

## SECTION 16119 - AIRPORT OBSTRUCTION LIGHTS

### PART 1 GENERAL

#### 1.1 RELATED DOCUMENTS

- A. The General Provision of the contract, including the General Provisions for Construction Projects (2016), Special Provisions, and General Requirements of the Specifications, apply to the work specified in this section.
- B. This Section shall be in accordance with FAA Specification Item L-119 – Airport Obstruction Lights, as included as an attachment to this Section.

#### 1.2 SUMMARY

Work under this Section includes the requirements for the construction of airport obstruction lights as shown on the Plans.

#### 1.3 REFERENCES

- A. FAA Specification Item L-119 – Airport Obstruction Lights as modified herein.
- B. Section 16108, Underground Power Cables for Airports
- C. Section 16110, Airport Underground Electrical Duct Banks and Conduits
- D. Section 16115, Electrical Manholes and Junction Structures
- E. American Society for Testing and Materials (ASTM), standards and tests referred to in the attached FAA Specification Items.
- F. American Association of State Highway and Transportation Officials (AASHTO) standards and tests referred to in the attached FAA Specification Items.

#### 1.4 SUBMITTALS

Prior to commencing Work in this Section, the Contractor shall submit the following information as according to Section 01300, Submittals.

- A. Equipment and materials covered by advisory circulars (ACs) shall be certified in AC 150/5345-53, Airport Lighting Equipment Certification Program (ALECP) and listed in the ALECP Addendum.

### PART 2 PRODUCTS

#### 2.1 OBSTRUCTION LIGHTING

Obstruction lights shall conform to Section 16119 Airport Obstruction Lights, FAA Item L-119.

### PART 3 EXECUTION

#### 3.1 OBSTRUCTION LIGHTING

The Contractor install obstruction lights in accordance with FAA Specification Item L-119, modified and as shown on the plans.

### PART 4 MEASUREMENT AND PAYMENT

#### 4.1 METHOD OF MEASUREMENT

- A. Method of measurement and payment shall be in accordance with FAA Specification Item L-119, paragraph 119-4.1.

#### 4.2 BASIS OF PAYMENT

- A. Basis for payment shall be in accordance with FAA Specification Item L-119, paragraph 119-5.1.

### PART 5 ATTACHMENTS

#### 5.1 FAA SPECIFICATIONS

- A. Item L-119, Airport Obstruction Lights

END OF SECTION 16119

## **ITEM L-119 AIRPORT OBSTRUCTION LIGHTS**

### **DESCRIPTION**

**119-1.1** This item shall consist of furnishing and installing obstruction lights per these specifications. Included in this item shall be the furnishing and installing, steel pipes or other supports as required in the plans or specifications and in accordance with the requirements in advisory circular (AC) 70/7460-1, Obstruction Marking and Lighting

This item shall also include all wire and cable connections, the furnishing and installing of all necessary conduits, fittings, including underground distribution and electrical equipment and temporary solar powered obstruction lighting. In addition, it includes the furnishing and installing of all lamps and, if required, the furnishing and installing of insulating transformers, the servicing and testing of the installation and all incidentals necessary to place the lights in operation as completed units to the satisfaction of the RPR.

### **EQUIPMENT AND MATERIALS**

#### **119-2.1 General.**

**a.** Airport lighting equipment and materials covered by specifications shall be certified under AC 150/5345-53, Airport Lighting Equipment Certification Program (ALECP) and listed in the ALECP Addendum.

**b.** All other equipment and materials covered by other referenced specifications shall be subject to acceptance through manufacturer's certification of compliance with the applicable specification when requested by the RPR.

**c.** Manufacturer's certifications shall not relieve the Contractor of the responsibility to provide materials per these specifications. Materials supplied and/or installed that do not comply with these specifications shall be removed (when directed by the RPR) and replaced with materials that comply with these specifications at the Contractor's cost.

