

**CITY OF BOISE SPECIFICATIONS FOR
LIGHT EMITTING DIODE (LED) STREET LIGHTING
Effective 1 Feb, 2018**

1. LIGHT EMITTING DIODE (LED) LUMINAIRES FOR ROADWAY TYPE 3 ILLUMINATION

A. Testing and Compliance / Manufacturer

1. The luminaire must be listed by a National Recognized Testing Laboratory (NRTL) as defined by the U.S. Department of Labor and recognized by OSHA.
2. A label must be clearly visible on the luminaire that states operating voltage and current range as well as independent third-party testing laboratory approval, i.e. UL, CSA or equivocal.
3. The luminaire must be listed and labeled by a NRTL as being suitable for use in wet locations.
4. The luminaire must have RoHS compliant light source and drivers.
5. The luminaire must be in compliance with Electro Magnetic Interference (EMI) requirements as defined by FCC 47 Sub Part 15.
6. The luminaire must be manufactured in ISO 9001 certified facility or manufacturer must provide a copy of company workmanship standards and or quality control manual.
7. Manufacturer must have product support representation within the Northwest region.
8. Manufacturer must be able to show they have been in business at least two times the length of warranty offered on their product or 10 years, whichever is less.

B. Fixture Construction

1. Housing and heat sink constructed out of Aluminum.
2. All hardware will be corrosion resistant.
3. Fixture will not weight more than 44 lbs. when fully assembled.
4. Design will not trap water.
5. When installed, simple access to internal components; (terminal block, driver surge protector). Approved fixtures for installation are on Attachment "A" listing.
6. Provisions for a 2 or 4-bolt slip fitter type mounting on nominal 2-inch (2 3/8 OD) pipe brackets. Slip fitter mount shall allow 4 inches of the pole bracket to be inserted in the luminaire mounting assembly.

7. The mounting assembly will permit any necessary adjustment to orient the luminaire with the roadway for proper light distribution.
8. Only passive cooling method can be used to manage thermal output of the LED light engine and power supply.
9. Fixture will have a completely sealed optical system with an IP rating of 65 or greater.
10. Fixture to have NEMA Photocontrol receptacle for either NEMA shorting cap or NEMA photo cell.
11. Fixture shall provide a type 3 light distribution pattern.

C. Electrical Requirements

1. Luminaire will fully operate in an ambient temperature range of -30°C to 40°C (-22°F to 104°F).
2. Power supply (electronic driver) will be integral to the fixture.
3. The power supply (electronic driver) will operate within 100 to 300 VAC (rms) at 50/60 hertz.
4. The power supply (electronic driver) will have a power factor of .90 or greater and a total harmonic distortion of 20% or less at full load.
5. The power supply (electronic driver) will have thermal overload protection.
6. A power supply (electronic driver) with a rated life of 70,000 hours with a luminaire operated at an ambient temperature of 25°C (77°F).
7. The power supply (electronic driver) will have self-limited short circuit protected and over load protected.
8. The power supply (electronic driver) will be fully incased with IP rating of 65 or greater.
9. Surge protection device, incorporating a circuit module, internal fusing and MOV's rated to withstand 10kV of transient line surge, separate from the power supply (electronic driver), that can easily be replaced separate from the power supply (electronic driver) but still contained within the housing.
10. A terminal block for terminating pole wiring to the luminaire is required. The terminal block shall be a 3 station, tunnel lug terminal board that will accommodate #6 thru #18 AWG wire.

D. LED Performance Requirements

Shall meet the Chromaticity requirements as follows:

1. The standard color for the LED luminaire shall be white. The colors shall conform to the following color regions based on the 1931CIE chromaticity diagram.
2. Nominal Correlated Color Temperature, CCT = 3000K for Residential and 4000K for Arterial and Collector streets.
3. No more than plus or minus 300 K variance between fixtures to provide a uniform appearance throughout project installations.
4. Must have a minimum Color Rendering Index (CRI) of 70
5. Intensity and Chromaticity must be confirmed by an Independent test lab.
6. The luminaire must have a minimum efficacy of 112 lumens per watt.
7. The luminaire will deliver an average 90% of initial lumens after 60,000 hours of operation based on TM-21 data.

