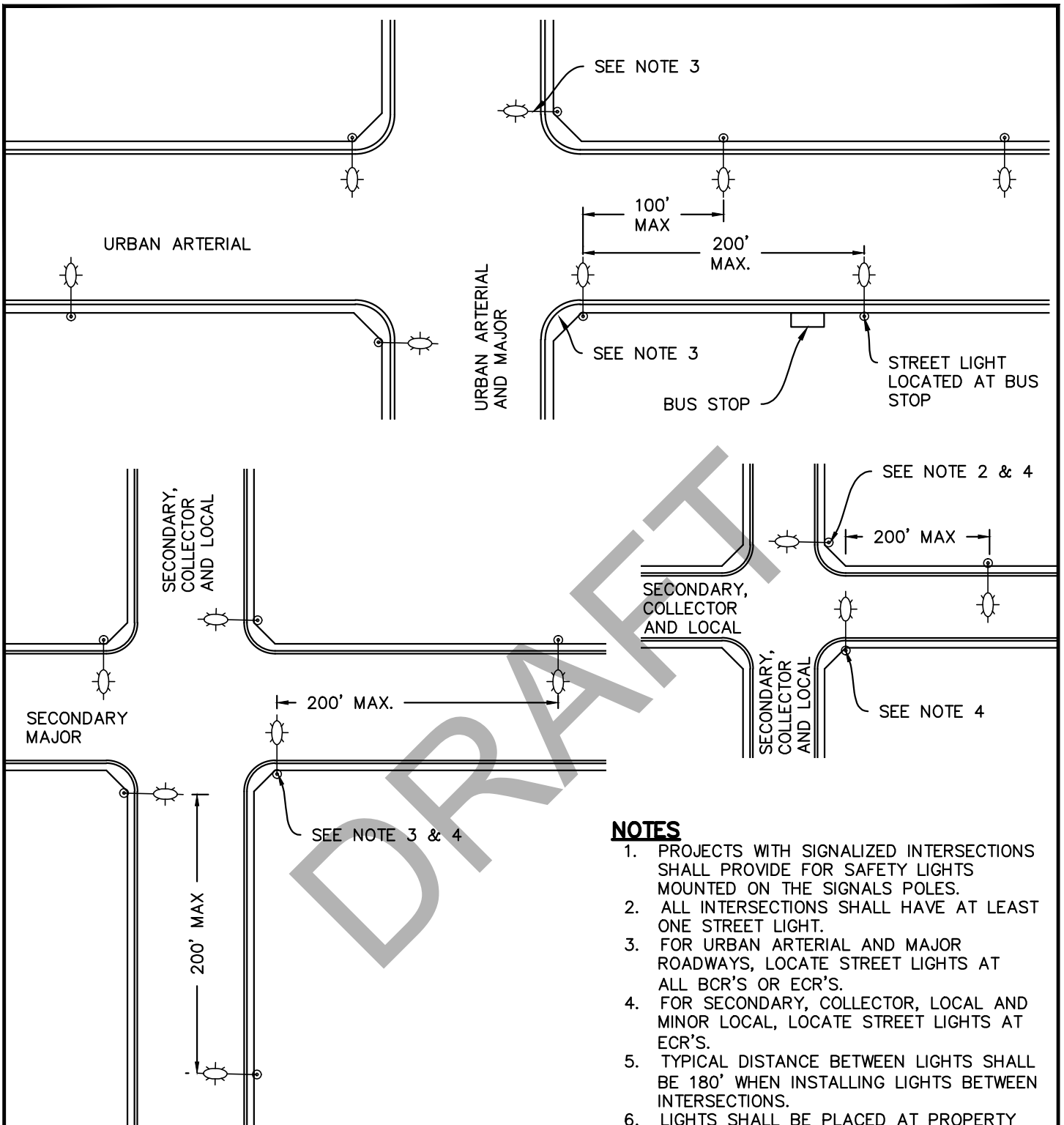
DRAFT



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**DRAFT**

## STREET LIGHT STANDARD DRAWINGS



### NOTES

1. PROJECTS WITH SIGNALIZED INTERSECTIONS SHALL PROVIDE FOR SAFETY LIGHTS MOUNTED ON THE SIGNALS POLES.
2. ALL INTERSECTIONS SHALL HAVE AT LEAST ONE STREET LIGHT.
3. FOR URBAN ARTERIAL AND MAJOR ROADWAYS, LOCATE STREET LIGHTS AT ALL BCR'S OR ECR'S.
4. FOR SECONDARY, COLLECTOR, LOCAL AND MINOR LOCAL, LOCATE STREET LIGHTS AT ECR'S.
5. TYPICAL DISTANCE BETWEEN LIGHTS SHALL BE 180' WHEN INSTALLING LIGHTS BETWEEN INTERSECTIONS.
6. LIGHTS SHALL BE PLACED AT PROPERTY LINES.

APPROVED BY:

