

LED L-858(L) SIGN

ITEM L-125 INSTALLATION OF LED L-858(L) SIGNS

DESCRIPTION

125-1.1 This item shall consist of furnishing and installing the L-858(L) guidance signs in accordance with these specifications.

This item shall also include all wire and cable connections, the furnishing and installing of all necessary conduits and fittings and all necessary mounting structures. It shall also include the testing of the installation and all incidentals necessary to place the signs in operation as completed units to the satisfaction of the Engineer.

DEFINITION FOR WAIVER

125-1.2 To meet FAA AIP fund requirements for specific type equipment, a waiver may need to be in place to specify the use of LED illuminated L-858(L) guidance signs, for energy efficiency requirements on a project. In accordance with CFR Title 49 Part 18.36:

(7) Grantees and subgrantees are encouraged to use value engineering clauses in contracts for construction projects of sufficient size to offer reasonable opportunities for cost reductions. Value engineering is a systematic and creative analysis of each contract item or task to ensure that its essential function is provided at the overall lower cost.

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(13) Mandatory standards and policies relating to energy efficiency which are contained in the state energy conservation plan issued in compliance with the Energy Policy and Conservation Act (Pub. L. 94-163, 89 Stat. 871).

The initial cost of signs in excess of incandescent illuminated airfield signs is more than recovered over the lifetime of the sign. The power consumption for the LED-L858(L) represents a 75% reduction on average from traditional incandescent illumination. Add to this the replacement cost of incandescent lamps with labor and the reduced VA size requirement for Constant Current Regulators, the LED L-858(L) signs more than meet the 20% increase in efficiency set forth by the Energy Policy and Conservation Act.

EQUIPMENT AND MATERIALS

125-2.1 L-858. The LED L-858(L) signs shall conform to the requirements of FAA Advisory Circular 150/5345-44 (latest revision) "Specification for Runway and Taxiway Signs" and FAA LED "Engineering Brief No. 67" (current edition), and be certified to these specifications by Intertek ETL (the FAA designated technical review agency.)

125-2.2 EQUIPMENT SUPPLIED. Each LED airfield sign shall consist of one FAA LED L-858(L) Y, L, R, or B. Each lot shipment of LED L-858(L) signs shall include two Instruction Manuals

125-2.3 L-858(L) SIGN. The Type L-858(L) signs shall be *{Size 1 (18" face and 12" legend) Size 2 (24" face and 15" legend) Size 3 (30" face and 18" legend) Size 4 (48" face and 40" legend) Size 5 (30" face and 25" legend)}*. To insure reduced energy and maintenance requirements, the L-858(L) sign light source shall be illuminated by a Light Emitting Diode (LED) assembly. Signs shall be *{Style 2 (4.8A-6.6A) Style 3 (2.8A-6.6A) Style 5 (5.5A)}*.

The LED power supply circuit in each sign shall output a regulated DC voltage. To maximize maintenance personnel safety, there should be no more than 51V DC at any point inside the sign. The LED power supply circuit shall not require field calibration or adjustment. For maximum efficiency the LED L-858 sign shall have an input Power Factor >0.9. The VA loading requirements should be below the maximums listed in the table below:

| L-858(L) Size | 1 Module | 2 Module | 3 Module | 4 Module |
|------------------|-------------|-------------|-------------|-------------|
| Size 1 | 38 | 40 | 47 | 55 |
| Size 2 | 38 | 47 | 58 | 65 |
| Size 3 | 40 | 55 | 65 | 77 |
| Size 4 | 40 | | | |
| Size 5 | 40 | | | |

To provide the greatest power savings on the project, the total VA load of the LED L-858(L) equipment should be such that a lower KW value Constant Current Regulator(s) may be used. All bids should be compared for maximum energy savings by comparing the total VA loads of the L-858(L) equipment and preference should be for the bid with the lowest total VA.

To insure maximum pilot visibility, the LED L-858(L) sign shall have illumination uniformity exceeding the minimum FAA specifications. The measured points on the panel are defined in AC 150/5345-44 par. 4.1.1.3. Measurements must be made on a 3 in. grid over the entire face of the sign, with no measurement closer than 3 in. to the sign frame. The average of all measurements must be between 10 and 30 fL. The ratio between maximum and minimum luminance over the whole sign face must not exceed 5:1. Adjacent grid measurements must not exceed a 1.5:1 luminance ratio.

It is preferred that the signs be accessible using a “no tools required” fastener that secures entry to the sign, providing easy field maintenance and reduced repair or refurbishment costs. The signs *{Size 1, Size 2 & Size 3}* shall be modular in design and be capable of being lengthened or shortened to accommodate legend changes. The signs shall be Mode 2 – able to withstand wind loads of 200 mph (322 kph) minimum. The sign floor flange should have only two mounting holes to minimize installation cost and use fewer anchor bolts.

CONSTRUCTION METHODS

125-3.1 PLACING THE LED L-858(L) SIGNS. The contractor shall furnish and install each LED L-858(L) sign as specified in the proposal and shown in the plans. The L-858(L) shall be mounted on concrete pads at the location shown on the plans.

125-3.2 TESTS. The sign system shall be fully tested by continuous operation for not less than 24 hours as a completed system prior to acceptance.

METHOD OF MEASUREMENT

125-4.1 MEASUREMENT. The quantity of lights to be paid for under this item shall be for each LED L-858(L) sign, with one tether per module, and one Instruction Manual (per lot) installed and accepted as completed units, in place, ready for operation.

BASIS FOR PAYMENT

125-5.1 PAYMENT. Payment will be made at the contract unit price for the completed total quantity of L-858(L) signs installed, in place by the Contractor, and accepted by the Engineer. This price shall be full compensation for furnishing all materials and for all preparation, assembly, and installation of these materials, and for all labor, equipment, tools, and incidentals necessary to complete this item.

Payment will be made under:

- Item L-125-5.1 LED L-858(L) Size 4 signs, in Place—per each
- Item L-125-5.2 LED L-858(L) Size 1 signs, in Place—per each
- Item L-125-5.3 LED L-858(L) Size 2 signs, in Place—per each
- Item L-125-5.4 LED L-858(L) Size 3 signs, in Place—per each
- Item L-125-5.5 LED L-858(L) Size 5 signs, in Place—per each

END OF ITEM L-125