

SECTION 16125 - INSTALLATION OF AIRPORT LIGHTING SYSTEMS

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-125 – Installation of Airport Lighting Systems, as included as an attachment to this Section.

1.2 SUMMARY

Work under this Section includes the requirements for the installation of airport lighting systems as shown on the Plans.

1.3 REFERENCES

- A. FAA Specification Item L-125 – Installation of Airport Lighting Systems as modified herein.
- B. Section 16108, Underground Power Cable for Airports
- C. Section 16110, Airport Underground Electrical Duct Banks and Conduits
- D. American Society for Testing and Materials (ASTM), standards and tests referred to in the attached FAA Specification Items.
- E. 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 AIRPORT LIGHTING SYSTEMS

Airport lighting systems shall conform to Section 16125 Installation of Airport Lighting Systems, FAA Item L-125.

PART 3 EXECUTION

3.1 INSTALLATION OF AIRPORT LIGHTING SYSTEMS

The Contractor install airport lighting systems in accordance with FAA Specification Item L-125, 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-125, paragraph 125-4.1.

4.2 BASIS OF PAYMENT

- A. Basis for payment shall be in accordance with FAA Specification Item L-125, paragraph 125-5.1.

PART 5 ATTACHMENTS

5.1 FAA SPECIFICATIONS

- A. Item L-125, Installation of Airport Lighting Systems

END OF SECTION 16125

ITEM L-125 INSTALLATION OF AIRPORT LIGHTING SYSTEMS

DESCRIPTION

125-1.1 This item shall consist of airport lighting systems furnished and installed in accordance with this specification, the referenced specifications, and the applicable advisory circulars (ACs). The systems shall be installed at the locations and in accordance with the dimensions, design, and details shown in the plans. This item shall include the furnishing of all equipment, materials, services, and incidentals necessary to place the systems in operation as completed units to the satisfaction of the RPR.

EQUIPMENT AND MATERIALS

125-2.1 General.

a. Airport lighting equipment and materials covered by Federal Aviation Administration (FAA) specifications shall be certified under the Airport Lighting Equipment Certification Program in accordance with AC 150/5345-53, current version. FAA certified airfield lighting shall be compatible with each other to perform in compliance with FAA criteria and the intended operation. If the Contractor provides equipment that does not perform as intended because of incompatibility with the system, the Contractor assumes all costs to correct the system for to operate properly.

b. Manufacturer's certifications shall not relieve the Contractor of their responsibility to provide materials in accordance with these specifications and acceptable to the RPR. Materials supplied and/or installed that do not comply with these specifications shall be removed, when directed by the RPR and replaced with materials, which do comply with these specifications, at the sole cost of the Contractor.

c. All materials and equipment used 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. Clearly mark each copy to identify pertinent products or models applicable to this project. Indicate all optional equipment and delete non-pertinent data. Submittals for components of electrical equipment and systems shall identify the equipment for which they apply on each submittal sheet. Markings shall be clearly made with arrows or circles (highlighting is not acceptable). The Contractor shall be responsible for delays in the project accruing directly or indirectly from late submissions or resubmissions of submittals.

d. 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 in electronic PDF format, tabbed by specification section. The RPR reserves the right to reject any or all equipment, materials or procedures, which, in the RPR's opinion, does not meet the system design and the standards and codes, specified herein.

e. All equipment and materials furnished and installed under this section shall be guaranteed against defects in materials and workmanship for a period of 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.

EQUIPMENT AND MATERIALS

125-2.2 Conduit/Duct. Conduit shall conform to Specification Section 16110, Item L-110 Airport Underground Electrical Duct Banks and Conduits.

125-2.3 Cable and Counterpoise. Cable and Counterpoise shall conform to Section 16108, Item L-108 Underground Power Cable for Airports.

125-2.4 Tape. Rubber and plastic electrical tapes shall be Scotch Electrical Tape Numbers 23 and 88 respectively, as manufactured by 3M Company or an approved equal.

125-2.5 Cable Connections. Cable Connections shall conform to Section 16108, Item L-108 Installation of Underground Cable for Airports.

125-2.6 Retroreflective Markers. Retroreflective markers shall be type L-853 and shall conform to the requirements of AC 150/5345-39.

125-2.7 Runway and Taxiway Lights. Runway and taxiway lights shall conform to the requirements of AC 150/5345-46. Lamps shall be of size and type indicated, or as required by fixture manufacturer for each lighting fixture required under this contract. Filters shall be of colors conforming to the specification for the light concerned or to the standard referenced.