CITY ENGINEER  
REMON HABIB

DATE

REVISION	BY:	APPROVED	DATE



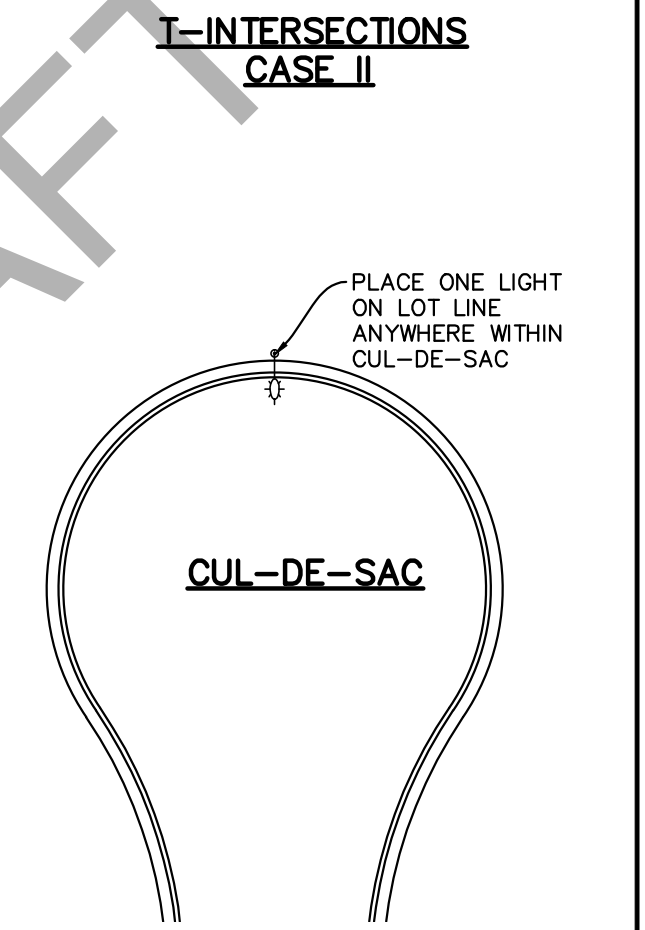
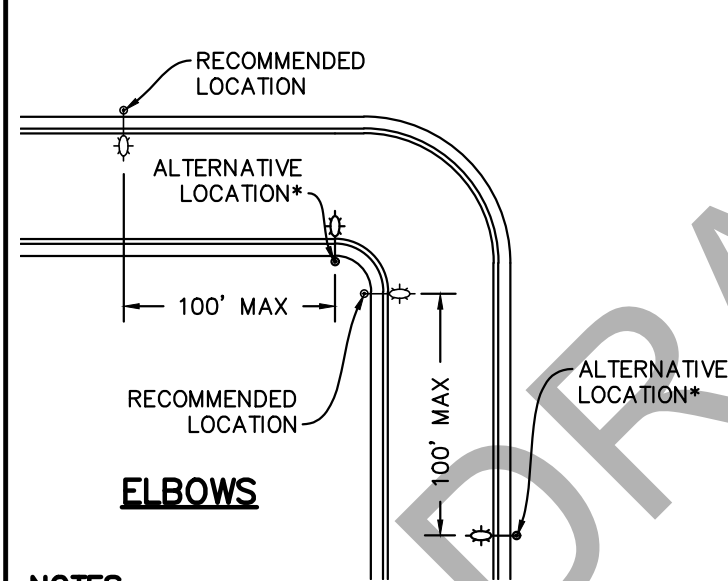
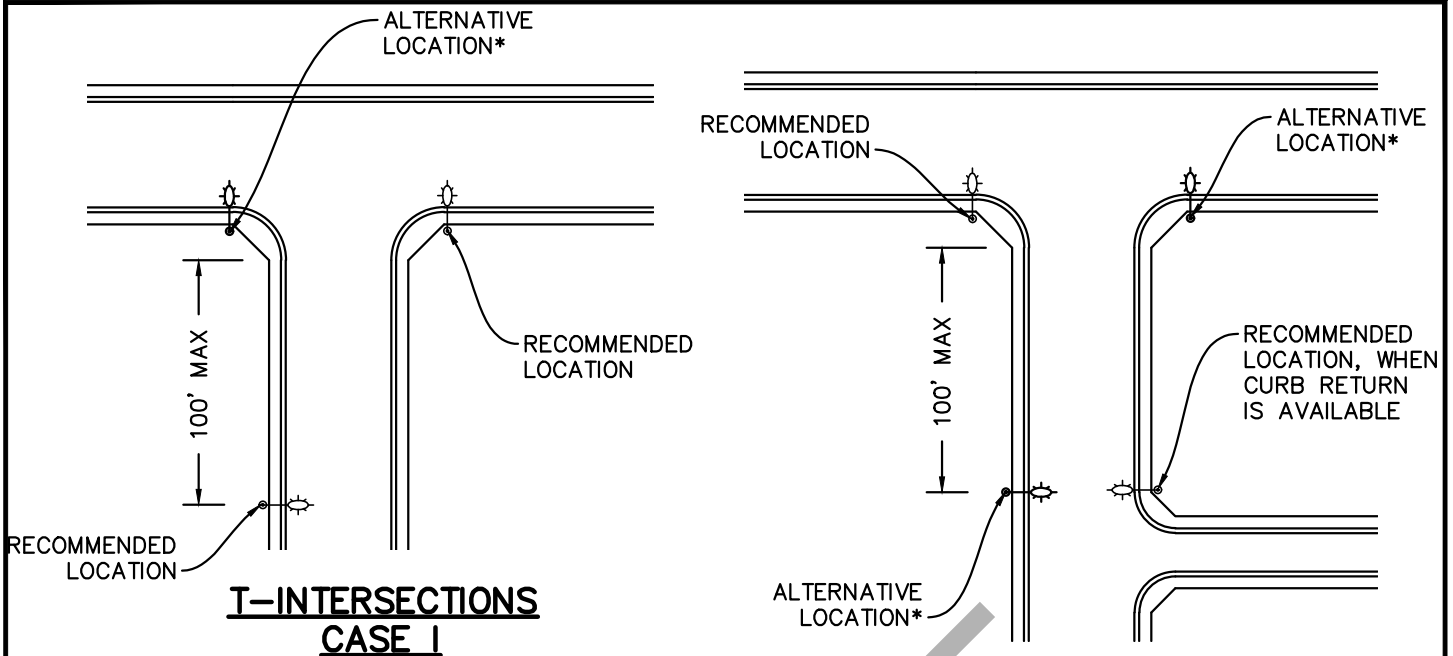
CITY OF LAKE ELSINORE

## TYPICAL STREET LIGHT PLACEMENT-INTERSECTIONS

STANDARD PLAN NO.

**501**

SHEET 1 OF 1



**NOTES**

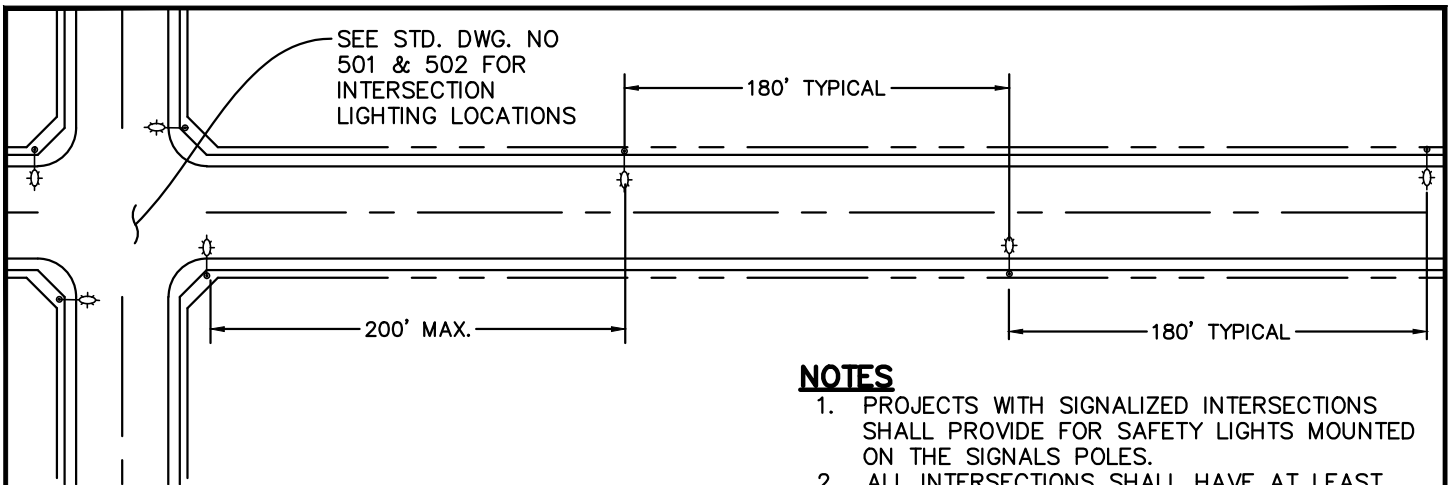
1. PROJECTS WITH SIGNALIZED INTERSECTIONS SHALL PROVIDE FOR SAFETY LIGHTS MOUNTED ON THE SIGNALS POLES.
2. ALL INTERSECTIONS SHALL HAVE AT LEAST ONE STREET LIGHT.
3. STREET LIGHT LOCATIONS SHALL BE ADJUSTED TO MISS DRIVEWAYS, EXISTING UTILITIES AND OTHER OBSTRUCTION BY AT LEAST FIVE FEET (5').
4. STREET LIGHT LOCATIONS SHOWN HEREIN ARE FOR SECONDARY, COLLECTOR, LOCAL AND MINOR LOCAL STREETS
5. TYPICAL DISTANCE BETWEEN LIGHTS SHALL BE 180' WHEN INSTALLING LIGHTS BETWEEN INTERSECTIONS.
6. LIGHTS SHALL BE PLACED AT PROPERTY LINES.