**d.** All materials and equipment used to construct this item shall be submitted to the RPR for approval prior to ordering the equipment. Submittals consisting of marked catalog sheets or shop drawings shall be provided. Submittal data shall be presented in a clear, precise and thorough manner. Original catalog sheets are preferred. Photocopies are acceptable provided they are as good a quality as the original. Clearly and boldly mark each copy to identify products or models applicable to this project. Indicate all optional equipment and delete any non-pertinent data. Submittals for components of electrical equipment and systems shall identify the equipment to which they apply on each submittal sheet. Markings shall be made bold and clear with arrows or circles (highlighting is not acceptable). Contractor is solely responsible for delays in the project that accrue directly or indirectly from late submissions or resubmissions of submittals.

**e.** The data submitted shall be sufficient, in the opinion of the RPR, to determine compliance with the plans and specifications. The Contractor's submittals shall be submitted electronically in pdf format, tabbed by specification section. The RPR reserves the right to reject any and all

equipment, materials or procedures that do not meet the system design and the standards and codes, specified in this document.

**f.** All equipment and materials furnished and installed under this section shall be guaranteed against defects in materials and workmanship for at least twelve (12) months from final acceptance by the Owner. The defective materials and/or equipment shall be repaired or replaced, at the Owner's discretion, with no additional cost to the Owner.

**119-2.2 Obstruction lights.** The obstruction lighting assembly shall be Type **L-810(L)** meeting the requirements of AC 150/5345-43, Specification for Obstruction Lighting Equipment. Temporary obstruction lighting shall conform with FAA Engineering Brief No. 76.

**119-2.3 Isolation transformers.** Not Used.

**119-2.4 Transformer housing.** Transformer housings, if specified, shall be per AC 150/5345-42, Specification for Airport Light Bases, Transformer Housings, Junction Boxes, and Accessories.

**119-2.5 Conduit.** Steel conduit and fittings shall be per Underwriters Laboratories Standards 6, 514B, and 1242.

**119-2.6 Plastic conduit (for use below grade only).** Plastic conduit and fittings shall be per:

- UL 514B covers W-C-1094 - Conduit fittings all types, classes 1 through 3 and 6 through 10<sup>SEP</sup>
- UL 514C covers W-C-1094 - all types, class 5 junction box and cover in plastic (PVC)
- UL 651 covers W-C-1094 - Rigid PVC Conduit, types I and II, class 4<sup>SEP</sup>
- UL 651A covers W-C-1094 - Rigid PVC Conduit and high-density polyethylene (HDPE) Conduit type III and class 4

and must be one of the following, as shown on the plans:

**a.** Type I—Schedule 40 PVC suitable for underground use either direct-buried or encased in concrete.

**b.** Type II—Schedule 40 PVC suitable for either above ground or underground use.

**119-2.7 Electrical wire and cable.** For ratings up to 600 volts, moisture and heat resistant thermoplastic wire conforming to Commercial Item Description A-A-59544A, Type THWN-2, shall be used. The wires shall be of the type, size, number of conductors, and voltage shown in the plans or in the proposal. Overhead line wire from pole to pole, where specified, shall be per American National Standards Institute/Insulated Cable Engineers Association (ANSI/ICEA) S-70-547-2007.

**119-2.8 Miscellaneous.** Paint, poles, pole steps, insulators, and all other miscellaneous materials necessary for the completion of this item shall be new and first-grade commercial products. These products shall be as specified in the plans or specifications.

## CONSTRUCTION METHODS

**119-3.1 Placing the obstruction lights.** The Contractor shall furnish and install single-or double-obstruction lights as specified and shown in the plans. The obstruction lights shall be mounted on jet blast deflectors at approximately the location shown in the plans. The exact location shall be approved by the RPR in accordance with AC 70/7460-1, Obstruction Marking and Lighting.