Lights

Type	Class	Mode	Style	Option	Base	Filter	Transformer	Notes
L-861T (L)	2	1	-	4	L-867B	Blue	L-830, per manufacturer	-
L-852T (L)	2	1	3	-	L-868B	Blue	L-830, per manufacturer	Low protrusion, reinforced top cover, (4) protected prisms
L-862 (L)	2	1	-	4	L-867B	White/White	L-830, per manufacturer	-
L-862 (L)	2	1	-	4	L-867B	Yellow/Red	L-830, per manufacturer	-
L-862 (L)	2	1	-	4	L-867B	Red/White	L-830, per manufacturer	-
L-850A (L)	2	1	3	-	L-868B	White/White	L-830, per manufacturer	-
L-850A (L)	2	1	3	-	L-868B	Yellow/White	L-830, per manufacturer	-

Type	Class	Mode	Style	Option	Base	Filter	Transformer	Notes
L-850A (L)	2	1	3	-	L-868B	Yellow/Red	L-830, per manufacturer	-
L-861E (L)	2	1	-	4	L-867B	Blank/Red	L-830, per manufacturer	-
L-862E (L)	2	1	-	4	L-867B	Blank/Green	L-830, per manufacturer	-
L-861E (L)	2	1	-	4	L-867B	Green/Red	L-830, per manufacturer	-
L-862E (L)	2	1	-	4	L-867B	Green/Red	L-830, per manufacturer	-
L-852D (L)	2	1	3	-	L-868B	White/White	L-830, per manufacturer	-
L-852D (L)	2	1	3	-	L-868B	Yellow/White	L-830, per manufacturer	-
L-852D (L)	2	1	3	-	L-868B	Yellow/Red	L-830, per manufacturer	-
L-861 (L)	2	1	-	4	L-867B	White/White	L-830, per manufacturer	
L-861 (L)	2	1	-	4	L-867B	Yellow/White	L-830, per manufacturer	
L-861 (L)	2	1	-	4	L-867B	Yellow/Red	L-830, per manufacturer	

125-2.8 Runway and Taxiway Signs. Runway and Taxiway Guidance Signs should conform to the requirements of AC 150/5345-44.

Signs

Type	Size	Style	Class	Mode	Notes
L-858Y (L)	3	2	1	2	With gecko box
L-858R (L)	3	2	1	2	With gecko box
L-858L (L)	3	2	1	2	With gecko box

Type	Size	Style	Class	Mode	Notes
L-858B (L)	3	2	1	2	With gecko box
L-858B (L)	3	3	1	2	With gecko box
L-858C	72"	4	1	1	-

125-2.9 Runway End Identifier Light (REIL). The REIL fixtures shall meet the requirements of AC 150/5345-51, Type L-849V (L), Style E

125-2.10 Precision Approach Path Indicator (PAPI). The light units for the PAPI shall meet the requirements of AC 150/5345-28, Type L-880 (L), Style A, Class I and with heater.

125-2.11 Circuit Selector Cabinet. Not Used.

125-2.12 Light Base and Transformer Housings. Light Base and Transformer Housings should conform to the requirements of AC 150/5345-42. Light bases shall be Type L-867 or L-868, Class 2A, Size B shall be provided as indicated or as required to accommodate the fixture or device installed thereon. Base plates, cover plates, and adapter plates shall be provided to accommodate various sizes of fixtures.

125-2.13 Isolation Transformers. Isolation Transformers shall be Type L-830, size as required for each installation. Transformer shall conform to AC 150/5345-47.

125-2.13 L-824 Series Circuit Cutover Cabinet. L-824 series circuit cutover cabinet shall be type Nema 12, hinged with lockable hasp and drip shield. Cabinet shall be equipped with cable and L-823 connector support, sized to accommodate disconnection and reconnection of L-823 connectors to airfield lighting circuits. Sufficient slack of L-824 cable shall be provided to allow the reconnection of any circuits within the cabinet.

125-2.13 Constant Current Regulator (CCR). CCR's shall be ferroresonant FAA L-829 with integral distributed control and monitoring unit (DCMU) and series cutout. CCR's shall be equipped with insulation resistance and monitoring system (IRMS) and input current, voltage monitoring (CVM).

