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# Lighting



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Raymour & Flanigan  
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# Lighting

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## Introduction



*E Houston Street, Manhattan*

### About this Chapter

This chapter, which constitutes the current DOT Street Lighting Catalogue, outlines options for street and pedestrian lighting for New York City streets, bikeways, pedestrian bridges, pedestrian malls, plazas, and parks. Street lights currently installed on the street, but not included in this chapter, are not recommended for new projects. The street lights herein meet DOT engineering standards and technical requirements for safety and energy efficiency. Most are appropriate for use in a variety of contexts, pending DOT design review and approval.

### Selection Criteria

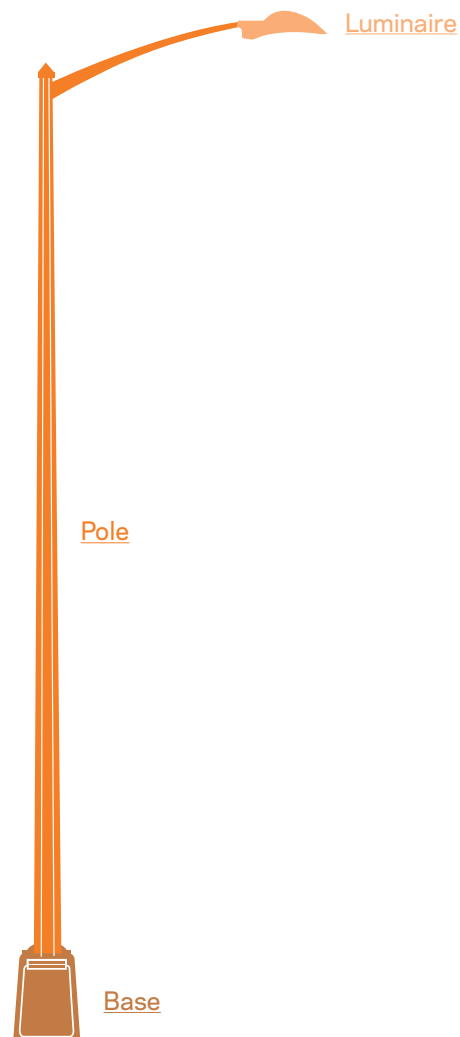
DOT uses guidelines established by the Illuminating Engineering Society of North America (IES) to provide sufficient light values and uniformity in the ROW and produce a comfortable and safe street environment. In addition to lighting characteristics, the agency considers the design qualities of poles and luminaires with an eye to maintaining an aesthetically consistent and coherent streetscape within a neighborhood or corridor. Accordingly, the agency does not approve block-by-block variations in types of street lights.

### o Street Light Components

A street light comprises three elements: 1) the base (sometimes with a “skirt” that covers the base to achieve a desired appearance), 2) the pole, and 3) the LED luminaire. Some poles can be combined with different luminaires to achieve the desired aesthetic and engineering outcomes; in other cases, the combination of pole and luminaire cannot be changed. This chapter notes the luminaires with which each pole can be paired.

### o Energy Standards

DOT requires the use of LED luminaires for all installations.



- o **Engineering Review**

In all cases, the suitability of the street light for a particular street and lighting condition must be approved by DOT's Street Lighting Engineering Unit (DOT Street Lighting).

### Usage Categories

Street lights and components are categorized as Standard, Distinctive, or Historic. DOT maintains equipment in each of these categories, and replaces damaged street lights.

- o **Standard**

The current Standard street light poles are the steel Octagonal and Davit for city streets, and aluminum Round for highways, with LED luminaires as indicated. The M-2A and the S-1A signal poles are Standard for use at traffic signal locations. The M-2A pole may be used to hold a standard street light arm and luminaire. In addition to the pedestrian poles featured in this Manual, other Standard pedestrian poles suitable for use are covered in DOT Street Lighting's Standard Drawings Book.

With DOT approval, modifications and alternate combinations of components are possible. Poles can be painted according to federal specifications in silver, black, or green. While such modifications are considered Standard, they typically require a maintenance agreement and DOT Street Lighting approval.

- o **Distinctive**

Street light poles, other than those that are listed as Standard or Historic, are considered Distinctive; they are installed as part of streetscape projects and other locally-funded initiatives. Unless they are in-kind replacements for damaged street lights, Distinctive lights require PDC approval. DOT is responsible for submitting Distinctive street light proposals to PDC on behalf of neighborhood associations and other groups that request the treatments. In preparation for these submittals, DOT works closely with applicants to develop consistent street lighting plans that are sensitive to local contexts. DOT maintains Distinctive street lights unless otherwise stated in a maintenance agreement.

- o **Historic**

Historic-style poles can only be used in LPC designated historic districts or in neighborhoods with substantial, intact historic fabric—i.e., three or more contiguous blocks. They require approval by LPC for use in historic districts and PDC approval for use in non-designated areas with substantial, intact historic fabric. The Historic street light poles are currently used with only the Teardrop and Shielded Teardrop Luminaires.

