



**SPECIAL PROVISIONS
FOR
STREET LIGHTING**

**Scott County
IM-074-1(226)5--13-82**

**Effective Date
March 17, 2015**

THE STANDARD SPECIFICATIONS, SERIES 2012, ARE AMENDED BY THE FOLLOWING MODIFICATIONS AND ADDITIONS. THESE ARE SPECIAL PROVISIONS AND THEY SHALL PREVAIL OVER THOSE PUBLISHED IN THE STANDARD SPECIFICATIONS.

120299.01 DESCRIPTION.

Furnish all work, apparatus, and materials to construct, install, and place in operation, to the Engineer's satisfaction, a complete highway lighting system as shown in the contract documents.

In the event that rock is encountered and a Type 'A' foundation is not possible, the Engineer will issue a construction change to utilize a Type 'B' foundation.

120299.02 MATERIALS.

Install lighting materials that meet the requirements of Division 41 of the Standard Specifications, except as modified here.

A. Aluminum Poles.

1. Fabricated from ASTM B 221 6063-T6 or 6061-T6 aluminum alloy tube or ASTM B 209 5086-H34 aluminum sheet.
2. Minimum nominal wall thickness of 1/4 inch.
3. Shafts tapered approximately 0.14 inch per foot of length.
4. The pole shall have a finished as noted in the plans.
5. Base castings of ASTM A 356/A 356M-T6 aluminum alloy meeting the requirements of Article 4187.01 of the Standard Specifications.
6. An internal Stockbridge vibration dampener device as recommended by the pole manufacturer and approved by the Engineer shall be included.
7. Blocked and paper or plastic wrapped prior to shipment.

8. All hardware shall be stainless steel.

B. Mast arms and Accessories.

1. When indicated in the contract documents, furnish a single mast arm as luminaire support. The contract documents will state the horizontal span of the mast arm.
2. Furnish mast arms meeting the following requirements:
 - Aluminum tube to match the pole with smooth openings into the pole shaft to provide an electrical raceway.
 - Capable of accommodating a 2 inch slipfitter type luminaire.
 - Type A mast arms: no braces or truss members.
 - Type B mast arms: a single underbrace attached to the mast arm at no less than two locations.
3. C-shaped poles shall be furnished with a luminaire arm tenon(s). The tenon(s) shall have an outside diameter of 2.38 inches for slip fit luminaires.

C. Breakaway Couplings.

1. General.

- a. Breakaway couplings shall be manufactured of galvanized steel. Certification shall be submitted from the supplier that the device used under the conditions of the particular design meets the AASHTO breakaway specification. Certification shall include test results performed by the manufacturer, supplier or others. If test results have been previously approved by a letter from the FHWA, a copy of the approval letter from FHWA should accompany the certification. The coupling shall not alter the bolt circle of the pole.
- b. The breakaway device shall be vandal resistant and shall not adversely affect the light pole installation and maintenance or decrease the resistance of the light pole to non-collision type of design loading. The breakaway device shall be field attachable and detachable.

2. Breakaway Coupling Cover.

- a. The breakaway device shall have a cover enclosing the space between the bottom of the pole base plate and the foundation.
- b. The cover shall be an aluminum skirt of a two piece design made of 3003 H14, or 5052 H32T aluminum alloy, 0.080 inches thick. For the decorative poles, it shall be painted grey to match the poles. The enclosure shall fit snugly around the breakaway devices between the bottom face of the pole base plate and top of the foundation. Vertical or horizontal movement of the enclosure will not be acceptable.

D. Roadway Luminaire, Type A.

The luminaire shall be Lumec Roadstar model #GPLM-130W98LED4K-240-LE3-BL-NP, or approved equal, with the lighting distribution type as noted on the contract documents.

1. Information Required.

Each bidder shall submit with his proposal the following information relative to the luminaire he proposes to furnish:

- a. Outline drawing.
- b. Complete description and weight.
- c. Candlepower distribution curve showing the light distribution in the 70 degree cone and in a vertical plane through the maximum beam.
- d. Isolux curves.
- e. Utilization efficiency charts.
- f. Luminaire efficiency.
- g. Projected area in square feet.

- h. Manufacturer's name and catalogue designation of the luminaire.
- i. IES formatted photometric curve in electronic format.

2. Sample.

One completely assembled luminaire of the manufacture intended to be furnished, shall be submitted upon request of the Engineer within 21 calendar days of such request.

