

## Streetlight Luminaires, Waterfront, Side-Mount, Roadway



### 1. Scope

This standard covers the requirements for waterfront, side-mount, roadway streetlight luminaires and accessories.

This standard applies to the following Seattle City Light (SCL) stock numbers:

Stock No.	Description
014508	Waterfront, side-mount, roadway luminaire
014509	House side shield for waterfront, side-mount, roadway luminaire

### 2. Application

Waterfront Seattle Arterial Roadway LED luminaires are:

- Installed only within the boundary of the Waterfront Seattle project as defined by public works contract PW#2018-085.
- Intended for installation in the Waterfront Seattle Project areas only.

Waterfront side-mount roadway luminaires use Stock No. 014509 house side shields.

Streetlight Engineering shall pre-approve all installations of luminaire shields. Contact Streetlight Engineering for details.

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### 3. Industry Standards

Waterfront, side-mount, roadway streetlight luminaires shall meet the applicable requirements of the following industry standards:

**ANSI/NEMA/ANSLG C78.377-2008**; Specifications for the Chromaticity of Solid State Lighting (SSL) Products

**ANSI C136.10-2010**; Locking-Type Photocontrol Devices and Mating Receptacles

**ANSI C136.31-2010**; American National Standard for Roadway Lighting Equipment – Luminaire Vibration

**ANSI C136.37-2011**; American National Standard for Roadway and Area Lighting Equipment – Solid State Light Sources Used in Roadway and Area Lighting

**ANSI C136.41-2013**; Dimming Control Between an External Locking Type Photocontrol and Ballast or Driver

**ASTM B117-09**; Standard Practice for Operating Salt Spray (Fog) Apparatus

**ASTM D1654-08**; Standard Test Method for Evaluation of Painted or Coated Specimens Subjected to Corrosive Environments

**ASTM D523-08**; Standard Test Method for Specular Gloss

**ASTM G154-06**; Standard Practice for Operating Fluorescent Light Apparatus for UV Exposure of Nonmetallic Materials

**C136.15-2011** (or latest); American National Standard for Roadway and Area Lighting Equipment – Internal Labeling of Luminaires

**C136.22-2004 (R2009)**; American National Standard for Roadway and Area Lighting Equipment – Ingress Protection (Resistance to Dust, Solid Objects and Moisture) for Luminaire Enclosures

**Federal Trade Commission (FTC) Green Guides**; 16 CFR Part 260; Guides for the Use of Environmental Marketing

**IEC 60529**; Degrees of protection provided by enclosures (IP Code), consolidated edition

**IEEE C62.41.2-2002**; IEEE Recommended Practice on Characterization of Surges in Low-Voltage (1000 V and less) AC Power Circuits

**IES LM-79-08**; Approved Method: Electrical and Photometric Measurements of Solid State Lighting Products

**IES LM-80-08**; Approved Method: Measuring Lumen Maintenance of LED Lighting Sources

**IESNA TM-15-11 (revised)**; Luminaire Classification System for Outdoor Luminaires

**RoHS (European Union Directive 2002/95/EC** for Restriction of Hazardous Substances)

**Title 47 of the Code of Federal Regulations (CFR), Part 15**; Radio Frequency Devices

**UL 1598**; Luminaires; UL

## 4. Requirements

### 4.1 Luminaire Performance

Operating temperature, range	
°C	-20 to +50
°F	-4 to +122
Correlated Color Temperature (CCT), nominal, °K, per ANSI/NEMA/ANSLG C78.377	4000 ± 300
Color rendering index (CRI), minimum	80
L70 lumen depreciation of LED light sources per IES LM-80, hours, minimum	100,000
Light distribution, IES	Type 2
Backlight, Uplight, and Glare (BUG) rating per IESNA TM-15, Addendum A	B2, U0, G2
Luminaire efficacy, lumens/watt, minimum, per IES LM-79, Section 11.0	90
Off-state power consumption, W, maximum	0.5
On-state power consumption, W, maximum	109 W
Luminous flux distribution at median driver current, lumens, minimum <<not data we've reflected in other standards>>	10478
Effective projected area (EPA), maximum, ft <sup>2</sup>	0.5
Total harmonic distortion at full power across specified voltage range, maximum	20%
Vibration withstand, minimum, per ANSI C136.31	Level 2 (bridge/overpass application)

