

**CITY OF SAN BERNARDINO
DEPARTMENT OF PUBLIC WORKS/CITY ENGINEER
STREET LIGHTING POLICIES AND PROCEDURES**

DIVISION 1. POLICY

A LOCATION OF STREET LIGHTS

- 1 Intersections
 - a One minimum
 - b Two, one each on opposite corners, where both Streets having a curb separation of 64' or greater .

- 2 Between intersections with staggered spacing as follows:
 - a Residential curb separation 44' or less, 300'+ or - 30' .
 - b All others, 200' + or - 20'.
 - c Attempt to place near lot lines, but allow clear sight distances for survey ties.
 - d Sharp curves, steep hills and other street conditions as deemed necessary by City Engineer.

- 3 Alleys, where warranted by extreme situations resulting in severe problems.

B. STREET LIGHT TYPE

<u>CURB SEPARATION</u>	<u>LAND USE</u>	<u>TYPE*</u>
0- 36'	Residential	A
0- 36	Commercial	B
37 - 66'	Residential	B
67- 80'	All	C
Divided Highway	Commercial	D
Divided Highway	Other	C

*Per Standard Drawing SL-1

C INSTALLATION REQUIRED OF DEVELOPERS

- 1 Mandatory for subdivisions and developments requiring a building permit in accordance with Sections A & B, except:

- a Single lot zoned R-1 or R-2, unless required by original subdivision.
- b Remodels and additions less than 25% of the existing structures, where no street improvements are required.
- c Energy charges, paid in advance by Developer, for first 48 months of installation required for subdivisions.
- d Existing Edison Lights shall be replaced with City standard lights if they meet the criteria enumerated in Section C1 .

D CITIZENS' REQUESTS FOR STREET LIGHTS

- 1 Street Lights can be Installed at the City' s expense only if it meets the criteria enumerated in Section A.

E PRIVATE STREETS

- 1 Street lights shall be located the same as public streets with Type A (minimum) fixture or equivalent.

DIVISION 2. STANDARD SPECIFICATIONS

F GENERAL

- 1 Street lighting systems shall conform to these specifications and City Standard Drawings designated SL series .
- 2 All material shall be new, and shall bear the label of the Underwriter's Laboratories, where applicable.
- 3 All work shall be done in compliance with the latest edition of Standard Specifications for Public Works Construction, the National Electrical Code, the California State Safety Orders and all other codes, rules and requirements of authorities having jurisdiction. Particular attention is directed to Section 2 and 307 Standard Specifications for Public Works Construction.
 - a On State Highways. All work shall be done in compliance with the latest edition of Standard Specifications, Department of Transportation, State of California.
 - b In case of conflict between any Standard Specifications and these policies and procedures, these policies and procedures shall take precedence over and be used in lieu of such conflicting portions except for work on State Highways.

- 4 Street lighting systems shall be installed in conformity with the following specifications:
 - a All street lighting systems shall be metered systems and shall become, upon acceptance, the sole property of the City of San Bernardino.
 - b Installations shall mean the excavation and backfill of trenches, installing conduit and conductors, lighting standards, foundations, luminaries and lamps, service panel, and all other related devices and fittings necessary for a complete and operable street lighting system.
 - c Contractors shall observe all Sections of the Municipal Code, City of San Bernardino, in relation to obstruction of passageways for vehicles and/or pedestrians, the providing of barricades, warning lights, etc., safety at or near the construction site. Attention is directed to Section 6 of the Standard Specifications for Public Works Construction (latest edition).
 - d All street pavement, concrete curb and sidewalk removed or damaged or any conduit, water line, sewer, etc., damaged shall be repaired or replaced in accordance with Title 12, Municipal Code of the City of San Bernardino, and any amendments thereto, particularly with respect to the methods of cutting pavements, backfilling, temporary resurfacing and street cut permits.

B CONDUIT AND CONDUCTORS

- 1 Conduit
 - a Rigid metal galvanized conduit shall conform to Underwriter's Laboratory, Inc., standards for rigid steel conduit.
 - b Materials shall be recognized by the Underwriter's Laboratories, Inc. as having suitable characteristics when properly formed and treated, including rigid polyvinyl chloride (Schedule 40) for underground use, and rigid polyvinyl chloride (Schedule 80)-for use above ground and passing under roadways. PVC conduit shall be grey in color.
 - c Conduit or duct passing under roadways shall be installed prior to paving, otherwise jacking or drilling methods shall be employed, utilizing only galvanized steel conduit. Conduit shall be 2" diameter minimum.
 - d Conduit or duct shall be placed at the following depths below grade:

- e 18" within parkways and medians, back of curbs, and under concrete sidewalks. 24" deep when crossing streets and/or alleys.
- f Existing conduit in areas where street improvements are being made, shall be relocated to depths below grade per section d. above.
- g Conduit shall be 1-1/4" diameter minimum. Determination of conduit size (based on number and size of wires) shall be according to conduit and wire tables of the National Electric Code and the California State Safety Orders.
- h Galvanized rigid conduit shall be reamed when cut and shall be capped to prevent foreign objects from falling into pipe openings. The conduit shall remain capped until wire is pulled.
- i All conduit in the base of the poles shall lean toward the hand hole and the ends shall not extend more than 3/4" above the bottom of the hand hole nor be terminated more than 2' below the bottom of the hand hole.
- j Conduit shall be bent without crimping or flattening and shall have a radius of at least 6 times the diameter of the conduit.

