

SECTION 5
STREET LIGHT DESIGN

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SECTION 5
STREET LIGHT DESIGN

5-1 STREET LIGHTS REQUIRED

Street lights shall be required for all lots and parcels being developed or constructed upon unless excepted by Section 5-2. 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 the work. Illustrations of street lights generally required are shown in the Standard Drawings.

5-2 STREET LIGHTS NOT REQUIRED

Street lights shall not be required under the following circumstances:

- A. Single family residential subdivisions having an average lot street frontage of more than 125 feet 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 described herein or deemed by the Director to be essential for safety.
- B. For planned 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.

5-3 DEVELOPER'S RESPONSIBILITY

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.

A new service enclosure 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 insure that the power shall remain to the existing street light system until the new street light system to replace it is completed and functioning correctly.

5-4 UTILITY COMPANY AUTHORIZATION

A written notice from the serving utility company, stating that line clearances and service have been checked and are adequate, shall be submitted to the Director for all developments.

5-5 GENERAL PLAN DETAILS

The plans shall show and identify all street lights to be installed, all existing lights in the immediate vicinity of the project, all conduit and conductor runs, service points, trees, and all applicable provisions and details specified in these standards.

On subdivision plans, the street lights shall be shown separately. In addition to the above, the following shall be required on the street light portion of subdivision plans, even though duplications may be involved:

- A vicinity map or equivalent
- Utility poles and public utility easements
- Names of adjacent subdivisions
- Intersecting property lines of adjacent properties
- A “Symbols” legend conforming to the Standard Drawings
- A north arrow and appropriate scale (1”=10’ to 1”=100’)
- All existing street lights on both sides of any streets
- All new tree installations shall be more than 10’ from street lights

5-6 DESIGN STANDARDS

Street lighting shall be designed in conformance with these specifications, the current edition of the City of Elk Grove Standard Construction Specifications, and the “American National Standard Practice for Roadway Lighting” of the American National Standards Institute, except that the average horizontal maintained foot candles for the various street classifications shall be as shown on the Standard Drawings. Data and calculations supporting the satisfaction of the above requirements shall be submitted for review, or the predetermined design standards included herein shall apply.

5-7 STREET LIGHT TYPE

A. Lighting Type Areas - Street light poles and fixtures shall conform to the designated type depending on the location within Elk Grove.

1. Laguna West (LW) – Selected areas west of the Union Pacific Railroad alignment (approximately 300 feet west of Franklin Road); north of and including Elk Grove Blvd; south of and including Laguna Blvd; and east of Harbour Point Drive.
2. Old Town (OT) – Elk Grove Boulevard between Elk Grove-Florin Road and Waterman Road
3. Zone 2 – Area south of Elk Grove Boulevard; east of Bruceville Road; north of Kammerer and west of Route 99; excluding the Auto Mall area bounded by Laguna Grove Drive and Elk Grove Boulevard.
4. Common [non-decorative] (CT) – All other areas within Elk Grove.

Street lighting designs shall reference the type of light shown in the Standard Drawings for the project location.

B. Decorative Street Lights

1. Decorative streetlights must be approved during the planning process in the City General Plan or specific plan.
2. When decorative type streetlights are designated by type in these standards or in an approved City plan not yet incorporated into these standards, the developer shall supply additional complete streetlight assemblies (electrolier, luminaire, glassware, etc.) to the City for future street light replacement. The minimum number of replacement street lights (spares), by series and type, to be supplied to the City shall be 2% of the lights being installed with any fractional percent rounded up to the next whole number. Developments with less than 10 streetlights in total do not need to provide spares. A note shall be included on the street light plan sheet indicating the requirement for spares as detailed above.
3. The developer shall be required to submit design calculations for the foundation, and pole spacing, including photometric calculations and plots from an appropriate computer program, if not already provided in these standards.

C. Equipment Type

Materials and equipment shall be purchased as required to meet these standards:

1. Specified Manufacturer(s): Where specific manufacturers are specified in these standards for streetlights in a particular zone, the City has determined that for ensuring aesthetics and durability, minimizing inventory costs, and expediting repairs, standardization is in its' best interest.
2. Substitutions: Substitutions will not be considered for a particular project. If a distributor or manufacturer has a streetlight product with the exact same visual appearance specified for a zone; it may submit the item to the City for evaluation. The City may take up to 90 days typically to consider a new streetlight manufacturer. The streetlight assembly will be evaluated against the criteria established by the City Engineer. If the streetlight meets all the criteria and is evaluated essentially the same in appearance, quality, and ease of servicing requirements, it may be added to these specifications at the City Engineer's discretion.

