

**DIVISION V  
DESIGN CRITERIA**

**SECTION 5800 STREET LIGHTING**

APPROVED AND ADOPTED THIS 15TH DAY OF DECEMBER, 1982

KANSAS CITY METROPOLITAN CHAPTER  
OF THE AMERICAN PUBLIC WORKS ASSOCIATION

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**DIVISION V  
DESIGN CRITERIA**

**SECTION 5800 STREET LIGHTING**

**SECTION 5801 APPLICABILITY**

These criteria shall be adhered to for the design of street lighting systems to be installed in the public right-of-way or on other public property which is under the jurisdiction of the governing agency.

**SECTION 5802 GENERAL**

**5802.1 System Composition:** The street lighting system consists of one or more feed points, distribution system, poles, luminaires and other appurtenances required to provide a complete, operable system. Components of the system shall conform to section 2802 MATERIALS AND EQUIPMENT.

**5802.2 Design Standards:** The street lighting shall be designed to conform with the following standards and codes:

- A. American National Standard Practice for Roadway Lighting (ANSI/IES RP-8)
- B. National Electrical Code (ANSI/NFPA 70)
- C. National Electrical Safety Code (ANSI C2)

The Standard used shall be the issue adopted by the jurisdictional agency, or the current issue if none has been adopted. These standards are available from:

American National Standards Institute  
1430 Broadway  
New York, New York 10018

**SECTION 5803 LIGHTING LAYOUT**

**5803.1 General:** The lighting layout shall be in conformance with the American National Standard Practice for Roadway Lighting (ANSI/IES RP-8) (See Section 5802.2). Appendix A to the Standard Practice shows suggested layouts for various conditions and offers a good starting point for the designer. Specific references that follow are to the 1983 Edition of the Standard Practice.

**5803.2 Street and Area Classification:** See Section I of the Standard Practice. The designer should consult zoning maps and available future planning documents to assist in area classification. Many municipalities have a major street plan or other documents which classify streets.

**5803.3 Pavement Classification:** See Section 2.3 of the Standard Practice. The designer should consider that portland cement concrete pavement may lose as much as 50% of its reflective property over its life. The designer should also consider the owner's overlay practice. Pavement classification R3 is usually a good choice.

**5803.4 Luminance/Illuminance Values:** Luminance/illuminance values are obtained from Table I of the Standard Practice. These are values which are expected to exist at the time of relamping. Determine the light loss factor by following the procedures in Section 3.3 of the Standard Practice. If the municipality has a standard group relamping period, it should be used to determine lamp lumen depreciation. The illuminance level, the light loss factor, and the recommended group relamping period shall be shown on the plans.

**5803.5 Uniformity Ratios:** In addition to the average to minimum illuminance ratio recommended by the Standard Practice, the maximum to minimum illuminance ratio shall not exceed ten on all except local residential streets.

**5803.6 Mounting Height and Spacing:** Sections 3.6 and 3.7 of the Standard Practice offer guidance to the designer. Generally, with well designed luminaires, the mounting height and spacing are selected to achieve the desired uniformity ratio. The lamp size is then selected to provide the desired value of illuminance. Many luminaire manufacturers offer an applications engineering service which may be helpful in determining the optimum mounting height and spacing. Poles should be located in the public right-of-way as near to the side property lines as feasible.

**5803.7 Pole Setback:** In general, the pole setback from the curb should be selected to help prevent the pole from being struck by a vehicle. This should be eight or more feet on heavily traveled streets. An appropriate length mounting arm to put the luminaire at or near the curb should be specified. On limited access roadways, the use of breakaway pole bases is recommended. Guardrail can also be used to prevent a vehicle from striking the pole.

**SECTION 5804 ELECTRICAL SYSTEM**

**5804.1 General:** The electrical system shall comply with the standards listed in Section 5802.2 and service standards issued by the utility which will be supplying power to the street light system.

**5804.2 Feed Point:** The feed point location shall be coordinated with the utility to insure availability of service. The load should be adjusted to take advantage of the rate schedule and secure the most economical rate. The main fuse or circuit breaker shall be capable of interrupting the maximum fault current expected at the service location, but in no case less than 65,000 amperes.

**5804.3 Distribution System:** The distribution system shall be underground. Distribution cable may be direct buried except under streets, driveways, sidewalks and parking areas where it shall be in conduit. The cable shall be sized so that the voltage drop does not exceed five percent at any point in the system. Conductors shall be no larger than 1/0 AWG or no smaller than 8 AWG.