

CITY OF RICHLAND, PUBLIC WORKS  
**MATERIAL SPECIFICATION FOR STREET LIGHTING**

Material Specification: MS-STRTLT

Approved: Clint R. Whitney 3/11/2015  
 Engineering Date

Approved: [Signature] 3/13/15  
 Operations Date

Approved: [Signature] 3/10/15  
 Public Works Date

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REVISIONS

<u>Revision No.</u>	<u>By</u>	<u>Date</u>	<u>Description</u>
1.		01/09/96	General Revision Throughout Specifications
2.		05/24/96	Luminary Model #1 Update
3.		09/09/99	Approved Manufacturers Update
4.	WT	10/31/02	General revision
5.	WT	5/15/10	Approved Manufacturer Update on standards
6.	JRP	3/10/15	Remove HPS luminaires & replace with LED

## 1.0 STREET LIGHT STANDARD

The streetlight standard (pole) shall be as specified in the sections below. Valmont galvanized steel poles are the City standard. Please contact the Public Works Department for assistance in determining which type of pole is appropriate for specific installations. Two pole heights are specified as standard, 30 ft and 40 ft. Two arm lengths are specified as standard: 8 ft and 12 ft. All fasteners and non-aluminum attaching devices shall be galvanized in accordance with ASTM designation A153.

### 1.01 APPROVED MANUFACTURERS

Poles shown in table are current City standards; other poles may be utilized with advanced approval from the Public Works Department.

POLE TYPE	HEIGHT (ft)	ARM LENGTH* (ft)	MANUFACTURE AND MODEL #	BOLT CIRCLE (inch)
GALVANIZED STEEL (ROUND TAPERED)	30	8	Valmont DS32-750A286-8S-GV	10.5
	30	8	Union Metal T71043-Y10	10.5
	40	8	Valmont DS32-900A386-8S-GV	12.5
	40	8	Union Metal T71043-Y15	12.5
	40	12	Valmont DS32-950A386-12S-GV	13
	40	12	Union Metal T71043-Y17	12.5
	30	8	Valmont EM30-850A356-8S-GV-HH	Direct Buried
	30	8	Union Metal 70950-B41-Y3	

\*Typically, the arm length should be selected such that the luminaire will be positioned at the edge of the roadway pavement.

### 1.02 HAND HOLE

A 2-1/4 inch x 7 inch hand hole shall be provided in the pole shaft at a distance of approximately 18 inches above the finished grade. The hand hole shall be positioned on the same side of the pole as the mast arm. Hand hole cover must be steel and secured with screws that require a special tool for their removal.

### 1.03 GROUNDING

Each standard shall be provided with a provision for grounding the pole, mast arm and luminaire with one grounding connection. The grounding means shall be located such that the ground connections can easily be made through the hand hole. Each light standard shall be assembled such that all metallic components of the pole are internally bonded to the grounding means.

## 2.0 LUMINAIRES

Luminaires shall be of the general "cobra-head" style and shall be

designed and constructed to meet the requirements of ANSI C136.37. Light Emitting Diode (LED) luminaires shall be utilized and have an LED life greater than 100,000 hrs. The luminaires shall be constructed to accept mast arms with a 2-inch nominal pipe size (NPS) tenon slip fit attachment. Consult the City Public Works Department, Administration & Engineering Division to determine if glare shields will be required for a given location.

## **2.01 LUMINAIRE CONSTRUCTION**

Luminaire housing shall be cast aluminum and allow tool-less entry. Housing shall be provided with a level bubble to facilitate installation. Luminaire external housing shall have a minimum rating of IP65 as specified in IEC 60529, with the ability to shed water from inside the housing (i.e. weep holes). The luminaire optical chamber shall have a minimum rating of IP66 as specified in IEC 60529.

The luminaire door shall be securely hinged and incapable of involuntary separation from the housing when accessed in field installed position.

Luminaire cooling system shall consist of a passive heat sink with no fans, pumps, or liquids. All fasteners shall be stainless steel and all polycarbonate components shall be UV stabilized. The complete assembly weight shall not exceed 40 lbs.

