

*rec'd 9/27/09*

**CITY OF NEW YORK  
DEPARTMENT OF TRANSPORTATION  
OPERATIONS DIVISION  
BUREAU OF STREET LIGHTING**

**DESIGN CRITERIA  
FOR LIGHTING OF ROADWAYS AND BRIDGES  
OVER ROADWAYS, WATERWAYS & RAILROADS**

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## LIGHTING CRITERIA

### 1. Roadways, Main Crossings and Approaches

#### 1.1. Lighting Criterion

##### 1.1.1. Roadways

###### 1.1.1.1. Average Maintained Illuminance ( $E_{avg}$ )

Major Roadways	12 to 17 Lux
Collector Roadways	8 to 12 Lux
Local Roadways	6 to 9 Lux

###### 1.1.1.2. Illuminance Uniformity ( $E_{avg}/E_{min}$ )

Major Roadways	3:1
Collector Roadways	4:1
Local Roadways	6:1

###### 1.1.1.3. Veiling Luminance Ratio ( $L_{vmax}/L_{avg}$ )

Major Roadway	0.3
Collector & Local Roadways	0.4

###### 1.1.1.4. Total Depreciation (Loss) Factor

High Pressure Sodium	0.58
Metal Halide	0.50
Icecron (Flu.)	0.65

##### 1.1.2. Intersections

###### 1.1.2.1. Average Maintained Illuminance ( $E_{avg}$ )

Major/Major	24 to 34 Lux
Major/Collector	20 to 29 Lux
Major/Local	18 to 26 Lux
Collector/Collector	16 to 24 Lux
Collector/Local	14 to 20 Lux
Local/Local	12 to 18 Lux

###### 1.1.2.2. Illuminance Uniformity ( $E_{avg}/E_{min}$ )

Major/Major, Major/Collector, Major/Local	3:1
Collector/Collector, Collector/Local, Local/Local	4:1

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## LIGHTING CRITERIA

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### 1.1.3. Walkways and Bikeways

1.1.3.1.	Average Maintained Illuminance (Eavg)	5 to 10 Lux
1.1.3.2.	Illuminance Uniformity (Eavg/Emin)	4:1

### 1.2 Luminaires

#### 1.2.1. Type

Standard	Cobra head – 100W, 150W and 250W HPS
Special	Post top & Offset styles – 100W to 400W HPS
Decorative	Tear drop styles – 150W, 250W HPS & MH

#### 1.2.2. Initial Lumens

100W HPS	9,600 Lumens
150W HPS	16,000 Lumens
250W HPS	27,500 Lumens
400W HPS	50,000 Lumens
175W MH	12,000 Lumens
250W MH	20,000 Lumens

#### 1.2.3. Mounting Height

Standard (Cobra head)	30 ft.
Special (varied parameters)	13 ft. to 30 ft.
Decorative	15 ft. to 28 ft.

#### 1.2.4. Photometric Reference

100W & 150W Cobra head	Crouse Hinds, Test # 765026
	American Electric Test # 33538
250W & 400W Cobra head	Crouse Hinds, Test # 763715
	American Electric Test # 33467
250W & 400W Offset	Cooper Test # Orl4xx
	Holophane Test # 50380
250W Tear Drop	Holophane Test # ITL44090
	Sentry Test # LTL04025
	Magni Flood Test # LTL03634
100W & 150W CPW Acorn	Sentry Test # 8450 & 8451
100W & 150W Type 2085	Sentry Test # 6886
250W GCP	Magni Flood Test # LTL05735
250W 34 <sup>th</sup> St.	Sentry Test # LTL04777

## LIGHTING CRITERIA

### 1.3. Lampposts

#### 1.3.1. Standard

Steel, Octagonal	12 ft. to 50 ft. shaft with or w/o base and with 2 ft., 4 ft., 6 ft., 8 ft. or 12 ft. arms
Aluminum, Spun	15 ft. to 40 ft. shaft with or w/o frangible base and with 2 ft., 4 ft., 8 ft., 12 ft. or 15 ft. arms

