



# Illinois Department of Transportation

2300 South Dirksen Parkway / Springfield, Illinois / 62764

## BDE PROCEDURE MEMORANDUM

**NUMBER:** 23-06

**SUBJECT:** BDE Manual Revision – Chapter 56

**DATE:** August 7, 2023

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Chapter 56 has been revised to reflect editorial changes, revisions according to industry standards, and other corrections as needed. Please see the BDE Manual on-line to view the revisions.

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### Background

Specific revisions to Chapter 56 are as follows:

Section 56-1. - Editorial changes made for consistency.

Section 56-1.02. - Deleted 'for non-practitioners'.

Section 56-1.02(1). - Replaced 'lamps' with 'luminaires'. Editorial changes for consistency.

Section 56-1.02(9). - Changed '2700 K' to '2200 K'.

Section 56-1.02(24). - Changed 'ballast' to 'driver'.

Section 56-1.02(25). - Changed 'Lamp Lumen Depreciation Factor' to 'Luminaire Depreciation Factor'. Changed 'lamp' to 'light source'.

Section 56-1.02(26). - Changed 'pole' to 'vertical structural support'.

Section 56-1.02(30). - Changed 'lamps' to 'luminaires'. Changed 'Maintenance Factor' to 'Light Loss Factor'.

Section 56-1.02(32). - Changed 'lamp' to 'light source'.

Section 56-1.02(33). - Changed 'lamp' to 'light source'.

Section 56-2. - Changed 'recommendations and principles' to 'warranting guidelines'.

Section 56-2.03(8). - Changed 'roadway and sidewalk' to 'pedestrian'.

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Section 56-2.06. - Changed 'exceeds approximately' to 'approaches'. Changed title of RP-8 to 'Recommended Practice: Lighting Roadways and Parking Facilities'.

Section 56-2.12. - Revised to 'Consider transition lighting to allow sufficient time for eye adaptation...'

Section 56-3. - Added 'and Recurring Special Provisions'. Deleted reference to Section 56-5.

Section 56-3.01. - Made editorial changes for consistency.

Section 56-3.02. - Changed 'will' to 'shall'. Added reference to Chapter 38.

Figure 56-3.A - Changed 'Anchor Bolt' to 'Anchor rod' and 'Breakaway Bolt Coupling' to 'Breakaway Coupling'. Revised luminaire symbol to be more representative of what is being provided by manufacturer's.

Section 56-3.03. - Revised typical mounting heights of ornamental light poles to '10 ft to 30 ft (3.0m to 9.1m).

Section 56-3.05(b)(3). - Deleted 'and it also can be used to control the brightness of the lamp source'.

Section 56-3.05(c). - Revised last two sentences to 'The driver is a device comprised of a power source and LED control circuitry designed to operate an LED light source by regulating power to the LED, thereby controlling the brightness or intensity of the LED. However, the driver system converts the supply voltage to a DC voltage and provides DC output current to the LED while maintaining the current at a constant level/output over variable supply voltages.'

Section 56-3.07. - Revised to 'Electric service shall be a low voltage (0-600V) grounded system delivered to the roadway right-of-way. The service and equipment shall be grounded in accordance with the NEC. The service transformer typically supplied by the electric utility shall deliver secondary voltages of single-phase 120/240V or 240/480V and, with Department approval, shall be three-phase voltages of 120/208V or 277/480V.'

Section 56-4. - Revised to 'The following provides a general discussion with regard to the preparation of roadway lighting design in the State (excluding District 1):

1. Responsibilities. Each district is responsible for highway lighting projects installed under contract in their respective jurisdictions. Typically, the District will initiate a lighting project by submitting the project scope, timeframe, warrants, and all supporting information to the Electrical and Mechanical unit in the Central Office for review. See Section 56-4.02 for a list of required supporting information.

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2. Approvals. The Consultant's lighting design criteria must be submitted and approved before lighting plans are prepared. The Consultant's preliminary and final lighting plans shall be submitted to the Electrical and Mechanical Unit for review and approval.
3. Plan Preparation. The district shall provide to the Consultant all information necessary to develop the lighting plan sheets showing the overall project with roadway area classifications. Base plan information showing roadway geometry shall include: pavement, shoulder, and median widths at frequent intervals; roadway stationing; locations of roadway feature; all utilities; the height and location of all overhead conflicts; and the location of existing and proposed utility service points.
4. Final Design Package. The final design package shall include pole locations, luminaire locations with orientation, electrical distribution wiring diagrams, voltage-drop calculations, luminaire performance tables, lighting calculations with roadway classifications, and special provisions.

Alternatively, and with approval from the Central Office, the District may request the Electrical and Mechanical Unit to prepare the design package.'

Section 56-4.02. -11<sup>th</sup> bullet point – Deleted 'of high ambient lighting or areas especially'.

Figure-5.A – made extensive revisions for consistency with the rest of this Manual.

Section 56-5.01. - Revised first sentence of first paragraph to 'The Illuminating Engineering Society (IES) has been a leader in developing illuminance and luminance methodologies for the design of roadway lighting.' Revised second sentence of second paragraph to 'Illuminance shall be used for design and luminance shall be used for field verification. Illuminance shall be used where luminance calculations are not applicable (see ANSI/IES RP-8 for applicability of each method).'

Section 56-5.01(a). – Deleted the sentence 'The brightest spot normally will occur directly under the luminaire and diminishes as the driver travels away from the source.'

Figure 56-5.B – Revised table to include 'Surround' as a roadway facility classification.

Section 56-5.01(c). – Deleted this section.

Section 56-5.02. – Added the following sentence to the second paragraph: 'The level of precision for calculations shall be in accordance with ANSI/IES TM-34.'

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Section 56-5.04(f)(4)(1). – Changed ‘Lamp’ to ‘Luminaire’. Revised last sentence to ‘The depreciation factor varies, but for all luminaire calculation, a value of 90% shall be used.’

Section 56-5.04(f)(4)(2). – Changed ‘lamp’ to ‘light source’.

Section 56-5.04(f)(4)(4). – Deleted ‘Consult the manufacturer’s data and the Electrical and Mechanical Unit in the Central office for the appropriate factors to use.’

Figure-5.H – Removed recommended illumination calculation points.

Section 56-5.05(2)(b). – Deleted this section.

Section 56-5.05(5)(b)- Deleted last sentence.

Section 56-5.05(5)(c). - Deleted ‘mounted atop barriers or’.

Section 56-5.05(7).- Deleted this section.

Section 56-5.05(b)(2). - Revised tube length in third sentence to ‘8-5/8 in. (220 mm)’.

Section 56-5.05(c). - Added new item 9 to this section.

Section 56-6.- Added new items 20 through 25.



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