**119-3.2 Installation on poles.** Not Used.

**119-3.3 Installation on beacon tower.** Not Used.

**119 3.4 Installation on Jet Blast Deflector.** Where obstruction lights are to be installed on buildings or similar structures, the installation shall be made per the details shown in the plans. The hub of the obstruction light shall be not less than one foot above the highest point. Conduit supporting the obstruction light units shall be fastened to structures with galvanized steel pipe straps and shall be secured by 1-1/2 inch. Conduit fastened to structural steel shall have the straps held with not less than No. 10 roundhead machine screws in drilled and tapped holes. Fastenings shall be approximately 5 feet apart. Three coats of paint shall be applied (one prime, one body, and one finish coat) with color per Federal Specification 595, international orange, number 12197 paint to all exposed material installed.

**119-3.5 Series isolation transformers.** If it is designed for use in a series lighting circuit, the L-810 series obstruction light does not include a film cutout. Therefore, an isolation transformer is required with each series lamp. Double series units of this type require two isolation transformers. The transformer shall be housed in a light base per paragraph 119-2.4 or buried directly in the earth per the details shown in the plans.

**119-3.6 Wiring.** The Contractor shall furnish all necessary labor and materials. The Contractor shall make complete electrical connections from the underground cable or other source of power per the wiring diagram furnished with the project plans. If underground cable is required for the power feed and if duct is required under paved areas, the cable and duct shall be installed per and paid for as described in Item L-108, Underground Power Cable for Airports, and Item L-110, Airport Underground Electrical Duct Banks and Conduit.

**119-3.7 Lamps.** The Contractor shall furnish and install in each unit one or two lamps that are per the manufacturer's requirements. Provide two lamp sets as spares.

**119-3.8 Tests.** The installation shall be fully tested by continuous operation for not less than 1/2 hour as a completed unit prior to acceptance. These tests shall include the functioning of each control not less than 10 times.

## **METHOD OF MEASUREMENT**

**119-4.1** All work under this section will not be measured for payment.

## **BASIS OF PAYMENT**

**119-5.1** Items covered by this section will be paid by lump sum. The contract price paid shall be for full compensation for furnishing and placing all materials and all labor, equipment, tools, and incidentals necessary for each of the construction phases.

Payment will be made under:

<u>Item No.</u>	<u>Description</u>	<u>Unit</u>
16119.1A	Airport Obstruction Lights (Phases 0 through 3)	Lump Sum

## REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

### Advisory Circulars (AC)

AC 70/7460-1	Obstruction Marking and Lighting
AC 150/5340-30	Design and Installation Details for Airport Visual Aids
AC 150/5345-7	Specification for L-824 Underground Electrical Cable for Airport Lighting Circuits
AC 150/5345-42	Specification for Airport Light Bases, Transformer Housing, Junction Boxes, and Accessories
AC 150/5345-43	Specification for Obstruction Lighting Equipment
AC 150/5345-47	Specification for Series to Series Isolation Transformers for Airport Lighting Systems
AC 150/5345-53	Airport Lighting Equipment Certification Program

### American National Standards Institute / Insulated Cable Engineers Association (ANSI/ICEA)

ANSI/ICEA S-70-547	Standards for Weather-Resistant Polyolefin Covered Connectors Commercial Item Description (CID)
A-A-59544A	Cable and Wire, Electrical (Power, Fixed Installation)

### Federal Standard (FED STD)

FED STD 595	Colors used in Government Procurement
-------------	---------------------------------------

### National Fire Protection Association (NFPA)

NFPA-70	National Electrical Code (NEC)
---------	--------------------------------

### Underwriters Laboratories (UL)

UL Standard 6	Electrical Rigid Metal Conduit – Steel
UL Standard 514B	Conduit, Tubing, and Cable Fittings Nonmetallic Outlet Boxes, Flush-Device Boxes, and Covers
UL Standard 651	Schedule 40, 80, Type EB and A Rigid PVC Conduit and Fittings
UL Standard 651A	Type EB and A Rigid PVC Conduit and HDPE Conduit
UL Standard 1242	Electrical Intermediate Metal Conduit - Steel

**END OF ITEM L-119**

**END OF SECTION 16119**