\*CITY ENGINEER APPROVAL MAYBE REQUIRED

APPROVED BY:			
CITY ENGINEER REMON HABIB		DATE	
REVISION	BY:	APPROVED	DATE



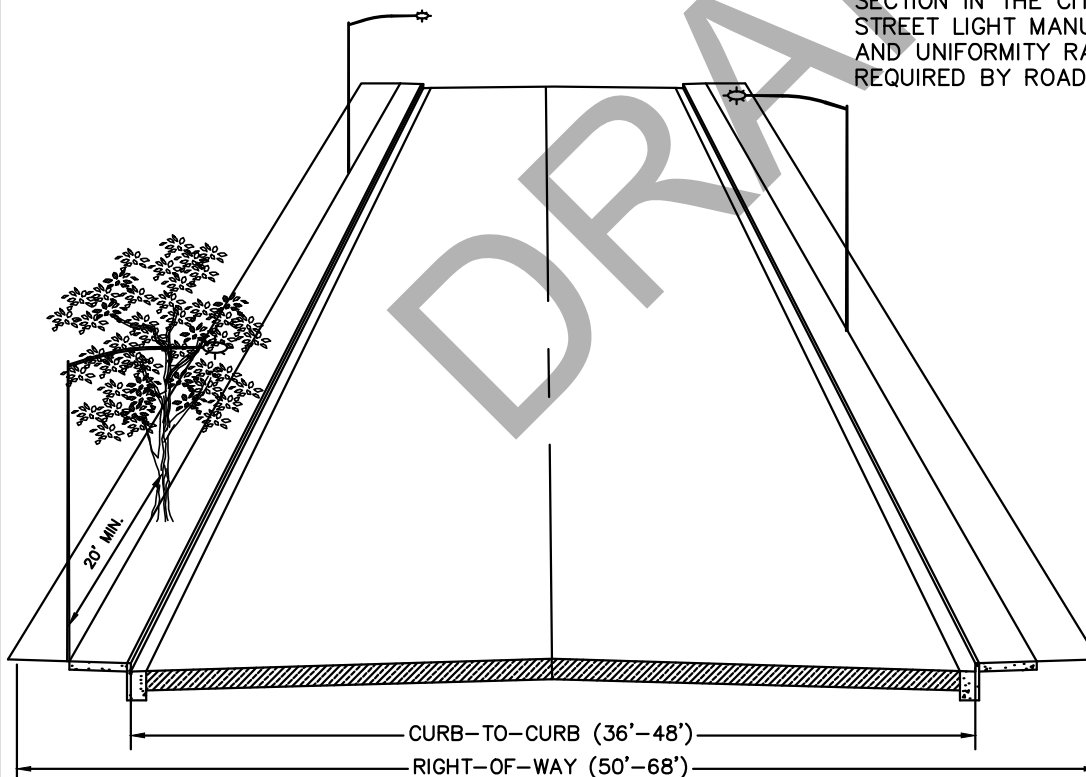
<b>CITY OF LAKE ELSINORE</b>	
<b>TYPICAL STREET LIGHT PLACEMENT T-INTERSECTIONS, CUL-DE-SAC &amp; ELBOWS</b>	
STANDARD PLAN NO.	502
SHEET 1 OF 1	



### NOTES

1. PROJECTS WITH SIGNALIZED INTERSECTIONS SHALL PROVIDE FOR SAFETY LIGHTS MOUNTED ON THE SIGNALS POLES.
2. ALL INTERSECTIONS SHALL HAVE AT LEAST ONE STREET LIGHT.
3. STREET LIGHT LOCATIONS SHALL BE ADJUSTED TO MISS DRIVEWAYS, EXISTING UTILITIES AND OTHER OBSTRUCTION BY AT LEAST FIVE FEET (5').
4. STREET LIGHTS SHALL BE LOCATED ON VERTICAL CURVES (CREST AND SAGE LOCATIONS)
5. TYPICAL DISTANCE BETWEEN LIGHTS SHALL BE 180' WHEN INSTALLING LIGHTS BETWEEN INTERSECTIONS.
6. LIGHTS SHALL BE PLACED AT PROPERTY LINES.
7. SEE "ILLUMINANCE LIGHTING LEVEL METHOD" SECTION IN THE CITY OF LAKE ELSINORE'S STREET LIGHT MANUAL FOR AVERAGE, MINIMUM AND UNIFORMITY RATIO OF ILLUMINANCE REQUIRED BY ROADWAY CLASSIFICATIONS

RECOMMENDED DESIGN STANDARDS	
POLE TYPE	AMERON 1C123, SEE STD. DWG. NO. 506
LUMINAIRE TYPE	GE EVOLVE # ERL1-0-05-B5-30-A
MAST ARM	8', SEE STD. DWG. NO. 506
SPACING	180' TYPICAL, 200' MAXIMUM
SPACING PATTERN	STAGGERED
ILLUMINATION LEVEL	SEE NOTE 7



APPROVED BY:

CITY ENGINEER  
REMON HABIB

DATE

REVISION	BY:	APPROVED	DATE



CITY OF LAKE ELSINORE

TYPICAL STREET LIGHT  
PLACEMENT-MINOR LOCAL  
AND COLLECTOR

STANDARD PLAN NO.

503

SHEET 1 OF 1

SEE STD. DWG.  
NO 501 & 502  
FOR INTERSECTION  
LIGHTING  
LOCATIONS

200' MAX.

180' TYPICAL

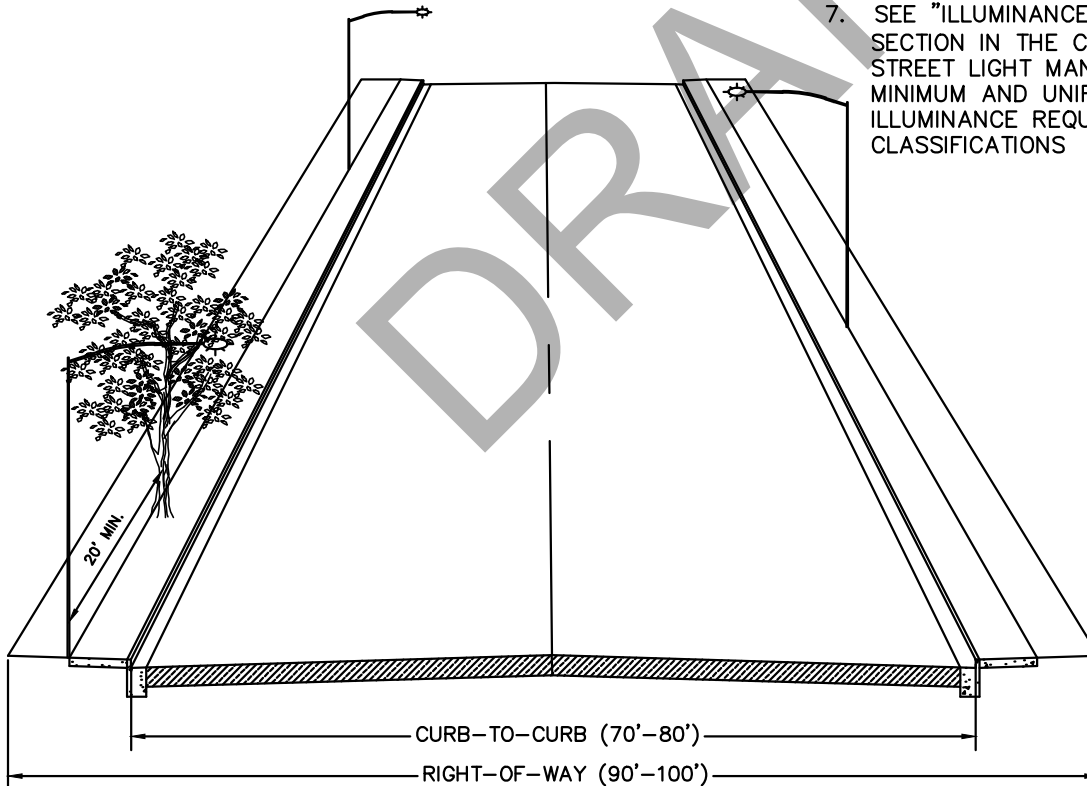
180' TYPICAL

### NOTES

1. PROJECTS WITH SIGNALIZED INTERSECTIONS SHALL PROVIDE FOR SAFETY LIGHTS MOUNTED ON THE SIGNALS POLES.
2. ALL INTERSECTIONS SHALL HAVE AT LEAST ONE STREET LIGHT.
3. STREET LIGHT LOCATIONS SHALL BE ADJUSTED TO MISS DRIVEWAYS, EXISTING UTILITIES AND OTHER OBSTRUCTION BY AT LEAST FIVE FEET (5').
4. STREET LIGHTS SHALL BE LOCATED ON VERTICAL CURVES (CREST AND SAGE LOCATIONS)
5. TYPICAL DISTANCE BETWEEN LIGHTS SHALL BE 180' WHEN INSTALLING LIGHTS BETWEEN INTERSECTIONS.
6. LIGHTS SHALL BE PLACED AT PROPERTY LINES.
7. SEE "ILLUMINANCE LIGHTING LEVEL METHOD" SECTION IN THE CITY OF LAKE ELSINORE'S STREET LIGHT MANUAL FOR AVERAGE, MINIMUM AND UNIFORMITY RATIO OF ILLUMINANCE REQUIRED BY ROADWAY CLASSIFICATIONS

### RECOMMENDED DESIGN STANDARDS

POLE TYPE	AMERON 1C125, SEE STD. DWG. NO. 506
LUMINAIRE TYPE	GE EVOLVE # ERL1-0-09-C5-30-A
MAST ARM	8', SEE STD. DWG. NO. 506
SPACING	180' TYPICAL, 200' MAXIMUM
SPACING PATTERN	STAGGERED
ILLUMINATION LEVEL	SEE NOTE 7