5-8 STREET LIGHT DESIGN DETAILS

Design details for street lights are as follows:

- A. Intersections – Intersections shall have at least one street light. Intersection street light locations and the number required shall conform to Standard Drawings.

- B. Cul-de-sacs – All cul-de-sacs exceeding 130 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, shall have a street light within the bulb. The location of the street light within the bulb shall conform to the Standard Drawings.
- C. Pedestrian Lanes – Street lights shall be placed at both ends of pedestrian lanes.
- D. Spacing – Maximum street light spacing, measured along the street centerline, shall conform to the Standard Drawings, except on arterial and thoroughfare streets with a 1,000-foot or smaller radius horizontal curve, in which case the maximum spacing is 170 feet. Note that light spacing for 84-foot, 108-foot, and 130-foot streets, the spacing dimension is based on one-side of the street and two lights are placed at each longitudinal location (either with poles on opposite sides of the street or tandem poles in the median). Spacing on all other streets is based on a staggered arrangement, and is measured between poles on alternating sides of the street. Maximum spacing may be adjusted as long as illumination criteria are met with approval of the Engineer.
- E. Street Light Poles – All street light poles shall be of galvanized steel except as provided for by Item F below. All pole construction and materials shall conform to the standards outlined in the Standard Construction Specifications, Section 49-2.0, “Standards, Steel Pedestals and Posts”, and the Standard Drawings referenced therein. Pole materials shall be identified on the plans or in the special provisions.

The position of the street light poles shall conform to Standard Drawings. The location and identification number of each pole shall be noted on the plans. Identification numbers are assigned by the City during the first plan check.

- F. Street Lights on Existing Utility-Owned Poles – Where there are permanent existing (or necessary planned) utility-owned poles adjacent to the roadway, the street lights may be installed upon the utility pole in lieu of the poles required on an exception basis if approved by the Director.. Should the utility pole option be requested and authorized, the following shall apply:
 - 1. In the Sacramento Municipal Utility District (SMUD) service area, the developer shall arrange to install City-owned/utility-maintained street lights on existing utility poles in accordance with SMUD Rate SL CODM.
 - 2. Spacing of light shall be varied to meet locations of existing utility poles, but shall not exceed the maximum spacing specified by the Standard Drawings. Street light mounting heights shall be as shown on the Standard Drawings. All luminaires shall have wattages relating to the street classification requirements shown on the Standard Drawings.

G. Luminaires and Ballasts

- a. Luminaires shall be high pressure sodium-type with internal ballasts. The type of street light and the appropriate wattage shall be specified on the

plans. All luminaries shall conform to the standards outlined in the Standard Construction Specifications, Section 49-6.01, "High Pressure Sodium Luminaires". Light distribution shall be ANSI Type III and that luminaries shall be cut off-type unless specified otherwise by the Director.

- b. Ballasts shall conform to the standards outlined in the Standard Construction Specifications, Section 49-6.01, "High Pressure Sodium Luminaires", and Section 49-6.02, "Lamps and Ballasts". The ballast shall be "energy efficient" in 100-watt high pressure sodium luminaries.

H. Service – All street light systems shall have underground service provided. Service voltage shall be shown on the plans. Service voltage shall be 120 volts, except service voltage may be 277 volts when 120 volt service is not available. A step-down transformer shall be provided when service voltage is not 120 volts. Service points shall be provided within a Public Utility Easement immediately adjacent to the right-of-way, or within the right-of-way, and at a point which is as reasonably near as possible to the serving utility power source. The service point shall be a pull box which is easily accessible to the street frontage. Types of service are as follows:

- a. The Director may approve overhead service in unusual areas when adequate justification is provided for why service cannot be provided underground.
- b. A direct underground service consists of one light being served from a single service point. New lights on developments adjacent to existing development shall connect to the existing service point. The service point shall be a pullbox installed by the. See the Standard Drawings for commercial and residential requirements, installation details.
- c. Multiple service is two or more lights being served from a single service point installed by the developer. The service point shall be a pullbox. Multiple systems shall have a service enclosure (can) which is normally located adjacent to the service point, between the service point and the light system. The service enclosure shall conform to the Standard Drawings.