### Inclusive Design

Street lights and signals at corners must be sited so that they do not obstruct pedestrian ramps, ensuring sufficient access to the sidewalk for all pedestrians, including those using mobility devices. At crossings, the height of Accessible Pedestrian Signals must be reachable by a person using a mobility device, at a preferred height of 42 inches and a maximum height of 48 inches (see *2010 ADA Standards for Accessible Design*).

### Resiliency

Existing foundations at traffic signal locations in certain flood-vulnerable areas are being replaced with coastal storm foundations that incorporate a square concrete pedestal raising the electrical components above some flood depths. The city's *Climate Resiliency Design Guidelines* provide guidance on height. The pedestal is monolithically poured with the foundation. Raising the base of the traffic signals or street light poles reduces the chance that the electrical components of the poles will be submerged in salt water during future flooding events. Additionally, High Density Polyethylene (HDPE) conduit, a more cost-effective material that is not susceptible to corrosion from residual salt water after storm surge events, is replacing galvanized steel for all signal locations and street light locations in flood-vulnerable areas.

DOT is also testing solar-powered lighting at select locations in flood-prone areas. If these applications are successful, solar lighting could reduce the amount of time without street lighting after major flood events.

### Specifications

For design criteria, technical information, finishes, and color specification, refer to DOT's Bureau of Traffic Operations, Division of Street Lighting specifications. The latest edition is available for purchase for \$50 from the Office of the Agency Chief Contracting Officer, 55 Water Street, Ground Level, New York, NY, 10041. For further information, call (212) 839-9435. DOT Street Lighting's Standard Drawings Book, available at [www1.nyc.gov/html/dot/downloads/pdf/nycdot-street-lighting-standard-drawings.pdf](http://www1.nyc.gov/html/dot/downloads/pdf/nycdot-street-lighting-standard-drawings.pdf), includes Standard drawings for elements in the lighting catalogue.

### BUG Ratings

DOT Street Lighting evaluates LED luminaires using the IES BUG (Backlight, Uplight, and Glare) rating system as part of its specifications.

	Average Illuminance (fc)	Illuminance Uniformity
<b>Roadways</b>		
Collector*	1.0 - 1.2	4:1
Local**	0.8 - 1.0	4:1
<b>Intersections</b>		
Collector/Collector	2.0 - 2.5	4:1
Collector/Local	1.5 - 2.0	4:1
Local/Local	1.5	4:1
<b>Plazas, Under the El</b>	2.0	4:1
<b>Pedestrian Sidewalks</b>	0.6 - 0.8	Up to 6:1
<b>Shared Bikeways</b>	0.8 - 1.0	4:1

\* DOT's Lighting Division generally classifies avenues and boulevards as collector roadways

\*\* DOT's Lighting Division generally classifies cross streets as local roadways

### Lighting Levels, Color, and Uniformity

DOT's lighting-levels and uniformity guidelines are based on those established by the IES Roadway Lighting standard RP-8-14 (or more stringent where needed). DOT uses higher wattages on wide or commercial corridors and lower wattages on narrow or residential streets. DOT currently specifies 3000 Kelvin as the color temperature for all luminaires.

All street lighting designs must be approved by DOT Street Lighting Engineering Unit.

### Notes and Symbols

<b>HDG</b>	Hot Dipped Galvanized Steel
<b>IES</b>	Illuminating Engineering Society of North America
<b>IES Type</b>	IES classification of lighting based on its photometric properties. Five types are relevant to the city's street lights: I, II, III, IV, and V.
<b>LED</b>	Light-Emitting Diode
<b>SSL</b>	Standard Street Light: Standard pole (Octagonal) with LED Cobra Head luminaire. While Davit and Round poles are also standard poles, cost comparisons to the SS refer to the Octagonal.
<b>W</b>	Watts
<b>\$</b>	Costs: Shown for each pole or luminaire as a \$ symbol, representing relative costs compared to the Standard Street Light (SSL), the Octagonal Pole. A scale of one to five \$ symbols is used rather than specific monetary amounts because actual costs are subject to change.

TABLE 4A: POLES & LUMINAIRES

Luminaires	Standard Poles			Distinctive & Historic Poles									
	Octagonal	Davit	Round 25'   40'	Alliance (Type S)	Bishops Crook	City Light	Flatbush Ave	TBTA	Type F	Type M	World's Fair Ped	Type B Ped	Flushing Meadows Ped
Cobra Head	●	●	●				●	●					
Teardrop					●		●	●	●	●			
Shielded Teardrop							●	●					
Alliance				●									
City Light						●							
Central Park												●	
Riverside												●	
Battery Park												●	
2085											●		
Flushing Meadows													●
LED Expressway			●										

Table 4a identifies which combinations of poles and luminaires are permitted.

