MICHIGAN DEPARTMENT OF TRANSPORTATION
BUREAU OF AERONAUTICS-STANDARD SPECIFICATION
L-125, Subpart "A"
Runway and Taxiway Edge Lighting Systems
(Based on AC 150/5340-24)

DESCRIPTION

1.1. This work shall consist of furnishing and installing elevated runway and taxiway edge lights as specified in the plans and this subpart.

Support equipment and installation such as cable, duct, vault and control equipment, are covered under other specifications as listed in L-125-1.1.

EQUIPMENT AND MATERIALS

2.1 **Commercial Equipment**. Equipment and materials used, which do not have FAA specification numbers, shall be suitable for the intended use and shall meet the specifications and descriptions shown in the plans. Electrical equipment shall bear the Underwriters' Laboratories label.

2.2 **Light Fixtures**. Light fixtures shall conform to Advisory Circular (AC) 150/5345-48 as follows:

System	Light Fixture Specification	
	Edge	Threshold
HIRL	*L-862	L-862
MIRL	L-861	L-861 SE
		**L-861 E
LIRL	L-860	L-860 E
MITL	L-861 T	
LITL	L-860 T	

* If semiflush lights are specified, type L-850-C light fixtures conforming to AC 150/5345-46, as specified in subpart "D" shall be used.

** Used when approach aids are established on runway end.

2.3 **Isolation Transformers**. Isolation transformers for use in series circuits, shall be type L-830 conforming to AC 150/5345-47, and shall be of the rating shown in the plans.

2.4 **Cable Connectors**. Cable connectors for use in series circuits shall be type L-823 connectors conforming to AC 150/5345-26. For parallel circuits, connectors shall conform to specification L-108, Installation of Underground Cable for Airports, and as detailed in paragraph 125A-3.3c.(2).

2.5 **Light Base and Transformer Housing**. Light bases and transformer housings shall be type L-857 conforming to AC 150/5345-42. A 12 inch (300 mm), type I, shall be used for elevated light fixtures.

2.6 **Concrete**. Concrete shall conform to specification P-610, Structural Portland Cement Concrete.

INSTALLATION

3.1 **Base Mounted Light Fixtures**. The light base shall be installed on undisturbed soil at the specified location.

If the soil is unsuitable, then an adequate depth of soil shall be removed and replaced with compacted acceptable material. The cable entrance hubs are oriented as indicated in the plans. Level the light base so the mounting

flange surface is approximately one inch above the finished grade. When the base is properly oriented and held at the proper elevation, place concrete backfill around the base in the configuration shown in the plans. The top of the concrete shall be sloped away from the flange portion of the base so the sloped outer edge of the concrete is at finished grade. If specified in the plans, a drain hole shall be constructed in the light base and concrete envelop. If semiflush lights are required, they shall be installed in accordance with subpart "D" of this specification.

3.2 Stake (Angle Iron) Mounted Fixtures. Stake mounted fixtures shall be installed in a six inch (150 mm) diameter hole to a depth of 30 inches (750 mm) at the specified location. The angle iron shall not be installed by driving. Unless otherwise specified, backfill around the stake with concrete of the configuration and to the depth shown in the plans. If specified, use a permeable backfill material, such as sand, around the buried electrical components and then cover the top surface with an impervious material to reduce moisture penetration and frost heave. Install the top of the stake even with, or not more than one-half inch (15 mm) above, the finished grade and maintain within one degree of vertical.

3.3 Light Fixture Installation.

(a) **General**. The light fixtures are supplied unassembled and consist of an optical system, lamp, connecting leads and a mounting assembly. Installation of the mounting assembly is discussed in paragraphs 125A-3.1 and 125A-3.2. The contractor shall assemble, connect to mounting, level and adjust the light fixture in accordance with the manufacturer's instructions. Care shall be taken that the lamp, specified by the manufacturer for the particular light fixture use, is installed. Lamp wattages shall be as specified in the plans. The light fixtures shall be leveled and aligned, where appropriate, within one degree. Unless otherwise specified, the maximum height of the top of the elevated light fixture is 14 inches (350 mm) above finished grade. Breakable couplings shall be installed a maximum of two inches (50 mm) above finished grade.