### 4.2 Power Supply/Driver

Input voltage, functional range, 60 Hz, Vac	120–277
Power factor, minimum	90
Surge protection, per ANSI C136.37 and ANSI/IEEE C62.41.2	10 kV
High exposure, kV	10
Low exposure, kV	6
Interference	FCC 47 CFR part 15/18, Class A
Dimming control signal interface operative range, Vdc	0–10

### 4.3 Construction

#### 4.3.1. General

Luminaires shall be side-mounted on 2.38-inch outside diameter tenons. See SCL 5756.27.

Luminaire features conforming to ANSI C136.37 shall include, but not be limited to:

- Mounting provisions
- Latching and hinging
- Terminal blocks
- Dimming
- Ingress protection
- Wiring and grounding
- Photocontrol receptacle

Luminaire shall be RoHS (European Union Directive 2002/95/EC for Restriction of Hazardous Substance) compliant. Luminaire shall have less than the maximum concentration values of the following RoHS restricted substances:

- Mercury (Hg)
- Cadmium (Cd)
- Chromium VI (Cr +6)
- Polybrominated biphenyl (PBB)
- Polybrominated biphenyl ether (PBDE) ▪ Lead (Pb)

#### **4.3.2. Fixture Housing**

Luminaire housing shall be cast aluminum.

Luminaire housing shall allow tool-less entry.

Luminaire external housing shall have a minimum rating of IP66 as specified in IEC 60529.

Luminaire door shall be securely hinged and incapable of involuntary separation from housing when accessed in field-installed position.

The luminaire optical chamber shall have a minimum rating of IP66 as specified in IEC 60529.

Luminaire cooling system shall consist of a passive heat sink with no fans, pumps, or liquids.

All fasteners shall be stainless steel.

All polycarbonate components shall be UV stabilized.

Complete assembly weight shall not exceed 20 lb.

Maximum estimated projected area shall not exceed 0.5 sq ft.

Luminaire design shall facilitate hose-down cleaning and discourage debris accumulation.

#### **4.3.3. Electrical**

Power supply/driver shall be provided with a control signal interface with operating range of 0 to 10 Vdc for dimming.

Luminaire photocontrol receptacle shall be designed and constructed to accept a standard plug type, locking, three-pole, three-wire, streetlight photo control. Photocontrol receptacle shall also be configured with the addition of a minimum of two conductive pads, as defined in ANSI C136.41. Four conductive pads are optional.

The two conductive pads shall be connected to the 0-10 Vdc control signal interface on the power supply/driver with quick-disconnect connectors.

Rotational adjustment of the photo control shall be tool-less.

Luminaire circuitry shall include quick connect/disconnects to allow easy separation and removal of driver.

Wire harnesses shall be protected with a spiral wrap to prevent damage to the wire insulation when operating the power door.

A three-pole terminal block capable of accepting #14 to #6 AWG wire shall be mounted to the housing inside the electrical compartment.

Terminal block shall be capable of operation with a standard #2 flat blade screwdriver. Luminaire shall meet the requirements of Title 47 of the Code of Federal Regulations (CFR), Part 15 – Radio Frequency Devices.

#### **4.3.4. Mounting**

Luminaire shall be designed to mount on a horizontal tenon.

Tenon mounting area opening shall be limited to 1/4-inch over the range of tenon sizes to prevent entrance of wildlife as specified in ANSI C136.37.

#### **4.3.5. Backlight Control**

Luminaire shall be provided with capability for optional, field-installed backlight control.

Backlight control shall be installed using stainless steel fasteners and be provided by the manufacturer. Screw drive type shall be slotted or Phillips.

In addition to required amount, each backlight shield shall be supplied with necessary fasteners.

#### **4.4 Finish**

Luminaire housing finish shall be powder-coated gray.

Painted or finished luminaire components exposed to the environment shall exhibit no peeling or flaking after 2000 hours of salt spray testing.

#### **4.5 Certification and Listing**

Power supply/driver shall be UL recognized for dry and damp locations.