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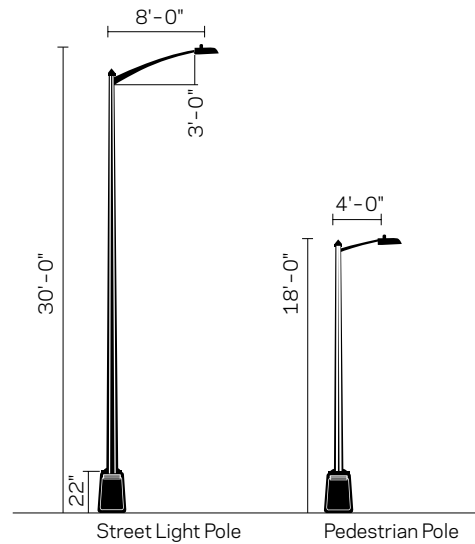
# Standard Poles



# Octagonal Pole

## Usage: Standard

The tapered steel Octagonal pole, combined with the LED Cobra Head luminaire, constitutes a Standard Street Light (SSL).



## Applications

Streets

Single and twin-mounting

## Luminaire

### LED Cobra Head

Wide Roadway/Commercial Area:  
110W maximum LED  
IES Type II or III

Residential Street:  
78W maximum LED  
IES Type II or III

Pedestrian Arm:  
40W maximum LED  
IES Type II or III

## Material/Color

HDG Steel/silver — black and green are also allowed but require a maintenance agreement

## Cost Compared to SSL

\$

Octagonal is the Standard pole

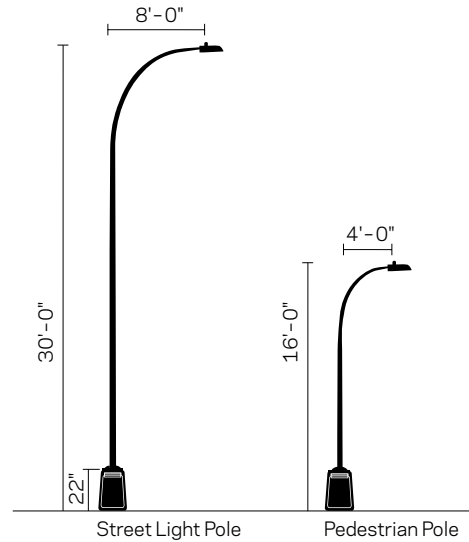


1st Street, Manhattan

# Davit Pole

## Usage: Standard

The Davit pole is an elegant, curved alternative to the Octagonal pole that can be used in the same streetscape contexts. An aluminum version of the Davit, not covered here, is also used on highways.



## Applications

- Streets
- Single and twin-mounting

## Luminaire

### LED Cobra Head

Wide Roadway/Commercial Area:  
110W maximum LED  
IES Type II or III

Residential Street:  
78W maximum LED  
IES Type II or III

Pedestrian Arm:  
40W maximum LED  
IES Type II or III

## Material/Color

HDG Steel/silver — black and green are also allowed but require a maintenance agreement

## Cost Compared to SSL

\$\$

Though also considered a Standard pole, the Davit is more expensive than the Octagonal

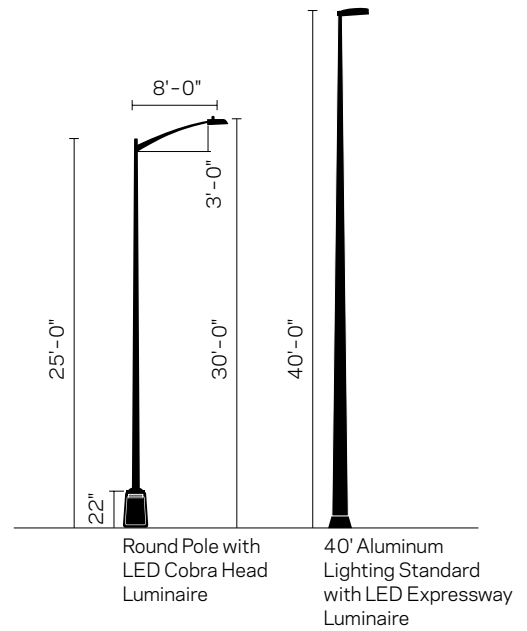


E Houston Street, Manhattan

# Round Pole

## Usage: Standard

The tapered aluminum Round pole, combined with the LED Cobra Head luminaire, constitutes a Standard Highway Street Light. As an alternative, the 40' Aluminum Lighting Standard is another street light option for expressways that can be installed with an LED Expressway luminaire.