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

End fitting shall be a slip fit design and shall be capable of accepting 1-1/4 inch through 2 inch diameter mounting arms. Slip fit end shall accept minimum 4-7/8 inch minimum arm penetration.

All incidental hardware shall be of corrosion resistant material.

Luminaire shall accept connection of #6 AWG Aluminum and Copper conductor to power source. Connections shall be made on a terminal block, which is secured, to the housing.

Luminaire shall be supplied fully assembled.

## **2.02 LUMINAIRE MARKING**

Luminaire shall be provided with large type external markings in accordance with the latest revision of ANSI C136.15.

## **2.03 WARRANTY**

Manufacturer of luminaire shall provide a minimum 5 year warranty covering maintained integrity and functionality of:

1. Luminaire housing, wiring, and connections
2. LED light source(s) (Negligible light output from more than 10 percent of the LED packages constitutes luminaire failure)
3. LED driver(s)

Warranty period shall begin 90 days after delivery to the City.

## 2.04 APPROVED LUMINAIRE MANUFACTURERS

The manufacturer's catalog numbers listed below have been pre-approved for use.

ROADWAY CLASSIFICATION	AMERICAN ELECTRIC	LEOTEK	CREE*
PRINCIPAL ARTERIAL	ATB2 60BLEDE10 MVOLT R3 GY NL P7	EC9-30M-MV- NW3-GY-700- PCR7	STR-LWY-3M-HT-11-E- UL-SV-700-IP-40K- DIM-R-UTL
MINOR ARTERIAL	ATB2 40BLEDE10 MVOLT R2 GY NL P7	EC7-20M-MV- NW3-GY-530- PCR7	BXSPA22HL-US-N
COLLECTOR	ATB0 20BLEDE13 MVOLT R2 NL P7	EC4-14M-MV- NW2-GY-530- PCR7	BXSPA22HA-US-N
LOCAL	ATBS F MVOLT R2 NL P7	EC3-10M-MV- NW2-GY-530- PCR7	BXSPA22GA-US-N

\*Must request 7-pin receptacle when ordering models from CREE

## 3.0 PHOTOCONTROL DEVICE

Photocontrol device shall conform to ANSI C136.10-2006 except where modified herein. Assembled photocontrols and each of their individual components shall be designed and constructed to have a nominal life of 20 years.

Photocontrol circuit boards shall be constructed of glass epoxy material and circuit board components shall be protected from the environment with a thin, transparent coating that does not promote heat buildup.

Photocontrol devices must meet the following requirements:

- Color code - Black
- Plug type - Locking, three-pole, three-wire
- Operating voltage range, volts, ac - 105 to 305
- Load rating, LED, minimum, watts - 1,000
- Operating temperature range, ambient, degrees C - -40 to +70
- Turn on response time range, seconds - 0.5 to 5.0
- Turn off response time range, seconds - 0.5 to 5.0
- Turn on light level, fc - 1.5 +/- 0.6
- Turn off light level, fc - 5.1
- Turn off/turn on ration, nominal - 1.5
- Failure mode, nominal - Fail ON

Each photocontrol shall be provided with a means to conveniently and permanently record date of installation and date of removal.

Each photocontrol shall be provided with an internal, 160 joule minimum, metal-oxide varistor (MOV) type surge arrester.

Photocontrols shall be provided with a means of sealing according to the requirements of ANSI C136.10, Section 4.3. Photocontrol base gasket shall be fabricated from a neoprene blend.

Photocontrols shall be tested according to the requirements of ANSI C136.10. Test results shall be provided upon request.

Each individual photocontrol shall be marked with the following information:

- Manufacturer's name
- Model number
- Voltage rating
- Load rating
- North orientation
- Rotation of installation and removal

### 3.01 APPROVED PHOTOCONTROL MANUFACTURERS

The manufacturer's catalog numbers listed below have been pre-approved for use.