APPROVED BY:

CITY ENGINEER  
REMON HABIB

DATE

REVISION BY: APPROVED DATE



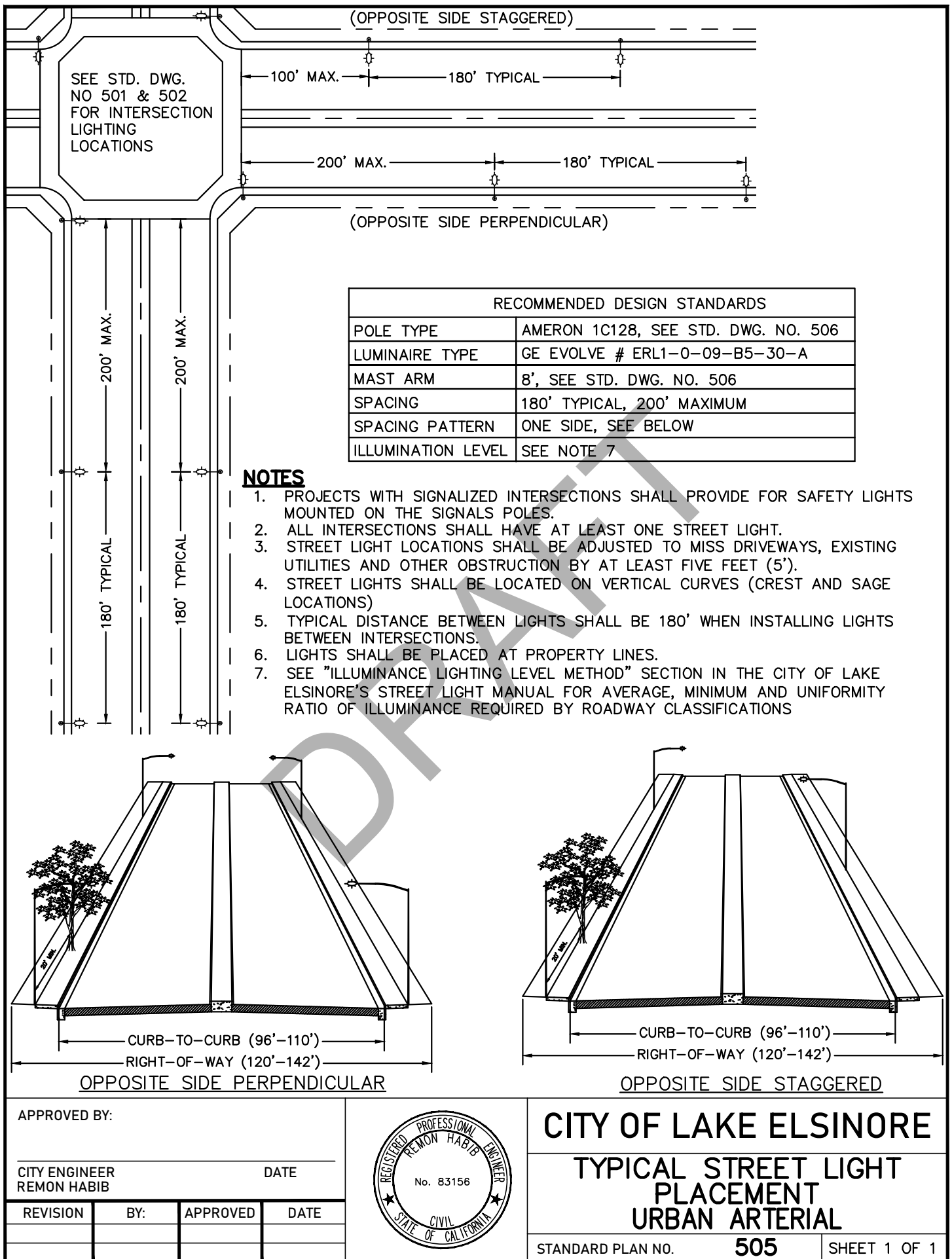
CITY OF LAKE ELSINORE

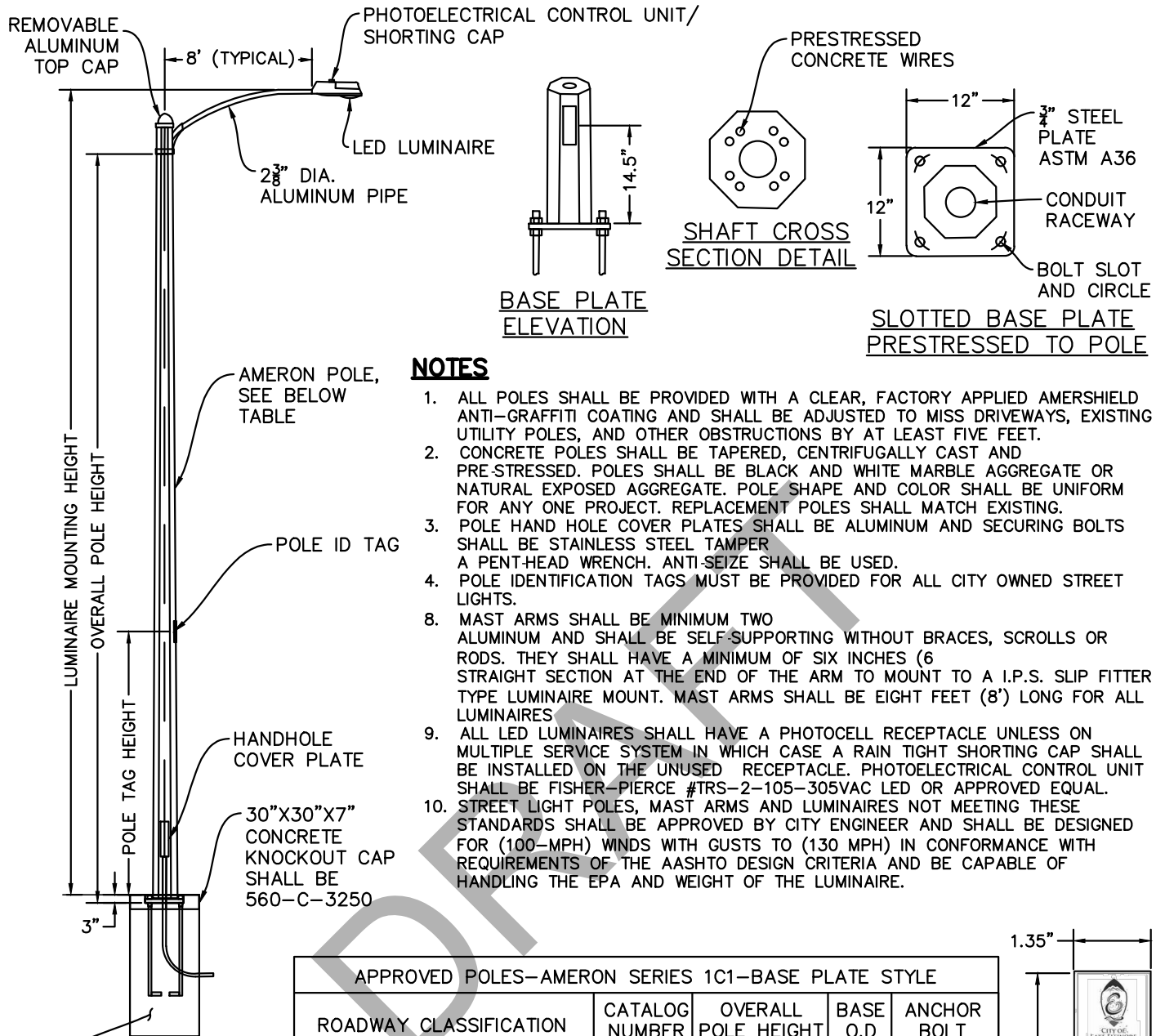
TYPICAL STREET LIGHT  
PLACEMENT  
SECONDARY AND MAJOR

STANDARD PLAN NO.