2 Conductors

- a Shall be copper and installed in conduit.
- b Shall be minimum No. 10 AWG, except can be No. 12 AWG within poles.
- c Conductors shall maintain a voltage drop no greater than 5 % of the serving voltage for high pressure sodium vapor (new installation) and 7% for mercury vapor (existing installations). Splices shall be made only in pullboxes, pole bases or service panels, and shall be covered with acceptable insulating material equal in value to that of the conductors and painted with P and B paint or an approved equal.

C BONDING AND GROUNDING

- 1 Street lighting systems shall provide for electrical ground continuity.
- 2 Systems utilizing metallic conduit shall have all conduit, electroliers, and all metallic components of the system bonded to each other.
- 3 Systems utilizing non metallic conduit shall have a continuous conductor bonding together all street lights, and all metallic components of the system.

- 4 Bonding conductors shall be solid copper wire with a minimum cross-sectional area equal to No. 8 AWG, or larger. All connections shall utilize UL approved ground clamps and brass nuts and bolts. One bonding conductor in each concrete street light base shall be looped up to a point to 2 inches above the bottom of the hand hole opening.
- 5 Systems shall be bonded to a ground electrode at the service neutral, and at such additional locations as may be specified by the City Engineer.
- 6 Bonding at street lighting standards and service pedestals shall be by means of a bonding wire connecting the conduit (or conduit ground wire) to the anchor bolts or ground electrode as the case may be.
- 7 Grounding of metal conduit, service equipment, and the grounded conductor at service point shall be accomplished as required by the National Electrical Code and serving utility.
- 8 For bonding purposes in all non-metallic type conduit, a bare or green insulated No. 8 copper wire shall be run continuously. Insulation must be stripped back a minimum of 10 inches at termination.
- 9 Bonding of metallic conduit in concrete pull boxes shall be by means of galvanized grounding bushings and bonding jumpers.

D SERVICE AND FEED POINTS

- 1 Electrical service shall be provided at locations designated jointly by the City Engineer and the serving utility. Service shall be 120/240 volt, single phase, City owned, and metered.

DIVISION 3. INSPECTION AND TESTING

A INSPECTION

- 1 All street lighting systems shall be inspected by the City Engineer or his designated representative at the following specified times:
 - a When service is installed, services must be inspected and cleared through the serving utility.
 - b After conduit is installed, with all ditches open and foundations ready for pouring or backfilling.
 - c At the completion of wiring, final rough inspection, at which time contractor shall have all pull boxes and connection points open for inspection

- d All street lighting installation and electrical materials are subject to inspection and approval of the City Engineer or his designated representatives during all phases of construction. The contractor shall notify the City Engineer at least 24 hours before any inspection is required, and 24 hours before any scheduled plan to place concrete. The contractor shall be solely responsible for notifying the City Engineer where and when such work is in readiness for inspection. Should such work be covered up without inspection and approval, it shall be uncovered, inspected and approved, or redone at the contractor's expense, as the case may be.

B TESTING

- 1 Prior to the completion of the work, the contractor shall cause the following tests to be made in the presence of the City Engineer or his designated representative on all lighting circuits:
 - 2 Tests for continuity of each circuit.
 - 3 Tests for grounds in each circuit.
 - 4 A megger test at 500 volts DC shall be made on each circuit between the circuit and a ground. The insulation resistance shall be not less than 10 megohms on all circuits.
 - 5 A functional test in which it is demonstrated that each and every part of the system functions as specified or intended.
 - 6 All lighting equipment shall be energized under as near actual service conditions as possible for three successive nights. During the third night of the test, all circuits shall be patrolled at least once by the contractor, and any inoperative equipment replaced or repaired.
 - 7 Any fault in any material or in any part of the installation, which may be revealed by these tests shall be corrected by the contractor in a manner approved by the City Engineer and the same tests shall be related.

DIVISION 4. PROCEDURES

A DESIGN

- 1 The initial submittal of improvement plans to the City for plan check shall show the location of all existing street lights within 600' of the proposed project.
- 2 As a part of the first plan check, the City will designate the location and type of street lights to be installed.

- 3 The second submittal to the City shall contain the proposed street lights. If acceptable, the City will inform the Design Engineer to submit two (2) additional sets of prints for preliminary signature to be used by the Design Engineer in dealing with the serving utility to determine the service pedestal and feed point locations.
- 4 The next improvement plan check submittal to the City shall contain the complete street lighting system including street lights, pull boxes, conduit (size & type), wiring (number, size & type), service pedestal and feed point locations. Calculations for wire sizing (based upon voltage drop) and conduit sizing shall also be submitted.
- 5 Upon satisfactory completion, the City Engineer will sign the improvement plans.

B CONSTRUCTION

- 1 The Developer submits copies of the signed improvement plans to the serving utility for final service planning. Any changes required by the utility or approved during construction shall be shown as a revision to the signed improvement plans.
- 2 Utility notifies Senior Field Engineer of Department of Public Works to send a letter of service request.
- 3 Senior Field Engineer sends letter of service request to utility (copy to Public Buildings Superintendent) and accepts charges for energy.
- 4 Developer constructs street lighting system observing the procedures of DIVISION 3. INSPECTION AND TESTING.
- 5 Senior Field Engineer notifies Public Buildings Superintendent when construction is complete for review.
- 6 Senior Field Engineer notifies utility to energize system.

DIVISION 5. IMPROVEMENT PLANS

A GENERAL NOTES (To be added to improvement plans)

- 1 All work related to electrical service shall be performed in conformance with Southern California Edison Company requirements or serving utility.
- 2 Twenty-four (24) hours prior notice shall be given to the Senior Field Engineer for all City inspections.

City
 Dep:
 Stre:

B. TYPICAL DESIGNATIONS ON PLANS