RIPLEY LIGHTING CONTROLS	DARK TO LIGHT	SUN-TECH (SUNRISE TECHNOLOGIES, INC.)
6390LL-BK	DLL127-1.5-BK	ES124-W-PJ1.5BK

### 4.0 DISCONNECT

The disconnecting means shall be UL listed and suitable for service entrance equipment. The disconnect shall include overcurrent protection in the form of a circuit breaker and be rated for the maximum available fault current at the installation site. The disconnect will be mounted on a pedestal, as outlined in the technical specification.

#### 4.01 PEDESTAL MOUNTED DISCONNECT

The pedestal and disconnecting means shall be constructed as a one-piece unit and UL Listed as such. Construction shall be NEMA Type 3R with galvanized steel and welded joints. A door capable of being sealed with a padlock shall be provided to conceal the circuit breaker housing. The pedestal post shall incorporate a removable section to assist in the wiring and a barrier to separate the fused and unfused conductors. Height to top of pedestal shall be 3' to 4' above ground. Pedestals shall incorporate stakes, stabilizing feet, or other means to ensure that a permanent and solid installation is achieved. The pedestal shall be capable of accepting (3) 1-1/2inch conduits at a depth of 2' to 3' below grade.

The circuit breaker housing shall incorporate dead front design so that no live wires are exposed when the door is opened. All terminals, including the ground shall be approved for #6 - #2 AWG Copper and Aluminum conductors (the use of high plugs, etc. may be allowed to meet this criteria if approved by the State Electrical

Inspector). The unit shall be rated for minimum of 60 amps continuous duty and a minimum of 10,000 AIC (Amps Interrupting Current) measured RMS symmetrical short circuit (higher short circuit ratings may be necessary depending upon location. Consult the City Electrical Engineering Division).

The following types of combination pedestal/disconnect units shall be considered as meeting the general requirements of this specification. Contractor shall be responsible for verifying that current productions meet these specifications. Other units may be utilized but must be submitted for approval.

- Midwest M101CP6
- Unicorn HP-UP04-Blank

## **5.0 BREAKAWAY SYSTEM**

The installation of a breakaway standard mounting system shall be required on all standards located on arterial and collector streets. The Transpo Industries Inc., Pole-Safe Coupling, Model No. 4100 is currently an approved breakaway system, however it is the installer's responsibility to verify that current productions of this device are approved by the Washington State Department of Transportation as a breakaway device.

## **6.0 WIRING, CONDUIT AND CONNECTIONS**

### **6.01 CONDUCTOR**

Electrical conductors shall be insulated with cross-link polyethylene type USE. Wiring shall be #2 aluminum triplex with a bare #6 copper ground wire for lateral runs and #6 duplex with a bare #6 copper ground wire for runs from the pole base junction box to the luminaire.

### **6.02 CONDUIT**

Conduit shall be 1-1/2 inch schedule 40 gray PVC conforming to NEMA TC-2 and ASTM D1785 specifications. All necessary fittings shall also be schedule 40 gray PVC conforming to NEMA TC-3 specifications. All sweeps must be factory made with a minimum radius of 18 inch. A reduced radius of 8 inch may be used in the light pole base.

### **6.03 JUNCTION BOX**

Underground enclosures, herein referred to as junction boxes (j-boxes) shall be Quazite Composolite #PG1730BA18, junction box cover shall be #PG1730CA00 with logo designation #29 ("LIGHTING" or "STREET LIGHTING"). Cover shall be provided with stainless steel standard pentahead bolt and washer.

### **6.04 LINE CONNECTORS**

Connections for current carrying conductors shall consist of insulated connectors suitable for use with copper and aluminum conductors. The connector shall be suitable for conductor with a size range of #8 - 1/0. Split bolt type connectors are not allowed. All line connectors must be listed as meeting UL 486B. Those connectors to be utilized within the underground junction boxes must also be listed as meeting UL 486D. The UL approved version of the UPP series Eritech ESP connector must be utilized for all

underground junction box applications.

#### **6.05 GROUND SYSTEM COMPONENTS**

Connectors for grounding conductor shall be UL approved and shall be compression or vise type. Split bolt type connectors are not allowed.

- Ground rods shall be 5/8 in X 8 ft copper or copper clad.
- Minimum size grounding conductor shall be #6 soft drawn copper.
- Connectors must be permanent, either bolted or Cadweld.