#### 1.3.2. Special/Decorative

Flatbush Avenue	33 ft. steel pole with decorative 8 ft. single or twin arms and octagonal base. 31 ft. MH.
Grand Central	25 ft. fluted steel pole with 4 ft. twin arms and octagonal base. 27 ft. luminaire MH.
Type F	25 ft. decorative Cast Iron pole with 3 ft. single or twin arms. 23 ft. luminaire MH.
Type M	28 ft. decorative Cast Iron pole with 10 ft. single or twin arms. 26 ft. luminaire MH.
5 <sup>th</sup> Avenue	27 ft. decorative Cast Iron pole with twin 3 ft. arms. 25 ft. luminaire mounting height.
BC (Bishops Crook)	26 ft. decorative Cast Iron pole with single 3 ft. bishop crook arm. 23 ft. luminaire MH
CPW (Central Park West)	27 ft. decorative Cast Iron pole with 8 ft. single or twin arms. 25 ft. Luminaire MH
14 <sup>th</sup> Street	25 ft. steel pole with high looped extension arm and transformer base. 34 ft. MH
Type B-12	12 ft. decorative Cast Iron pole with top mounted luminaire. 13 ft. luminaire MH
Lyre	27 ft. decorative Cast Iron pole with top mounted bracket and luminaire. 28 ft. MH

## 2. Pedestrian Bridges

### 2.1. Lighting Criterion

2.1.1. Average Maintained Illuminance (Eave)	= 4 Lux for Overpasses = 8 Lux for Stairs
2.1.2. Illuminance Uniformity (Eave:Emin)	= 4:1 to 6:1
2.1.3. Total Depreciation (Loss) Factor	= 0.58

## LIGHTING CRITERIA

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### 2.2. Luminaires

- 2.2.1. Type: Cobrahead, 100W HPS
- 2.2.2. Initial Lumens: 9,600
- 2.2.3. Mounting Height 13 ft. (for 2 ft. arm) to 16 ft. (for 4 ft. arm)
- 2.2.4. Photometric Reference American Electric, Test #33538  
Crouse-Hinds, Test #765026

### 2.3. Lampposts

- 2.3.1. Type: 14 ft. steel shaft with 2 ft. or 4 ft. steel arm with  
or without ladder rest

## 3. Underpasses (Nighttime)

### 3.1. Lighting Criterion

- 3.1.1. Average Maintained Illuminance (Eave): 30 - 50 Lux
- 3.1.2. Illuminance Uniformity (Eave:Emin): 3:1 to 4:1
- 3.1.3. Total Depreciation (Loss) Factor 0.58

### 3.2. Luminaire

- 3.2.1. Type Surface (wall) mounted: 100W and 250W HPS  
Pendant (ceiling) mounted: 150W HPS
- 3.2.2. Initial Lumens 9,600 for 100W, 16,000 for 150W, 27,500 for 250W
- 3.2.3. Mounting Height Determined by structure
- 3.2.4. Photometric Reference
- |               |                              |
|---------------|------------------------------|
| 100W and 250W | ABS Test # K-2067            |
| 150W Pendant  | Sentry Test # 28173          |
| 150W and 250W | Magni Flood Test # LTL 00742 |
| 100W          | Magni Flood Test # LTL 02945 |
| 150W Wallpack | Exceline Test # 323150L      |
| 250W Wallpack | Exceline Test # 55325L       |

## LIGHTING CRITERIA

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### 4. SIGNS

#### 4.1. Lighting Criterion

- |                            |   |
|----------------------------|---|
| 4.1.1. Illumination Level  | 200 - 400 Lux Average Maintained                          |
| 4.1.2. Depreciation Factor | 0.50  |
| 4.1.3. Uniformity Ratio    | 6:1 Maximum to Minimum Ratio<br>2.0 Illumination Gradient |

#### 4.2 Luminaire

- |                       |                                    |
|-----------------------|------------------------------------|
| 4.2.1. Type           | 175W Metal Halide (Bottom Mounted) |
| 4.2.2. Initial Lumens | 12,200 - 14,000                    |
| 4.2.3. Mounting       |                                    |

Set down: 12 in. for all signs  
Set back: 4 ft. for signs less than 12 ft. high  
Set back: 5 ft. for signs over 12 ft. high

#### 4.2.4. Photometric Reference

Holophane, Sign-Vue, Test # 40903  
American Electric, Sign Light, Test # 45421  
Magni Flood Refractor Lens Test # LTL03809