E. Warranty

1. The entire luminaire assembly including material, workmanship, finish, photometrics, labor, power supply, surge protectors, and LED modules will have a minimum of five (5) year warranty from the date of installation.
2. If more than 10% of the individual LEDs fail within the warranty period, the luminaire must be repaired or replaced.

2. LIGHT EMITTING DIODE (LED) LUMINAIRES FOR HISTORIC DECORATIVE ILLUMINATION

A. Testing and Compliance / Manufacturer

1. The luminaire must be listed by a National Recognized Testing Laboratory (NRTL) as defined by the U.S. Department of Labor and recognized by OSHA.
2. A label must be clearly visible on the luminaire that states operating voltage and current range as well as independent third-party testing laboratory approval, i.e. UL, CSA or equivocal.
3. The luminaire must be listed and labeled by a NRTL as being suitable for use in wet locations.
4. The luminaire must have RoHS compliant light source and drivers.
5. The luminaire must be in compliance with Electro Magnetic Interference (EMI) requirements as defined by FCC 47 Sub Part 15.

6. The luminaire must be manufactured in ISO 9001 certified facility or manufacturer must provide a copy of company workmanship standards and or quality control manual.
7. Manufacturer must have product support representation within the Northwest region.
8. Manufacturer must be able to show they have been in business at least two times the length of warranty offered on their product or 10 years, whichever is less.
9. Manufacturer must have website with downloadable specification sheets and photometric IES files.

B. Fixture Construction

1. Housing and heat sink constructed out of Aluminum.
2. All hardware will be corrosion resistant.
3. Fixture will not weight more than 50 lbs. when fully assembled.
4. Design will not trap water.
5. Fixture must be capable of mounting on top of the current approved Boise Historic Light Pole, standard drawing BC SD-8 without any field modification. Current approved poles are on the "Street Light Approved Fixtures" list on the Boise website. Decorative Cast pole drawing BC SD-8.
6. The mounting assembly will permit any necessary adjustment to orient the luminaire with the roadway for proper light distribution.
7. Only passive cooling method can be used to manage thermal output of the LED light engine and power supply.

C. Electrical Requirements

1. Luminaire will fully operate in an ambient temperature range of -30°C to 40°C (-22°F to 104°F).
2. Power supply (electronic driver) will be integral to the fixture.
3. The power supply (electronic driver) will operate within 100 to 300 VAC (rms) at 50/60 hertz.
4. The power supply (electronic driver) will have a power factor of .90 or greater and a total harmonic distortion of 20% or less at full load.
5. The power supply (electronic driver) will have thermal overload protection.

6. A power supply (electronic driver) with a rated life of 70,000 hours with a luminaire operated at an ambient temperature of 25°C (77F).
7. The power supply (electronic driver) will have self-limited short circuit protected and overload protected.
8. The power supply (electronic driver) will be fully incased with IP rating of 65 or greater.
9. Surge protection device, incorporating a circuit module, internal fusing and MOVs rated to withstand 10kV of transient line surge, separate from the power supply (electronic driver), that can easily be replaced separate from the power supply (electronic driver) but still contained within the housing.
10. Connections shall be accomplished using standard connections and fittings, meeting NEC electrical codes. These connections must be robust and utilize vibration resistant mechanisms.

D. LED Performance Requirements

1. Shall meet the Chromaticity requirements as follows:
2. The standard color for the LED luminaire shall be white. The colors shall conform to the following color regions based on the 1931CIE chromaticity diagram.
3. Nominal Correlated Color Temperature, CCT = 5000K
4. No more than plus or minus 300 K variance between fixtures to provide a uniform appearance throughout project installations.
5. Must have a minimum Color Rendering Index (CRI) of 70
6. Intensity and Chromaticity must be confirmed by an Independent test lab.
7. The luminaire must have a minimum efficacy of 115 lumens per watt.
8. The luminaire will deliver an average 90% of initial lumens after 75,000 hours of operation based on TM-21 data.

E. Warranty

1. The entire luminaire assembly including material, workmanship, finish, photometrics, labor, power supply, surge protectors, and LED modules will have a minimum of a ten (10) year warranty from the date of installation.
2. If more than 10% of the individual LEDs within the warranty period the luminaire must be repaired or replaced.