504

SHEET 1 OF 1





### NOTES

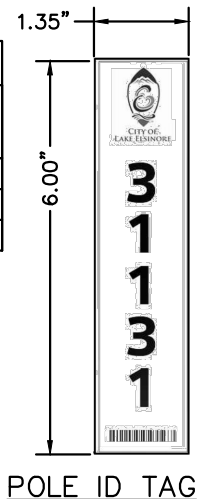
1. ALL POLES SHALL BE PROVIDED WITH A CLEAR, FACTORY APPLIED AMERSHIELD ANTI-GRAFFITI COATING AND SHALL BE ADJUSTED TO MISS DRIVEWAYS, EXISTING UTILITY POLES, AND OTHER OBSTRUCTIONS BY AT LEAST FIVE FEET.
2. CONCRETE POLES SHALL BE TAPERED, CENTRIFUGALLY CAST AND PRE-STRESSED. POLES SHALL BE BLACK AND WHITE MARBLE AGGREGATE OR NATURAL EXPOSED AGGREGATE. POLE SHAPE AND COLOR SHALL BE UNIFORM FOR ANY ONE PROJECT. REPLACEMENT POLES SHALL MATCH EXISTING.
3. POLE HAND HOLE COVER PLATES SHALL BE ALUMINUM AND SECURING BOLTS SHALL BE STAINLESS STEEL TAMPER A PENT-HEAD WRENCH. ANTI-SEIZE SHALL BE USED.
4. POLE IDENTIFICATION TAGS MUST BE PROVIDED FOR ALL CITY OWNED STREET LIGHTS.
8. MAST ARMS SHALL BE MINIMUM TWO ALUMINUM AND SHALL BE SELF-SUPPORTING WITHOUT BRACES, SCROLLS OR RODS. THEY SHALL HAVE A MINIMUM OF SIX INCHES (6) STRAIGHT SECTION AT THE END OF THE ARM TO MOUNT TO A I.P.S. SLIP FITTER TYPE LUMINAIRE MOUNT. MAST ARMS SHALL BE EIGHT FEET (8') LONG FOR ALL LUMINAIRES
9. ALL LED LUMINAIRES SHALL HAVE A PHOTOCELL RECEPTACLE UNLESS ON MULTIPLE SERVICE SYSTEM IN WHICH CASE A RAIN TIGHT SHORTING CAP SHALL BE INSTALLED ON THE UNUSED RECEPTACLE. PHOTOELECTRICAL CONTROL UNIT SHALL BE FISHER-PIERCE #TRS-2-105-305VAC LED OR APPROVED EQUAL.
10. STREET LIGHT POLES, MAST ARMS AND LUMINAIRES NOT MEETING THESE STANDARDS SHALL BE APPROVED BY CITY ENGINEER AND SHALL BE DESIGNED FOR (100-MPH) WINDS WITH GUSTS TO (130 MPH) IN CONFORMANCE WITH REQUIREMENTS OF THE AASHTO DESIGN CRITERIA AND BE CAPABLE OF HANDLING THE EPA AND WEIGHT OF THE LUMINAIRE.

APPROVED POLES-AMERON SERIES 1C1-BASE PLATE STYLE

ROADWAY CLASSIFICATION	CATALOG NUMBER	OVERALL POLE HEIGHT	BASE O.D	ANCHOR BOLT
MINOR, LOCAL & COLLECTOR	1C123	23'-3"	8 3/8"	1"X36"X4"
SECONDARY AND MAJOR	1C125	25'-9"	8 3/8"	1"X36"X4"
URBAN ARTERIAL	1C128	28'-3"	9"	1"X36"X4"

APPROVED LED LUMINAIRES-GE EVOLVE LED ROADWAY LIGHTING

ROADWAY CLASSIFICATION	GE EVOLVE CATALOG NO.	WATTAGE
CUL-DE-SACS AND STUB ENDS	ERL1-0-03-D5-27-A-GRAY-L	22w
MINOR, LOCAL & COLLECTOR	ERL1-0-05-B5-30-A-GRAY-L	39w
SECONDARY AND MAJOR	ERL1-0-09-C5-30-A-GRAY-L	84w
URBAN ARTERIAL	ERL1-0-09-B5-30-A-GRAY-L	84w
INTERSECTION SAFETY LIGHTS	ERL1-0-13-D5-40-A-GRAY-L	111w



APPROVED BY:

CITY ENGINEER  
REMON HABIB

DATE

REVISION BY: APPROVED DATE



CITY OF LAKE ELSINORE

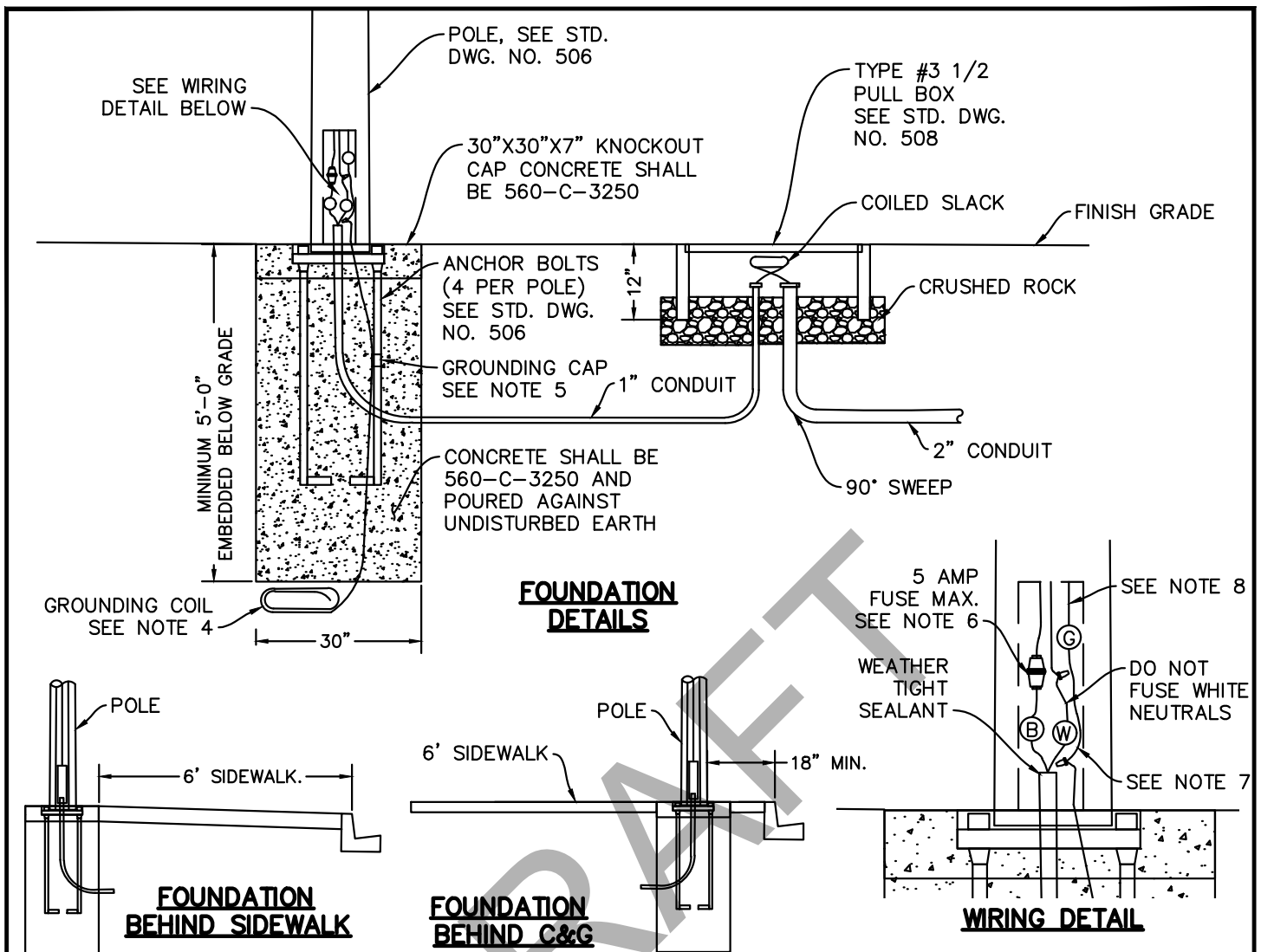
STREET LIGHT POLE,  
POLE ID, MAST ARM  
AND LUMINAIRE

STANDARD PLAN NO.