## Applications

For use on highways within city limits

## Luminaire

### LED Cobra Head

Highway:  
110W maximum LED  
IES Type II or III

Highway Ramp:  
78W maximum LED  
IES Type II or III

### LED Expressway

Expressway:  
150W maximum LED  
IES Type III or IV

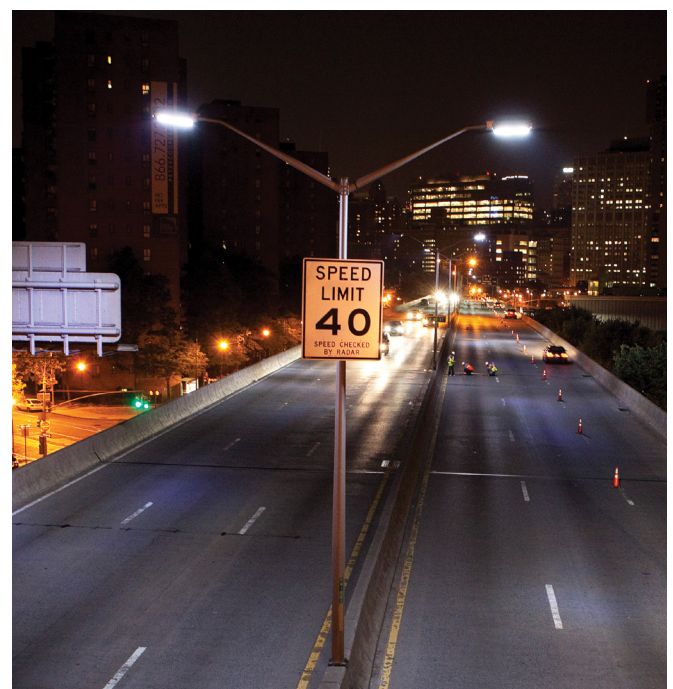
## Material/Color

Aluminum/silver

## Cost Compared to SSL

\$

Round is the Standard pole for highways



Round pole with 25-foot shaft and LED Cobra Head luminaire: FDR Drive, Manhattan

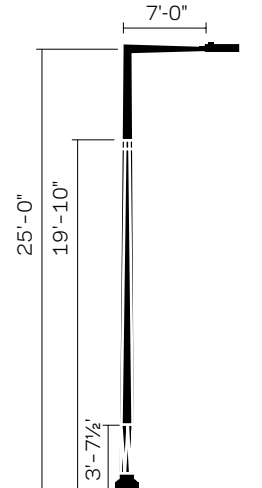
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# Distinctive & Historic Poles

## Alliance Pole (Type S)

Usage: Distinctive

The Alliance street light was originally introduced in Lower Manhattan by the Alliance for Downtown New York. This street light is a contemporary alternative to the Standard Street Light.



### Applications

- Commercial districts
- Roadways with widths of 36 feet or more
- PDC approval is required

### Luminaire

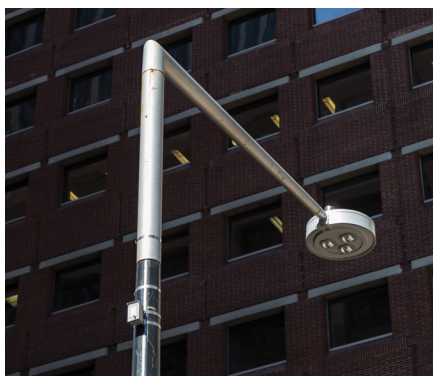
- Alliance (Type S)**
- 110W maximum LED
- IES Type II or III

### Material/Color

- HDG Steel/silver, black

### Cost Compared to SSL

\$\$\$\$\$



Water Street, Manhattan

## Bishops Crook Pole

### Usage: Historic

The Bishops Crook was the first of a number of decorative street lights to be introduced as early as 1900 on narrow city streets. Bracket versions of the Bishops Crook were also attached to the facades of buildings. The reproduction of the Bishops Crook was introduced in 1980 at Madison Avenue and 50th Street outside the Helmsley Palace Hotel (now the New York Palace Hotel).

### Applications

Historic districts or areas with substantial, intact historic fabric

Streets with roadway width of less than 36 feet

Within historic districts, LPC approval is required; outside of historic districts, PDC approval is required

### Luminaire

#### Teardrop

100W maximum LED

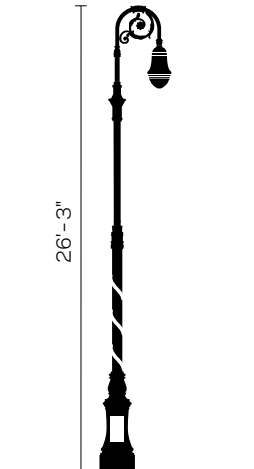
IES Type III

### Material/Color

Ductile iron pole with aluminum arm/black

### Cost Compared to SSL

\$\$\$\$\$

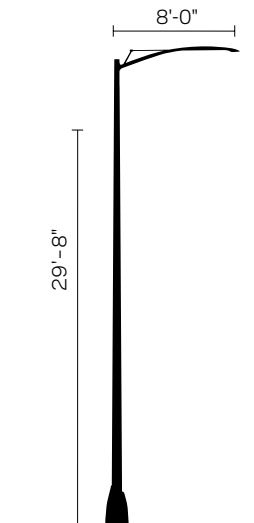


Orchard Street, Manhattan

# City Light Pole

## Usage: Distinctive

In 2004, an international design competition was held to develop a signature street light for New York City. The winning entry, the City Light, was added to DOT's lighting catalogue after extensive development and testing. This simple, elegant pole and luminaire provide less glare than other luminaires and complement both contemporary architecture and historic structures.