3. Assembly.

Each luminaire shall be delivered completely assembled, wired, and ready for installation. It shall consist of aluminum housing, LED assembly, terminal board-fuse block, driver-door panel, electronic driver, surge protector, fuses, gaskets, slip fitter, and all necessary hardware.

4. Finish.

The luminaire shall have a baked-on enamel finish. Surface texture and paint quality shall be subject to inspection and approval by the Engineer. Color shall be natural aluminum. A paint chip shall be submitted as a sample upon request.

5. Photometric Requirements.

The manufacturer shall demonstrate that the luminaires meets or exceeds the specified photometric requirements. The manufacturer shall provide photometric calculations using published luminaire data as part of the submitted package. The proposal shall contain luminaire photometric performance with results equal to or better than those listed as minimum requirements identified below in this Special Provision. Submittal information shall include computer-analysis based calculations, based on the controlling given conditions which demonstrate achievement of all listed performance requirements. Computer calculations shall be performed for roadway lighting and for sidewalk/parkway lighting. The submitted roadway lighting calculations shall be performed in accordance with the American National Standard Institute (ANSI)/ Illuminating Engineering Society of North American (IESNA) Practice for Roadway Lighting, ANSI/IESNA RP-8-2000, and shall include point-by-point illuminance, veiling luminance, and include a listings of all indicated averages and ratios. The submitted sidewalk/parkway calculations shall be performed in accordance with ANSI/IESNA RP-8-2000 requirements, and shall include point-by-point horizontal illuminance and vertical illuminance as well as listings of all indicated averages and ratios.

Minimum Performance Requirements (0.7 light loss factor):

Roadway Illuminance:	
Average Horizontal	0.9
Uniformity Ratio Av/Min	4:1
Max Veiling Luminance	0.3

The luminaires shall meet the performance requirements for the following physical conditions.

Curb-to-curb	42'
Median width	14'
Number of lanes	1 each direction
Mounting height	30'
Setback	3'
Arm length	8'
Spacing (staggered)	220'
Pavement	R3

E. Roadway Luminaire, Type B.

The luminaire shall be Lumec Capella model #CPLM-130W98LED4K-LE3F-240-COLTX, or approved equal, with the lighting distribution type as noted on the contract documents.

1. Information Required.

Each bidder shall submit with his proposal the following information relative to the luminaire he proposes to furnish:

- a. Outline drawing.
- b. Complete description and weight.
- c. Candlepower distribution curve showing the light distribution in the 70 degree cone and in a vertical plane through the maximum beam.
- d. Isolux curves.
- e. Utilization efficiency charts.
- f. Luminaire efficiency.
- g. Projected area in square feet.
- h. Manufacturer's name and catalogue designation of the luminaire.
- i. IES formatted photometric curve in electronic format.

2. Sample.

One completely assembled luminaire of the manufacture intended to be furnished, shall be submitted upon request of the Engineer within 21 calendar days of such request.

3. Assembly.

Each luminaire shall be delivered completely assembled, wired, and ready for installation. It shall consist of aluminum housing, LED assembly, terminal board-fuse block, driver-door panel, electronic driver, surge protector, fuses, gaskets, slip fitter, and all necessary hardware.

4. Finish.

The luminaire shall have a baked-on enamel finish. Surface texture and paint quality shall be subject to inspection and approval by the Engineer. Color shall be textured gray as specified in the order. A paint chip shall be submitted as a sample upon request.

5. Photometric Requirements.

The manufacturer shall demonstrate that the luminaires meets or exceeds the specified photometric requirements. The manufacturer shall provide photometric calculations using published luminaire data as part of the submitted package. The proposal shall contain luminaire photometric performance with results equal to or better than those listed as minimum requirements identified below in this Special Provision. Submittal information shall include computer-analysis based calculations, based on the controlling given conditions which demonstrate achievement of all listed performance requirements. Computer calculations shall be performed for roadway lighting and for sidewalk/parkway lighting. The submitted roadway lighting calculations shall be performed in accordance with the American National Standard Institute (ANSI)/ Illuminating Engineering Society of North American (IESNA) Practice for Roadway Lighting, ANSI/IESNA RP-8-2000, and shall include point-by-point illuminance, veiling luminance, and include a listings of all indicated averages and ratios. The submitted sidewalk/parkway calculations shall be performed in accordance with ANSI/IESNA RP-8-2000 requirements, and shall include point-by-point horizontal illuminance and vertical illuminance as well as listings of all indicated averages and ratios.