506

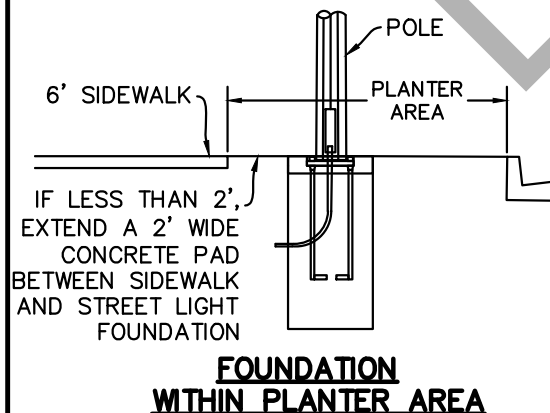
SHEET 1 OF 1





### NOTES

1. STREET LIGHT PULL BOX SHALL BE 5' MAX AWAY FROM STREET LIGHT POLE
2. STREET LIGHT WIRE INSULATION MARKINGS SHALL BE PER LATEST GREENBOOK SPECIFICATIONS
3. ALL CONNECTIONS SHALL BE TAPED WITH ELECTRICAL TAPE AND MADE WATER-TIGHT
4. OPEN COIL (PER N.E.C.), 15' NO. 4 BARE STRANDED WIRE-COILED 3" BELOW FOUNDATION AND SECURELY FASTENED TO ANCHOR BOLT FOR GROUNDING
5. ATTACH GROUND WIRE TO ANCHOR BOLT WITH BRASS/COPPER GROUNDING CLAMP
6. FUSE SHALL BE INSTALL IN ONE DIRECTION ONLY. FOR 240V SYSTEM USE 2 PULL FUSE HOLDER TYPE HEB-AA
7. CONNECT GREEN GROUNDING WIRE WITH 2' OF SLACK TO BARE NO. 4 STRANDED WIRE
8. SYSTEM NEUTRAL AND GROUND/BONDING WIRE MUST BE SECURED TOGETHER WITH BRASS/COPPER APPROVED CONNECTION



APPROVED BY:

CITY ENGINEER  
REMON HABIB

DATE

REVISION	BY:	APPROVED	DATE



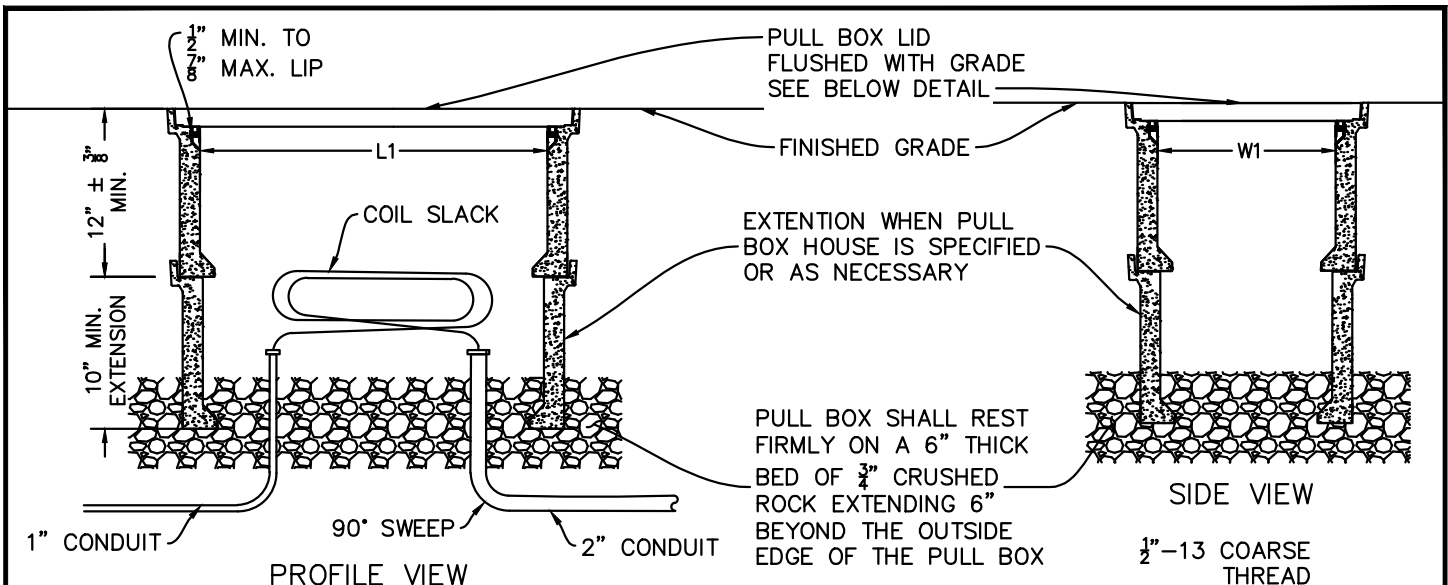
CITY OF LAKE ELSINORE

STREET LIGHT  
FOUNDATION DETAIL

STANDARD PLAN NO.

507

SHEET 1 OF 1



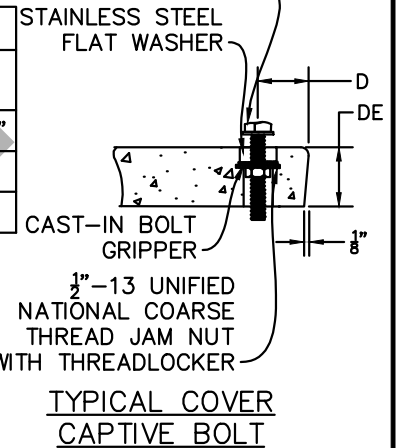
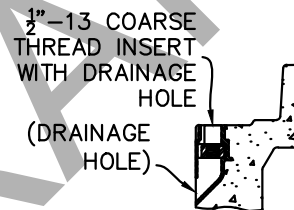
**PULL BOX DIMENSION TABLE**

**INSTALLATION DETAILS**

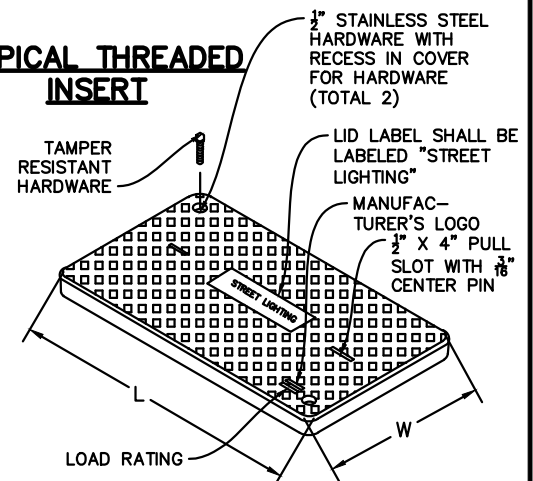
PULL BOX	PULL BOX				COVER			
	MIN. DEPTH BOX	MIN. DEPTH EXTENSION	L1 MIN.	W1 MIN.	TE	D	L	W
NO. 3 1/2	12"	N/A	1'-3"	9"	1 3/4"	1 3/4"	1'-3 1/4" - 1'-3 3/8"	10" - 10 1/8"
NO. 5	12"	10"	1'-8"	11"	2"	1 3/4"	1'-11 1/4"	1'-1 3/4"
NO. 6	12"	10"	2'-4 1/4"	1'-3 1/4"	2"	2"	2'-6 1/4"	1'-5 1/2"