INSTALLATION

125-3.1 Installation. The Contractor shall furnish, install, connect and test all equipment, accessories, conduit, cables, wires, buses, grounds and support items necessary to ensure a complete and operable airport lighting system as specified here and shown in the plans.

The equipment installation and mounting shall comply with the requirements of the National Electrical Code and state and local code agencies having jurisdiction.

The Contractor shall install the specified equipment in accordance with the applicable advisory circulars and the details shown on the plans.

125-3.2 Testing. All lights shall be fully tested by continuous operation for not less than 24 hours as a completed system prior to acceptance. The test shall include operating the constant current regulator in each step not less than 10 times at the beginning and end of the 24-hour test. The fixtures shall illuminate properly during each portion of the test.

125-3.3 Shipping and Storage. Equipment shall be shipped in suitable packing material to prevent damage during shipping. Store and maintain equipment and materials in areas protected from weather and physical damage. Any equipment and materials, in the opinion of the RPR, damaged during construction or storage shall be replaced by the Contractor at no additional cost to the owner. Painted or galvanized surfaces that are damaged shall be repaired in accordance with the manufacturer's recommendations.

125-3.4 Elevated and In-pavement Lights. Water, debris, and other foreign substances shall be removed prior to installing fixture base and light.

A jig or holding device shall be used when installing each light fixture to ensure positioning to the proper elevation, alignment, level control, and azimuth control. Light fixtures shall be oriented with the light beams parallel to the runway or taxiway centerline and facing in the required direction. The outermost edge of fixture shall be level with the surrounding pavement. Surplus sealant or flexible embedding material shall be removed. The holding device shall remain in place until sealant has reached its initial set.

METHOD OF MEASUREMENT

125-4.1 Airport Lighting Systems will not be measured for payment, but paid for as a lump sum.

125-4.2 REILs and PAPI at Runway 3 End will not be measured for payment, but paid for as a lump sum.

125-4.3 Infrastructure for REILS and PAPI at Runway 21 End will not be measured for payment, but paid for as a lump sum.

BASIS OF PAYMENT

125-5.1 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 system, complete-in-place and fully operational, and in accordance with the Plans and Specifications.

Payment for "Infrastructure for REILS and PAPI at Runway 21 End" shall be full compensation for the Contractor to install the required infrastructure as shown in the FAA drawings and specifications, which includes but is not limited to; foundations for the Runway 21 REILS and PAPI, underground conduits, manholes, handholes, and access roads. The FAA will be responsible for the installation of the NAVAID equipment, electrical conductors and cables, and commissioning of the systems.

Payment will be made under:

<u>Item No.</u>	<u>Description</u>	<u>Unit</u>
16125.1A	Airport Lighting Systems (Phases 0 through 3)	Lump Sum

16125.2A	REILS and PAPI at Runway 3 End (Phases 0 through 3)	Lump Sum
16125.2B	REILS and PAPI at Runway 3 End (Phase 4)	Lump Sum
16125.3A	Infrastructure for REILS and PAPI at Runway 21 End (Phases 0 through 3)	Lump Sum
16125.3B	Infrastructure for REILS and PAPI at Runway 21 End (Phase 4)	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 150/5340-18	Standards for Airport Sign Systems
AC 150/5340-26	Maintenance of Airport Visual Aid Facilities
AC 150/5340-30	Design and Installation Details for Airport Visual Aids
AC 150/5345-5	Circuit Selector Switch
AC 150/5345-7	Specification for L-824 Underground Electrical Cable for Airport Lighting Circuits
AC 150/5345-26	Specification for L-823 Plug and Receptacle, Cable Connectors
AC 150/5345-28	Precision Approach Path Indicator (PAPI) Systems
AC 150/5345-39	Specification for L-853, Runway and Taxiway Retroreflective Markers
AC 150/5345-42	Specification for Airport Light Bases, Transformer Housings, Junction Boxes, and Accessories
AC 150/5345-44	Specification for Runway and Taxiway Signs
AC 150/5345-46	Specification for Runway and Taxiway Light Fixtures
AC 150/5345-47	Specification for Series to Series Isolation Transformers for Airport Lighting Systems
AC 150/5345-51	Specification for Discharge-Type Flashing Light Equipment
AC 150/5345-53	Airport Lighting Equipment Certification Program

Engineering Brief (EB)

EB No. 67	Light Sources Other than Incandescent and Xenon for Airport and Obstruction Lighting Fixtures
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END OF ITEM L-125

END OF SECTION 16125