## Applications

Commercial or residential streets

PDC approval is required

## Luminaire

### City Light

Wide Roadway/Commercial Area:  
110W maximum LED  
IES Type II or III

Residential Street:  
78W maximum LED  
IES Type II or III

## Material/Color

Aluminum/silver

## Cost Compared to SSL

\$\$\$\$\$



Essex Street, Manhattan

# Flatbush Avenue Pole

## Usage: Distinctive

The Flatbush Avenue pole was first installed in 1988 on Flatbush Avenue in Brooklyn. Its design is appropriate for wide streets, including those with historic character.

## Applications

- Commercial and wide residential streets
- Single, or twin-mounting on center medians
- Streets with roadway width of 36 feet or more
- PDC approval is required

## Luminaire

### LED Cobra Head

110W maximum LED  
IES Type II or III

### Teardrop and Shielded Teardrop

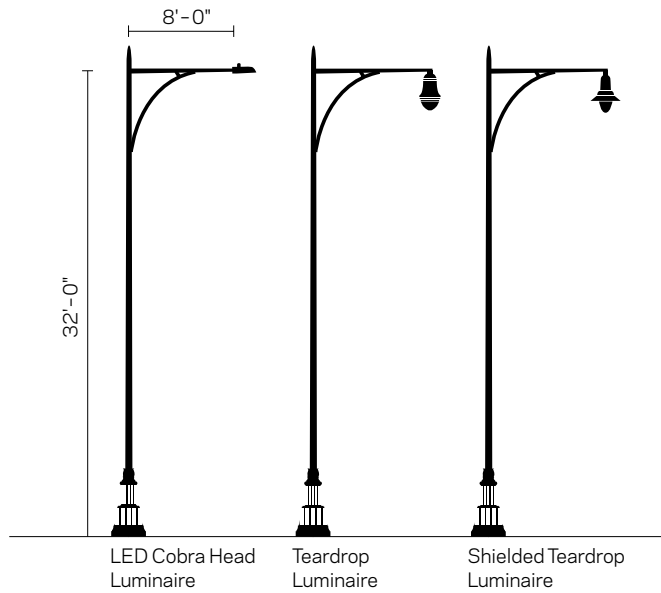
150W maximum LED  
IES Type III

## Material/Color

Fabricated steel pole/black, silver, green

## Cost Compared to SSL

\$\$\$



Pole with Teardrop luminaire: Flatbush Avenue, Brooklyn

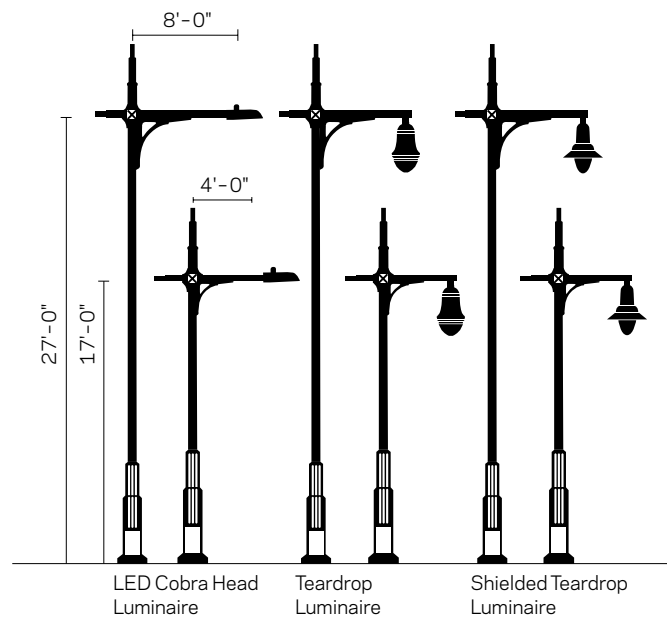




# TBTA Pole

## Usage: Distinctive

The TBTA (Triboro Bridge and Tunnel Authority) pole was introduced in the 1950s for mid-twentieth-century bridge construction projects such as the Robert F. Kennedy Bridge (formerly the Triboro Bridge). The TBTA pole replaced wooden lampposts that lit parkways during the 1920s and '30s. The Teardrop and Shielded Teardrop luminaires combine with the TBTA pole to produce a historic quality.