**NOTES**

- FOR CONDUIT INSTALLATION SEE STD. DWG. NO. 421, CONDUIT TRENCH SHALL BE COMPACTED TO 90% RELATIVE COMPACTION
  - NEW CONDUITS SHALL MINIMUM 2" PVC PIPE SCHEDULE 80
  - CONDUITS SHALL BE ENCASED IN A MINIMUM OF THREE INCHES (3") OF SAND ON ALL SIDES
  - CONDUITS SHALL BE LAIED TO A DEPTH OF NOT LESS THAN (30") UNLESS PLACED UNDER SIDEWALK IN WHICH CASE ONLY (18") SHALL BE REQUIRED. LOCATION TAPE SHALL BE INSTALLED ABOVE THE SAND LAYER ALONG THE LENGTH OF THE CONDUIT TRENCH
  - CONDUIT RUNS SHALL HAVE A MAXIMUM LENGTH OF 200 FEET.
- PULL BOX SHALL BE INSTALLED
  - PULL BOX THAT FEEDS INTO SCE SERVICE POINT SHALL BE A #5 PULL BOX AND WITHIN 5' OF THE PEDESTAL
  - WITHIN 5' OF EACH STREET LIGHT
  - WHERE MORE THAN TWO CONDUIT RUNS INTERSECT
  - WHERE CONDUIT RUNS ARE MORE THAN 200' LONG
  - AT THE END OF CONDUIT RUN
  - AT CRITICAL ANGLE POINTS AND AS ORDERED BY CITY ENGINEER
  - PULL BOXES LOCATED IN DRIVEWAY OR WITHIN 5- FEET OF DRIVEWAY SHALL BE TRAFFIC RATED (SEE CALTRANS STANDARD FOR TRAFFIC RATED PULL BOX. NO PULL BOX SHALL BE PLACE IN THE PLANTER AREAS
  - PULL BOX COVER SHALL BE ETCHED POLYPROPYLENE FACE ANCHORED IN CONCRETE WITH ULTRA-VIOLET INHIBITOR



**TYPICAL THREADED INSERT**



APPROVED BY:

CITY ENGINEER  
REMON HABIB

DATE

REVISION BY: APPROVED DATE



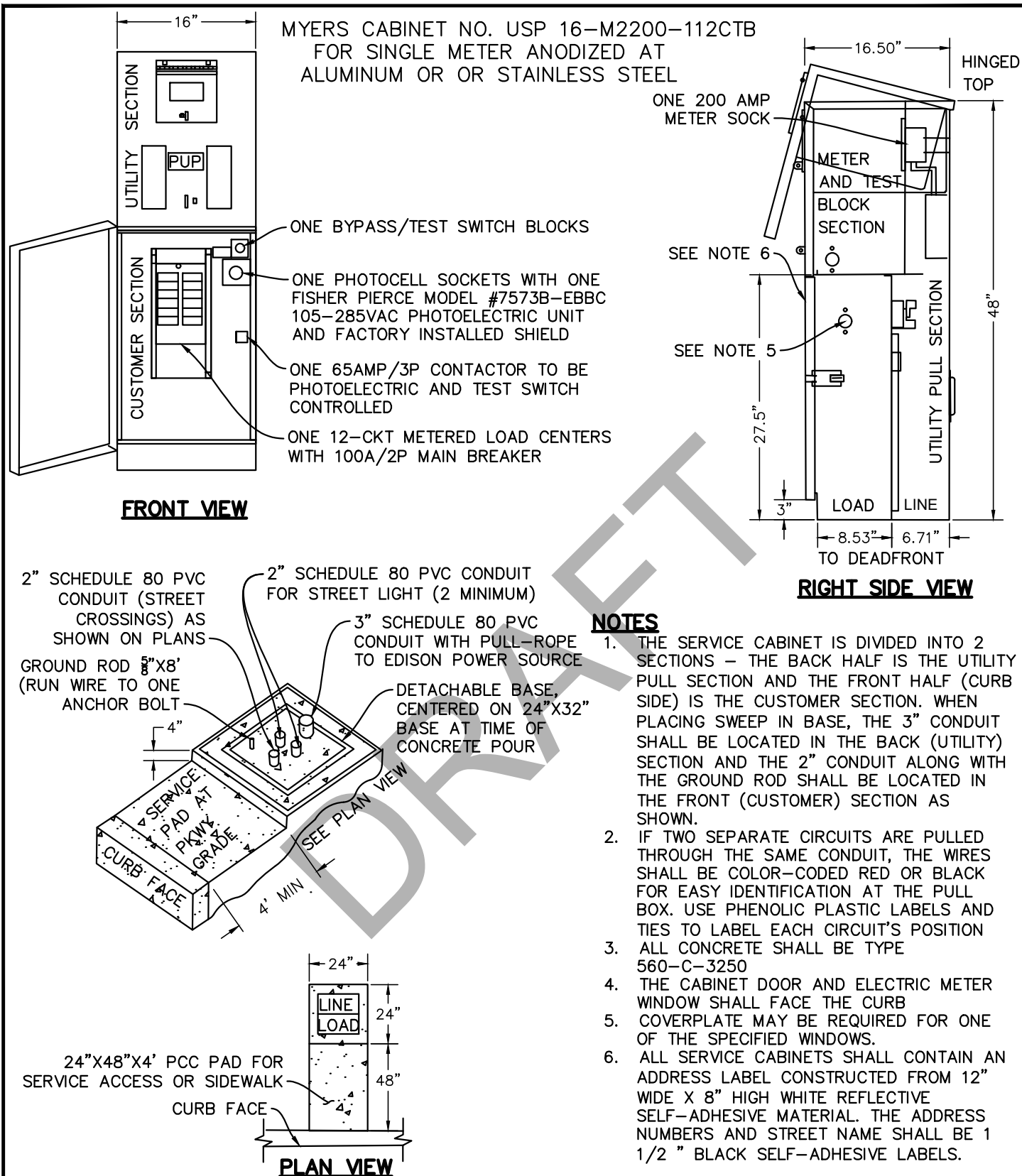
**CITY OF LAKE ELSINORE**

**PULL BOX AND  
CONDUIT INSTALLATION**

STANDARD PLAN NO.

**508**

SHEET 1 OF 1



APPROVED BY:

CITY ENGINEER  
REMON HABIB

DATE

REVISION

BY:

APPROVED

DATE



**CITY OF LAKE ELSINORE**

**SERVICE CABINET**

STANDARD PLAN NO.

**509**

SHEET 1 OF 1

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**FORM  
AND  
APPLICATION**



STREET LIGHT AUTHORIZATION FORM  
Engineering Department

Date:
Developer's Name:
Authorized Contact Person:
Mailing Address:
Phone No:
Email Address:
Project Name:
Project Location:
Tract/Ref No.
Number of Street lights Anticipated:
Project Description:

\_\_\_\_ Developer believes the above project is NOT required to provide for street lights  
\_\_\_\_ Developer believes the project is required to provide for street lights per below SCE  
Schedule  
\_\_\_\_ LS-1    \_\_\_\_ LS-2    \_\_\_\_ LS-3

I, the undersigned, do verify that all information listed above is current and accurate.

Authorize Signature \_\_\_\_\_ Date: \_\_\_\_\_

**FOR OFFICE USE ONLY**

\_\_\_\_ Developer is NOT required to provide for street lights  
\_\_\_\_ Developer is required to provide for street lights per below SCE Schedule  
\_\_\_\_ LS-1    \_\_\_\_ LS-2    \_\_\_\_ LS-3  
Received By: \_\_\_\_\_ Date: \_\_\_\_\_  
Approved BY: \_\_\_\_\_ Date: \_\_\_\_\_



**STREET LIGHT ACCEPTANCE FORM**  
Engineering Department

Date:
Developer's Name:
Authorized Contact Person:
Mailing Address:
Phone No:
Email Address:
Project Name:
Project Location:
Tract/Ref No.
Number of Street lights Constructed:

Developer must submit all the below documents to ensure acceptance of the street lights and release of bonds are completed in a speedy manner. If the below items cannot be provided, please provide explanation, use additional sheets if necessary.

- Copy of Signed Street Light Authorization Form
- Copy(s) of Signed As-Built plans
- Copy(s) of Bonds and Checks being requested for release.
- Include copies of City receipts and signed bond copies
- Copy(s) of SCE Street light Authorization (SLA)
- Copy(s) of SCE signed Contract for Electric Service (CSD272)
- Cabinet and Metering Addresses

I, the undersigned, do verify that all information listed above is current and accurate.