I. Pullboxes – All pullboxes, including the size, shall be shown and identified on the plans. Pullboxes shall be installed at all locations where more than two conduit runs intersect, where conduit runs are more than 250 feet long, where shown on City Standard Drawings, at critical angle points, at property lines at the end of the required conduit run to the property line (see Section 5-8 K, "Conduit"), behind each light when No. 4 A.W. G. conductors are used, and at such locations ordered by the Director. Normally a No. 3-1/2" pullbox will be allowed when three or fewer conduits of 1-1/4" or smaller size are involved or at the end of the required conduit run to the property line (See Section 5-8 K, "Conduit").

J. Conductors – All conductors, including quantity and size, shall be identified on the plans. Unless otherwise specified, conductors shall be single conductor, solid or

stranded copper, sized in accordance with these standards and the National Electrical Code.

- a. On a direct underground service, the minimum conductor shall be No. 8 A.W.G. In general, no conductor shall be larger than No. 4 A.W.G.
- b. On multiple service, the minimum conductor size from the service point to the service enclosure shall be No. 8 A.W.G. The size of each conductor from the service enclosure to the luminaries shall be such that the voltage drop along each circuit will not exceed 7% for 2-wire and 6% for 3-wire systems of the service voltage to the farthest luminaire. The service voltage to be used is 120 volts. Calculations shall be submitted substantiating the design criteria for every circuit. Calculations shall also be submitted showing the total load in amperes of each circuit at the service enclosure. See Standard Drawings SL-13 or SL-14 for typical voltage drop calculations.

In a multiple service system, the photo cell shall be connected to the service enclosure with three No. 14 A.W.G. (minimum diameter) conductors.

- K. Photo Cell – A single photo cell receptacle shall be provided on the nearest suitable luminaire to the service enclosure for multiple service systems.
- L. Conduit – All conduit runs, including the size, shall be shown and identified on the plans. The conduit size shall be determined using Standard Drawings SL-15 as a guideline, with the minimum size being 1-1/2” diameter conduit.

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

New development shall install 2” minimum diameter conduit, or larger as required, with one No. 10 A.W.G. stranded pullwire 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.

- M. Electrical Equipment and Work – Control and switching equipment and fusing of all circuits shall meet the requirements of the National Electrical Code, the Basic Electrical Regulations, Title 24, Part 3, of the California Administrative Code, the rules of the National Board of Fire Underwriters, and the City of Elk Grove.

5-9 LAYOUT PLANNING

Layout planning is the determination of street light locations between control points. Control points are proposed street light locations at street intersections in accordance with Section 5-8, and the Standard Drawings; and existing street lights. The purpose of layout planning is to establish an overall uniform street light system meeting minimum requirements. On 84-foot, 108-foot, and 130-foot streets, spacing dimensions resulting from layout planning shall apply to distances between street lights on one side of the

street. On all other streets, layout planning dimensions shall apply to both sides of the street. The procedure for layout planning is outlined as follows:

- A. Identify the nearest intersections each way from the street light locations being planned. Determine the location of the street lights at the intersections in conformance with the design standards in Section 5-8 above.
- B. Identify any existing street lights situated between the intersections.
- C. Determine the distance between the adjacent designed intersection street lights and/or adjacent existing street lights, whichever are nearest to the street light locations being planned.
- D. Divide the distance into equal spaces between lights not to exceed the maximum spacing requirements specified in Section 5-8 above.
- E. Compare the light locations to intersecting property lines, driveways, pedestrian lanes, and other obstructions as follows:
 1. If the location falls close to a property line and it can be adjusted to the property line while staying within the maximum spacing allowed, then the adjustment should be made.
 2. Generally, street lights should be situated at intersecting property lines for residential lots and parcels with minimal frontage (75 feet or less). The light spacing may have to be unbalanced, with additional lights being added to attain this and still comply with the maximum spacing allowed.
 3. Street light locations shall be adjusted to miss driveways, existing utility poles, trees, tree wells, and other obstructions by at least five feet.
- F. Street light locations on 84-foot, 108-foot, and 130-foot streets should be adjusted, when possible, to obtain a more uniform light distribution if there are existing street lights on the opposite side of the street in accordance with Section 5-8 D.