## Applications

### Street Light Pole:

- o Commercial and wide residential streets
- o Single or twin-mounting
- o Streets with roadway width of 36 feet or more

### Pedestrian Pole:

- o Parks, plazas, and esplanades

PDC approval is required

## Luminaire

### LED Cobra Head

Wide Roadway/Commercial Area:

110W maximum LED

IES Type II or III

Residential Street:

78W maximum LED

IES Type II or III

### Teardrop and Shielded Teardrop (historic districts only)

Commercial Area:

150W maximum LED

IES Type III

Residential Street:

100W maximum LED

IES Type III

## Material/Color

HDG steel/black, silver, green

## Cost Compared to SSL

\$\$\$\$\$

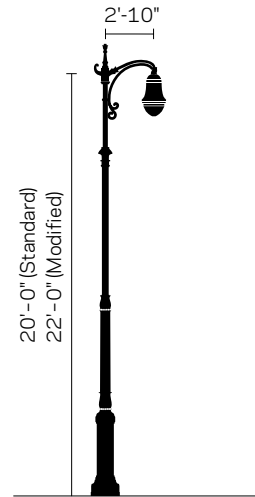


Pole with Shielded Teardrop luminaire: White Plains Road, Bronx

# Type F Pole

## Usage: Historic

The Type F pole, originally known as the Reverse Scroll Bracket, was developed in 1913 and installed on narrow streets downtown on Seventh Avenue. Bracket versions of the Reverse Scroll were also attached to the facades of buildings. The reproduction of the Reverse Scroll was introduced in the late twentieth century as the Type F pole.



## Applications

- Selected historic districts
- Streets with roadway width of less than 36 feet
- Single or twin-mounting
- Within historic districts, LPC approval is required; outside of historic districts, PDC approval is required

## Luminaire

**Teardrop**  
100 W maximum LED  
IES Type III

## Material/Color

Ductile iron pole/black

## Cost Compared to SSL

\$\$\$\$\$

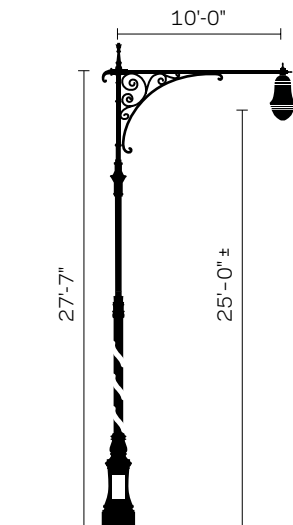


8th Street, Manhattan

## Type M Pole

### Usage: Historic

The Type M pole, originally known as the Mast-Arm post, was introduced in 1908 for wide streets at corners on Broadway north of Columbus Circle and on Seventh Avenue north of Central Park. Bracket versions of the Mast-Arm were also attached to the facades of buildings. The reproduction of the Mast-Arm was introduced in the late twentieth century as the Type M pole.



### Applications

Selected historic districts

Streets with roadway width of 36 feet or more

Single or twin-mounting

Within historic districts, LPC approval is required; outside of historic districts, PDC approval is required