Authorize Signature \_\_\_\_\_ Date: \_\_\_\_\_

**FOR OFFICE USE ONLY**

Received By: _____	Date: _____
Engineering Approved By: _____	Date: _____
Public Works Reviewed By: _____	Date: _____
Building Reviewed By: _____	Date: _____
Finance Reviewed By: _____	Date: _____
IT Reviewed By: _____	Date: _____



**STREET LIGHT TRANSFER OF UTILITY SERVICE FORM**  
Engineering Department

Date:
Developer's Name:
Authorized Contact Person:
Mailing Address:
Phone No:
Email Address:
Project Name:
Project Location:
Tract/Ref No.
Number of Street lights Constructed:

Developer must submit all the below documents to ensure transfer of utility service is completed in a speedy manner. If the below items cannot be provided, please provide explanation, use additional sheets if necessary.

- Copy of Signed Street Light Acceptance Form
- Copy(s) Current SCE Bills
- Copy(s) of Turn on/Turn off form from SCE

I, the undersigned, do verify that all information listed above is current and accurate.

Authorize Signature: \_\_\_\_\_ Date: \_\_\_\_\_

**FOR OFFICE USE ONLY**

Received By: \_\_\_\_\_ Date: \_\_\_\_\_

Approved BY: \_\_\_\_\_ Date: \_\_\_\_\_



## SOUTHERN CALIFORNIA EDISON STREETLIGHT AUTHORIZATION

DEVELOPER/APPLICANT MUST PROVIDE THIS FORM  
*COMPLETED BY THE PUBLIC AUTHORITY*  
FOR ANY SCE-OWNED STREETLIGHT INSTALLATION, REMOVAL OR CHANGE REQUESTS  
*Incomplete forms will be returned and not processed*

PUBLIC AUTHORITY NAME: \_\_\_\_\_

Builder/Developer Name: \_\_\_\_\_ Phone #: \_\_\_\_\_

Tract/Ref # \_\_\_\_\_ Streetlight Location \_\_\_\_\_

Please Check one: ☐ Installation ☐ Removal ☐ Change

Number of Lamp(s)

Lamp Size

Lamp Type

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

### New Installations

Public Authority Responsibility for Streetlight Monthly Billing

Please Check one and fill out applicable dates:

\_\_\_\_ Upon Energizing

☐ If Public Authority is collecting Builder/Developer Advanced Energy Payment,  
indicate date collected. (\_\_\_\_\_)

Monthly Billing: \_\_\_\_ Establish new Service Account (SA) Use existing SA # \_\_\_\_\_

\_\_\_\_ Commitment Date-

Date Agreed upon by SCE and Public Authority (\_\_\_\_\_) or no later than 36 months from first  
streetlight energized whichever is earlier.

Monthly Billing: \_\_\_\_ Establish new Service Account (SA) Use existing SA # \_\_\_\_\_

\_\_\_\_ Public Authority is not responsible

☐ HOA Area

Name \_\_\_\_\_

Other Entity (please define) \_\_\_\_\_

Public Authority Notes:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Authorized Public Authority Agent

\_\_\_\_\_  
Print name

\_\_\_\_\_  
Date

\_\_\_\_\_  
Signature

Phone # \_\_\_\_\_

\_\_\_\_\_  
Title

### TO BE COMPLETED BY SCE

ACTION: ENTER TRACT/REF# ON DM PROGRAM NAME FIELD.

District \_\_\_\_\_

Planning AOR \_\_\_\_\_

PLANNER NAME (PRINT) \_\_\_\_\_

DM SR # \_\_\_\_\_ Product # \_\_\_\_\_ (one per SLA)

FORWARD COMPLETED COPIES OF THE SLA FORM, MAP AND CSD272 CONTRACT, IF APPLICABLE TO:  
"Street & Outdoor Lighting Organization" Santa Ana Bldg. D  
SCE: SOLO-003 Rev 04-20-15

## APPLICATION AND CONTRACT FOR ELECTRIC SERVICE

To Southern California Edison (SCE):

The undersigned Applicant hereby requests you to supply electric service and to deliver electric energy to and for the equipment hereinafter described, at the location shown below, in accordance with the applicable rules and rules of SCE. (T)

Applicant hereby agrees to the following: (T)

1. SCE has made available for inspection its applicable rules and rules. Applicant agrees to comply therewith, and with any changes or modifications thereof which may be authorized from time to time by the Public Utilities Commission of the State of California.
2. Applicant's attention has been directed to the rate schedule applicable to the service herein described, and Applicant has elected to take and pay for service under Schedule \_\_\_\_\_ for a minimum period of \_\_\_\_\_ months.
3. Applicant hereby grants to SCE a right of way for any electric lines which it may be necessary to build in, on, under or over applicant's premises for the purpose of making delivery hereunder. Where Applicant requests facilities which are in addition to, or in substitution for, the standard facilities which SCE normally would install, the extra cost thereof shall be paid by Applicant.
4. If an Applicant, per the assigned period(s) within the agreed upon Rate Schedule(s) and/or contract(s) materially increases or decreases his electric service requirements from those installed hereunder and a change is made in the SCE's facilities, settlement shall be made for the installation and removal cost of the facilities removed. A new agreement shall be entered into providing for the modified service required by applicant.
5. This contract shall at all times be subject to such changes or modifications by the Public Utilities Commission of the State of California as said Commission may, from time to time, direct in the exercise of its jurisdiction.

EQUIPMENT TO BE SERVED	PHASE	K.V.A.	K.W.	H.P.
LIGHTING				
POWER				

Service Voltage \_\_\_\_\_

Connected Load \_\_\_\_\_ Cal. Max. Demand \_\_\_\_\_

Dated \_\_\_\_\_

Corporate or Individual's Name \_\_\_\_\_

D.B.A. \_\_\_\_\_

By \_\_\_\_\_ Title \_\_\_\_\_

Witness \_\_\_\_\_

Approved and accepted for Southern California Edison Company \_\_\_\_\_

Office of Origin \_\_\_\_\_

By \_\_\_\_\_ District Manager

CREDIT INFORMATION - FORM OF BUSINESS ORGANIZATION

☐ SOLE PROPRIETORSHIP ☐ CORPORATION ☐ GENERAL PARTNERSHIP ☐ CO-OWNERSHIP ☐ OTHER ☐

TYPE OF BUSINESS-PROCESSING, MFG., ETC.

CORPORATE OR INDIVIDUAL NAME \_\_\_\_\_

DIV. NAME \_\_\_\_\_

BUSINESS TELEPHONE NUMBER \_\_\_\_\_

PARTNER OR CORPORATION OFFICER:

NAME \_\_\_\_\_ ADDRESS \_\_\_\_\_ TITLE \_\_\_\_\_ TELEPHONE NUMBER \_\_\_\_\_

NAME \_\_\_\_\_ ADDRESS \_\_\_\_\_ TITLE \_\_\_\_\_ TELEPHONE NUMBER \_\_\_\_\_

SERVICE ADDRESS STREET \_\_\_\_\_

SERVICE ADDRESS POST OFFICE \_\_\_\_\_

LIGHT	SCHEDULE	NEAREST CROSS STREET
POWER	METER ORDER NO.	LOAD CHECK
WIRE DET.		

DATE INSTALLED \_\_\_\_\_

PROJECT NO. \_\_\_\_\_

NUMBER OF OPERATIONS \_\_\_\_\_

ADDITIONAL INFORMATION \_\_\_\_\_

ADDITIONAL INFORMATION \_\_\_\_\_

ORDER TAKEN \_\_\_\_\_

BY \_\_\_\_\_ DATE \_\_\_\_\_

FORMER BUSINESS SERVICE ADDRESS \_\_\_\_\_

OWNER OF PREMISES \_\_\_\_\_

NAME \_\_\_\_\_ TELEPHONE NUMBER \_\_\_\_\_

ADDRESS \_\_\_\_\_

NAME									
SERVICE ADDRESS STREET									
CITY									
STATE									
ZIP CODE									
BUILDING ADDRESS									
BUILDING ADDRESS									
ZIP CODE									

TO: SOUTHERN CALIFORNIA EDISON CO.

ADDRESS \_\_\_\_\_

CITY \_\_\_\_\_

[illegible]

SCC E 605 REV 5/73 (CW) (ESM 7 &amp; 14 SERIES)