All other electrical components shall be UL listed or recognized for wet locations.

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### **5. Testing**

Test data that establishes compliance with the requirements of this material standard shall be provided upon request.

Certificate of RoHS (European Union Directive 2002/95/EC for Restriction of Hazardous Substance) compliance shall be provided upon request.

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### **6. Design Changes**

Manufacturer shall inform Seattle City Light in writing of all design changes that could affect the product's understood or published capabilities.

## 7. Marking

### 7.1 Internal Labeling

A readily visible label shall be permanently affixed to the inside surface of each luminaire housing.

Internal label shall meet the requirements of ANSI C136.22.

Internal label shall include, but not be limited to, the following information:

- Manufacturer's name and catalog number
- Month and year of manufacture
- Line input voltage
- Frequency if other than 60 Hz
- Driver type (if applicable; may be on driver if readily visible)
- Photocontrol voltage if different from line input voltage
- Lamp type, wattage, and voltage (if applicable; may be on driver if readily visible)
- Descriptive wiring diagram showing input terminals, ballast, capacitors, starting aid, photocontrol receptacle, lamp, and the like, as necessary
- Plant location
- Input power consumption
- Driver output current
- Driver output adjustment
- IEC IP rating
- Correlated color temperature (CCT)
- Serial number
- IES light distribution type
- IESNA TM-15 BUG Rating

### 7.2 External Marking

A readily visible marker shall be permanently affixed to the outside surface of each luminaire housing.

External marker shall meet the requirements of ANSI C136.15. External marker type shall be large per ANSI C136.15.

### 7.3 Component Identification

All UL Listed components shall be labeled or recognized as such.

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## 8. Packaging

Luminaires shall be individually packaged to prevent damage during shipping, inside storage, and casual handling prior to installation.

Each package shall be legibly marked with:

- Manufacturer name
- Manufacturer catalog number
- Product description
- Date of manufacture (month and year)
- Seattle City Light stock number
- Seattle City Light purchase order number

Accessories shall be individually packaged to prevent damage during shipping, inside storage, and casual handling prior to installation.

Each package shall be legibly marked with:

- Product description
- Seattle City Light stock number

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## 9. Issuance

Stock unit: EA

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## 10. Approved Manufacturers

### 10.1 Stock No. 014508, Luminaire

**Manufacturer:** WE-EF Lighting

**Catalog Number:** 661-6255-VFL540-SE-[S70]-48LED-109W-700mA-4K-120-277V-RAL7024-PHOTO-LBL

*where:*

661-6255 = version

VFL540 = product

SE = mounting, horizontal tenon

[S70] = optic, Type 2

48LED = number of LEDs

109W = maximum luminaire wattage

700 mA = driver current of LEDs

4K = correlated color temperature

120-277V = voltage, universal 120–277 V

RAL7024 = color options, silver

PHOTO = NEMA 7-pin photocell receptacle

LBL = label per ANSI C136.15 and ANSI C136.22

### 10.2 Stock No. 014509, House Side Shield

**Manufacturer:** WE-EF Lighting

**Catalog Number:** 661-06051701

**Description:** House side shield for waterfront roadway luminaire. Used to mitigate house-side backlighting problems.

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## 11. Sources

**City of Seattle, Standard Specifications;** Section 9 -31.1(2)-Luminaires

**Federal Communications Commission Title 47 CFT;** Part 15/18, revision 05/10/11;  
[www.fcc.gov](http://www.fcc.gov)

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**IESNA Lighting Handbook;** Chapter 22,9th edition; Roadway Lighting

**IESNA Lighting Ready Reference;** A Compendium of Materials from the IESNA Lighting Handbook; 9th Edition, RR-03 Fourth Edition

**SCL Material Standard 5756.27;** “Steel Streetlight Poles and Arm Assemblies”

**Seattle City Light, Specification for LED Roadway Luminaires;** revised January 4, 2012

**UL 1012 - Power Units Other Than Class 2**

**UL 1310 - Class 2 Power Units**

**UL 2108** - Low Voltage Lighting Systems

**UL 8750** - Light-Emitting Diode (LED) Light Sources for Use in Lighting Products

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