### Luminaire

#### Teardrop

150 W maximum LED

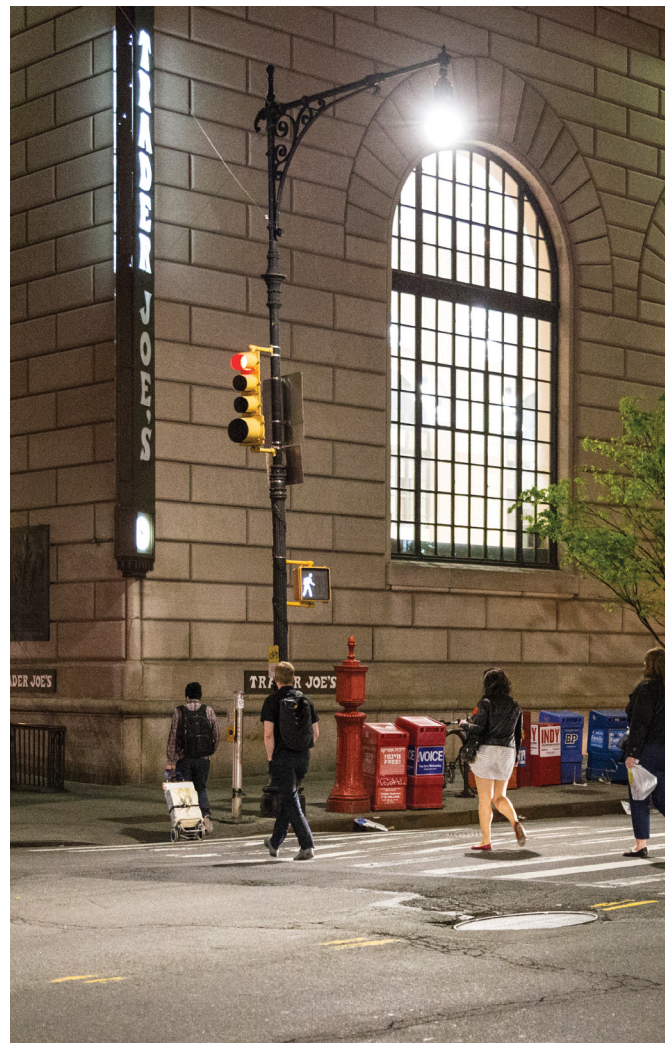
IES Type III

### Material/Color

Ductile iron pole/black

### Cost Compared to SSL

\$\$\$\$\$

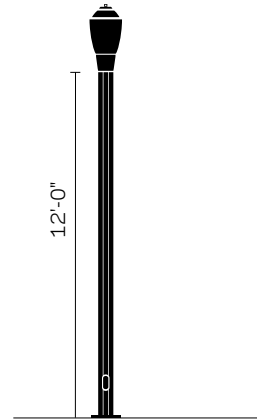


Atlantic Avenue, Brooklyn

## World's Fair Pedestrian Pole

### Usage: Distinctive

The World's Fair pedestrian light was first installed in 1964 during the World's Fair held in Flushing Meadows Park in Queens. The pole is now installed in many city parks, in plazas, and along pedestrian malls and bikeways.



### Applications

Parks, plazas, and esplanades

PDC approval is required

### Luminaire

#### 2085

76W maximum LED

IES Type III or V

### Material/Color

Steel/black, silver

### Cost Compared to SSL

\$



Flushing Meadows Corona Park, Queens

## Type B Pedestrian Pole

### Usage: Distinctive

The Type B pedestrian light was originally introduced in 1911 by designer Henry Bacon for the Central Park Mall and later installed in other city parks. The current version of the Type B pole was developed in the late twentieth century and offers a more traditional design for pedestrian areas such as parks and plazas.

### Applications

Parks, plazas, esplanades, and pedestrian bridges

Not suitable for use on roadways, except under elevated structures

PDC approval is required

### Luminaire

**Riverside Park, Battery Park, Central Park, and 2085**

76W maximum LED

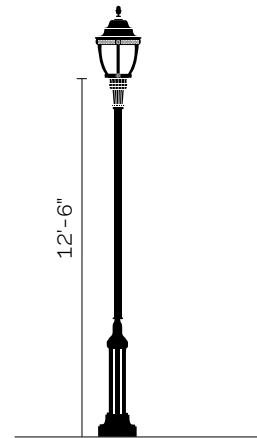
IES Type III or V

### Material/Color

Ductile iron pole/black

### Cost Compared to SSL

\$\$



Pole with Riverside Park luminaire: East River Park, Manhattan

## Flushing Meadows Pedestrian Pole

### Usage: Distinctive

The Flushing Meadows pedestrian light was first installed in 2004 by Parks in Canarsie Park in Brooklyn. The pole is now installed in many city parks and plazas.