Minimum Performance Requirements (0.7 light loss factor):

Roadway Illuminance:	
Average Horizontal	0.9
Uniformity Ratio Av/Min	4:1
Max Veiling Luminance	0.3

The luminaires shall meet the performance requirements for the following physical conditions.

Curb-to-curb	36'
Number of lanes:	3
Mounting height	25'
Setback	3'
Arm length	3.27'
Spacing (staggered)	150'
Pavement	R3

F. Sidewalk Luminaire.

The luminaire shall be Lumec Capella model #CPLS-60W30LED4K-LE3F-240-COLTX, or approved equal, with the lighting distribution type as noted on the contract documents.

1. Information Required.

Each bidder shall submit with his proposal the following information relative to the luminaire he proposes to furnish:

- a. Outline drawing.
- b. Complete description and weight.
- c. Candlepower distribution curve showing the light distribution in the 70 degree cone and in a vertical plane through the maximum beam.
- d. Isolux curves.
- e. Utilization efficiency charts.
- f. Luminaire efficiency.
- g. Projected area in square feet.
- h. Manufacturer's name and catalogue designation of the luminaire.
- i. IES formatted photometric curve in electronic format.

2. Sample.

One completely assembled luminaire of the manufacture intended to be furnished, shall be submitted upon request of the Engineer within 21 calendar days of such request.

3. Assembly.

Each luminaire shall be delivered completely assembled, wired, and ready for installation. It shall consist of aluminum housing, LED assembly, terminal board-fuse block, driver-door panel, electronic driver, surge protector, fuses, gaskets, slip fitter, and all necessary hardware.

4. Finish.

The luminaire shall have a baked-on enamel finish. Surface texture and paint quality shall be subject to inspection and approval by the Engineer. Color shall be textured gray as specified in the order. A paint chip shall be submitted as a sample upon request.

5. Photometric Requirements.

The manufacturer shall demonstrate that the luminaires meets or exceeds the specified photometric requirements. The manufacturer shall provide published luminaire data as part of the submitted package. The proposal shall contain luminaire photometric performance with results equal to or better than the specified luminaire.

G. Testing.

1. All testing shall be done on a prototype of the actual luminaire to be provided under this Special Provision by an independent testing company. If recent test results are available, they may be considered as meeting the testing requirements of this Special Provision. The Engineer will have the final approval of which tests are adequate.

2. The manufacturer shall be responsible for all costs associated with the specified testing, incidental to this contract.
 - a. Photometric testing shall be in accordance with published IESNA LM-79 lighting measurement testing and calculation guidelines. The photometric tests shall be conducted for the submitted luminaire. The tests, at a minimum, shall yield:
 - An isofootcandle chart with maximum candela and half maximum candela trace.
 - An isocandela diagram.
 - Maximum plane and maximum cone plots of candela.
 - A candlepower table (house and street side).
 - A coefficient of utilization chart.
 - A luminous flux distribution table.
 - b. Electrical and thermal testing shall conform to applicable IESNA, NEMA, ANSI and UL 8750 standards and, at a minimum, shall yield:
 - Total driver losses in watts and percent of input.
 - Regulation data.
 - Power factor.
 - A table of driver characteristics.
 - Operating temperature.
 - c. Lifetime testing. Life testing shall conform to IESNA LM-79, LM-80 and TM-21 standards.

H. Vibration testing in accordance with ANSI Standard C136.31.

Upon completion of the test, all set screws, castings, and components shall be secure and undamaged. For this test the luminaire will not be energized.

I. Warranty.

The manufacturer shall warrant the performance and construction of these luminaires to meet the requirements of this special provision, and shall warrant all parts, components and appurtenances against defects due to design, workmanship or material developing within a period of 5 years after the date of manufacture as indicated on the luminaire. This will be interpreted particularly to mean compatible performance of drivers with LED arrays, failure of any component, failure of more than 5% of the LED's, and discolorations or fogging of the optics impairing the transmission of light. Any luminaire or part thereof, not performing as required, or developing defects within this period shall be replaced by the manufacturer without expense to the City.

120299.03 CONSTRUCTION.

Construction shall be in accordance with ~~Section~~ Article 2523.03 of the Standard Specifications.

120299.04 METHOD OF MEASUREMENT.

Measurement for the quantities of the Lighting Poles will be by count.

120299.05 BASIS OF PAYMENT.

Payment for Lighting Poles will be at the contract unit price per each. Payment is full compensation for materials, equipment, excavation, and installation of the pole, luminaire, mastarm, footing, base, ground rod, wiring within the pole, and connectors within the pole, according to the contract documents.