(b) **Base Mounted Light Fixtures**. Prior to mounting the light fixture on the base, an L-823 connector kit shall be installed on the primary power cable ends in accordance with manufacturer's instructions. The specified L-830 isolation transformer shall be installed in the base. The primary cable/isolation transformer connection shall be wrapped with at least one layer of rubber or synthetic tape and one layer of plastic tape, one-half lapped, and extending at least 1½ inches (40 mm) on each side of the joint. The light fixture disconnecting plug shall be plugged into the transformer secondary receptacle, but shall not be taped.

(c) **Stake Mounted Light Fixtures**.

1. **Series System**. Transformer connections shall be made as detailed in paragraph 125A-3.3b. Cable connectors shall not be attached to the mounting stake. Primary cable connectors, splices and transformers shall be installed at a depth of at least 10 inches (250 mm), or as otherwise specified in the plans, and in the same horizontal plane as the primary cable with adequate slack provided as shown in the plans. The radius of cable bends shall not be less than 10 inches (250 mm). The secondary lead from the transformer to the lamp socket shall be placed in a loose spiral with excess slack at the bottom.

2. **Parallel (Multiple) System**. Connections of the lighting fixture pigtail leads to the primary cable shall be made with taped "T" splices. The "T" splice shall be made as follows: Remove the overall jacket for a distance of six inches (150 mm) from the light fixture pigtail lead. Remove the insulation for three inches (75 mm) from each of the two

pigtail conductors and thoroughly clean the bare copper wire. Remove the jacket and insulation from a section of the underground supply cable by penciling the jacket and insulation so as to expose one-half inch (15 mm) of bare conductor. Tightly wrap one of the bare pigtail wires around the bare section of the supply cable and make a soldered connection. Apply high-voltage rubber tape, one-half lapped over the bare wires. Proceed to continuously build up the tape over the entire "T" splice section to 1½ times the cable diameter. Apply the tape with ends tapered a distance of approximately one inch (25 mm) over the original jackets of the feeder and the pigtail. Take care when applying the tape to seal the area where the two conductors emerge from the overall jacket of the pigtail. Repeat this procedure with the second conductor of the pigtail and the remaining feeder wire. Apply double wrapping of plastic tape over the entire splice to give added mechanical protection. Glyptal or lacquer should not be use over vinyl plastic tape as they react as a solvent to the tape.

3.4 Direct Burial Cable and Counterpoise Wire. Primary cable and counterpoise wire shall be installed in trench and duct in accordance with specification L-108. Primary cable ends shall be sealed during construction to prevent the entrance of moisture. When base mounted lights are specified, at least 2 feet (600 mm) of slack cable shall be provided in the base to permit connection of the primary cable and isolation transformer above ground. Bare counterpoise wire, when included in the project, shall be securely bonded to light bases and mounting stakes as specified in the plans.

INSPECTION AND TESTS

4.1 System Inspection. The contractor shall perform the following inspections and checks in addition to those listed in L-125-3.3b:

(a) Check all light fixtures with asymmetrical lenses to determine they are properly oriented with respect to the runway longitudinal sides and the threshold. All lights shall be checked for alignment.

(b) Inspect each base plate of base mounted fixtures for damage during installation and refinish according to manufacturer's instructions.

(c) Check the current or voltage at the lamps to determine if the regulator current or supply voltage is within specified tolerance. If current or voltage exceeds tolerances, lamp life will be reduced.

4.2 System Tests. The contractor shall perform the system tests listed in L-125-3.3c.

METHOD OF MEASUREMENT

5.1 The method of measurement shall be as specified in L-125-4.1.

BASIS OF PAYMENT

6.1 The basis of payment shall be as specified in L-125-5.1.

Payment will be made under the nomenclature and seven digit item number specified in the plans and proposal for each type of light unit required - - - - per each.