### Applications

Parks, plazas, esplanades, and pedestrian bridges

Not suitable for use on roadways, except under elevated structures

Consider aluminum pole in high salt environments

PDC approval is required

### Luminaire

#### Flushing Meadows

70W maximum LED

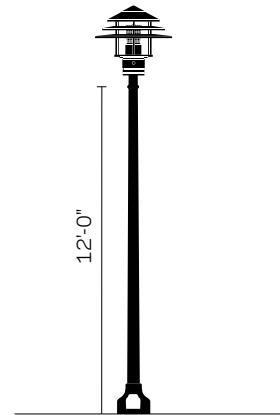
IES Type III or V

### Material/Color

HDG Steel or Aluminum/black, silver

### Cost Compared to SSL

\$\$



East River Park, Manhattan

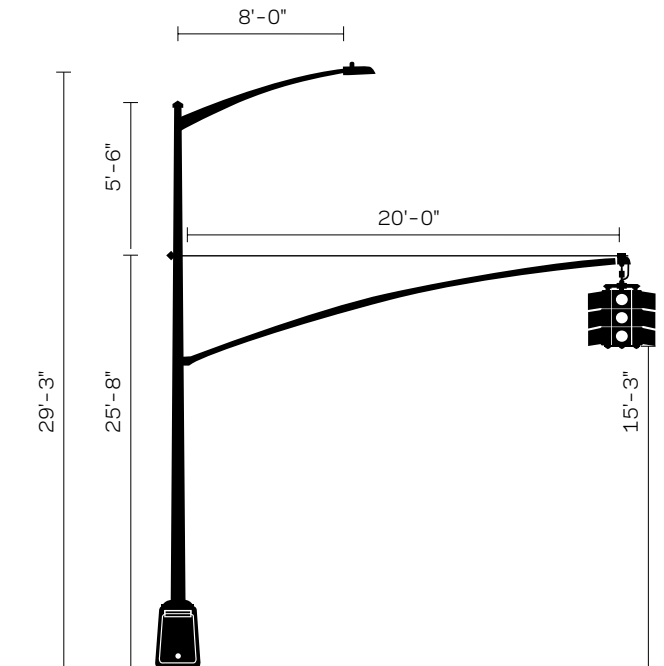
# 4.3 Signal Poles

## Type M-2A Signal Pole

### Usage: Standard

Introduced in 1964 as the M-2, the octagonal M-2A traffic signal pole is Standard for use at all traffic signal locations. A 5-foot mast-arm extension can be used to bring the signal farther out over the roadway, if necessary.

With a 7-foot shaft extension, the M-2A can be used to hold a standard street light arm and a luminaire. It can also be made to resemble nearby Distinctive poles.



Type M-2A signal pole with City Light pole: W 47th Street and 7th Avenue, Manhattan



Type M-2A signal pole with Type M pole and Teardrop luminaire (Historic): 114th Street, Manhattan

### Applications

Holds signals and/or signs

Single- or double-mounting

Two M-2A poles per intersection, diagonally opposite from each other

Sometimes mounted on a concrete coastal storm foundation to provide necessary clearance or avoid moisture in the base

If a luminaire is necessary, shaft extension provides required clearance from signal

5-foot mast-arm extension holds signal farther out over the roadway, if necessary

Accessible Pedestrian Signals (APS) must be included when a traffic signal with a pedestrian signal is newly installed or fully replaced (includes pole, foundation, conduit, and signal equipment) or relocated

### Luminaire

**LED Cobra Head** (Standard)

**Teardrop** (Historic)

### Material/Color

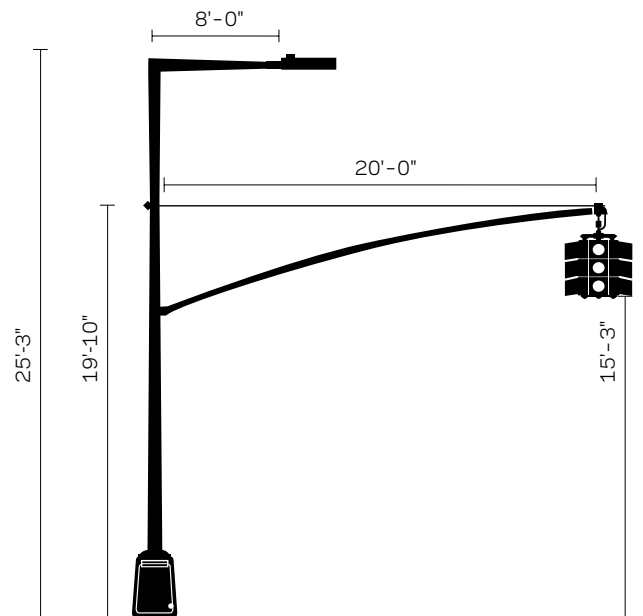
HDG Steel/silver, black, green



## Alliance Signal Pole (Type S)

### Usage: Distinctive

The Alliance street lights were introduced in the Lower Manhattan financial district by the Alliance for Downtown New York. The signal pole can be used as a contemporary alternative to the standard M-2A signal pole only in conjunction with nearby Alliance street lights.



South Street, Manhattan

### Applications

Intersections

Accessible Pedestrian Signals (APS) must be included when a traffic signal with a pedestrian signal is newly installed or fully replaced (includes pole, foundation, conduit, and signal equipment) or relocated

### Luminaire

#### Alliance (Type S)

110W maximum LED  
IES Type II or III

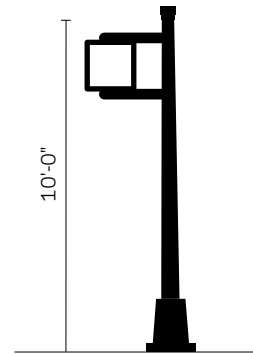
### Material/Color

HDG steel/silver, black

## Type S-1A Signal Pole

### Usage: Standard

Introduced as the S-1 in 1965, the round S-1A signal pole holds pedestrian signals at corners where an M-2A signal pole or a light pole is not necessary. It also holds traffic signals on medians and traffic islands.



Type S-1A signal pole with a pedestrian signal: Madison Square Park, Manhattan

### Applications

Holds pedestrian and/or traffic signals

Accessible Pedestrian Signals (APS) must be included when a traffic signal with a pedestrian signal is newly installed or fully replaced (includes pole, foundation, conduit, and signal equipment) or relocated

### Luminaire

This pole does not hold a luminaire

### Material/Color

HDG Steel/silver, black, green