# 660. Lighting Visual Aids



## 660.1. Introduction

The elements of miscellaneous visual aids are described in AC 150/5340-21, Airport Miscellaneous Lighting Visual Aids.

## 660.2. Unpaved Runway and Taxiway Edge Marking

For unpaved runways, the Department requires airport designers to use the following standards for runway and taxiway markers.

### *660.2.1 Runway Threshold Marking*

On lighted runways, the use of reflective markers (cones, flexible stakes or wands) is optional. The guidance in this subsection for placement of reflective markers on lighted runways applies when the designer determines augmentation of runway lighting is desirable. Consider installation of reflective markers in combination with lighting on airports with unreliable electrical power sources.

The use of cones over lights may be undesirable at some airports. Consult airport administrators and maintenance personnel to determine if use of cones over lights is desirable.

**Unlighted Runways**

*Threshold cone markers:* On unlighted runways, use reflective cone markers to mark the runway threshold.

1. Place three cone markers on each side of a threshold, for a total of six markers on each end.
2. Place the markers in a line perpendicular to the extended runway centerline and 10 feet from the designated runway threshold. Place the innermost threshold cone marker in line with the runway edge markers. Space the remaining threshold cone markers evenly at 10-foot intervals outbound from the runway (Figure 660-1).
3. Use markers that do not exceed 30 inches in height.
4. Use reflective cone markers with 180-degree green and 180-degree red reflective bands. Position the markers so that only the red color is visible from the runway side, and only green is visible from the approach path. Use a reflective band made of high-intensity sheeting of sufficient width to meet FAA specifications for reflective markers (AC 150/ 5345-39B for reflectivity specifications).

**Lighted Runways**

*Threshold lights:* Identify runway threshold by lighting.

1. On a runway used exclusively for visual operations, use six lights on each end (three on each side); on an instrumented runway, use eight lights on each end (four on each side). We advise using eight lights on each end whenever it is likely that a navigation aid and commissioned approach may be put in service at the airport.
2. Place threshold lights in a line perpendicular to the extended runway centerline and 10 feet from the designated runway threshold. Place the innermost runway threshold light in line with the runway edge lights, and space the remaining lights evenly at 10-foot intervals outbound from the runway (Figure 660-1).
3. Use threshold lights with green and red split lenses. Position the lights so that only the red color is visible from the runway side, and only green is visible from the approach path.

*Threshold cone markers:* On lighted runways, use reflective cone markers in conjunction with lights to identify the runway threshold.

1. Place a reflective cone marker over the top of each light so the light protrudes from the top of the cone marker (Figures 660-1, 2, and 3).
1. Use reflective cone markers with 180-degree green and 180-degree red reflective bands. Position the markers so that only the red color is visible from the runway side, and only green is visible from the approach path. Use a reflective band made of high-intensity sheeting of sufficient width to meet FAA specifications for reflective markers (AC 150/5345-39B for reflectivity specifications).

**Lighted and Unlighted Runways**

*Reflective threshold markers:* Mark the ends of lighted and unlighted runways with reflective threshold markers.

1. Use five markers on each side of a threshold, for a total of ten markers on each end (Figures 660-1 and 2).
2. Place the markers perpendicular to the runway centerline and space them at 1.7-foot intervals between the first two runway threshold cone markers or cone markers with lights (Figures 660-1 and 2). Use markers consisting of flexible posts, not to exceed 30 inches in height, covered by reflectivity enhancers.
3. Use orange markers with a 180-degree green reflective band toward the approach path and a 180-degree red reflective band toward the runway (Figure 660-1). Use reflective bands made of high intensity sheeting of sufficient width to meet FAA specifications for reflective markers (AC 150/5345-39B for reflectivity specifications).

### *660.2.2 Runway Edge Marking*

**Unlighted Runways**

*Reflective edge markers:* Cones, flexible posts, wands, or other frangible markers are a visual substitute for lights. Position them similarly to runway edge lights (AC 150/5340-24).

1. Line each side of the runway with a row of reflective edge markers. Place each row of edge markers parallel to the centerline and from 2 feet and 10 feet outside the edge of the designated runway. Use equidistant longitudinal spacing not to exceed 200 feet, in accordance with AC 150/5340-24. Place markers from one edge row directly across from the markers on the opposite edge row.
2. The area between the edge of the designated runway and the markers must support an aircraft's weight without causing damage to the aircraft. If the area between the markers and the edge of the designated runway cannot support an aircraft, place the markers on the edge of the designated runway.
3. Use markers that are frangible and are not less than 14 inches or more than 30 inches in height (Figure 660-4).

Use white reflective bands made of high intensity sheeting of sufficient width to meet FAA specifications for reflective markers (AC 150/5345-39B for reflectivity specifications).

**Lighted Runways**

*Combination reflective edge markers and lights:* Where runway lights are in place, install markers, as detailed in the previous section, either on the light (Figure 660-3) or slightly outboard (Figure 660-4). Use reflective bands that match the color of the runway lights (yellow/white) as appropriate. Install runway lights as per AC 150/5340-24.

### *660.2.3 Taxiway Edge Marking*

**Unlighted Taxiways**

*Reflective edge markers:* Cones, flexible posts, wands, or other frangible markers are a visual substitute for lights. Position them similarly to taxiway edge lights (AC 150/5340-24).

1. Line each side of the runway with a row of reflective edge markers. Place each row of edge markers parallel to the centerline and from 2 feet and 10 feet outside the edge of the designated taxiway. Use equidistant longitudinal spacing not to exceed 200 feet, in accordance with AC 150/5340-24. The longitudinal spacing of the markers is influenced by the physical layout of the taxiway.
2. The area between the edge of the designated taxiway and the markers must support an aircraft's weight without causing damage to the aircraft. If the area between the markers and the edge of the designated taxiway cannot support an aircraft, place the markers on the edge of the designated taxiway.
3. Use markers that are frangible and are not less than 14 inches or more than 30 inches in height (Figure 660-4).
4. Use blue reflective bands made of high intensity sheeting of sufficient width to meet FAA specifications for reflective markers (AC 150/5345-39B for reflectivity specifications).

**Lighted Taxiways**

*Combination reflective markers and lights:* Where taxiway lights are in place, install markers, as detailed in the previous section, either on the light

(Figure 660-3) or slightly outboard (Figure 660-4).
Install taxiway lights as per AC 150/5340-24.

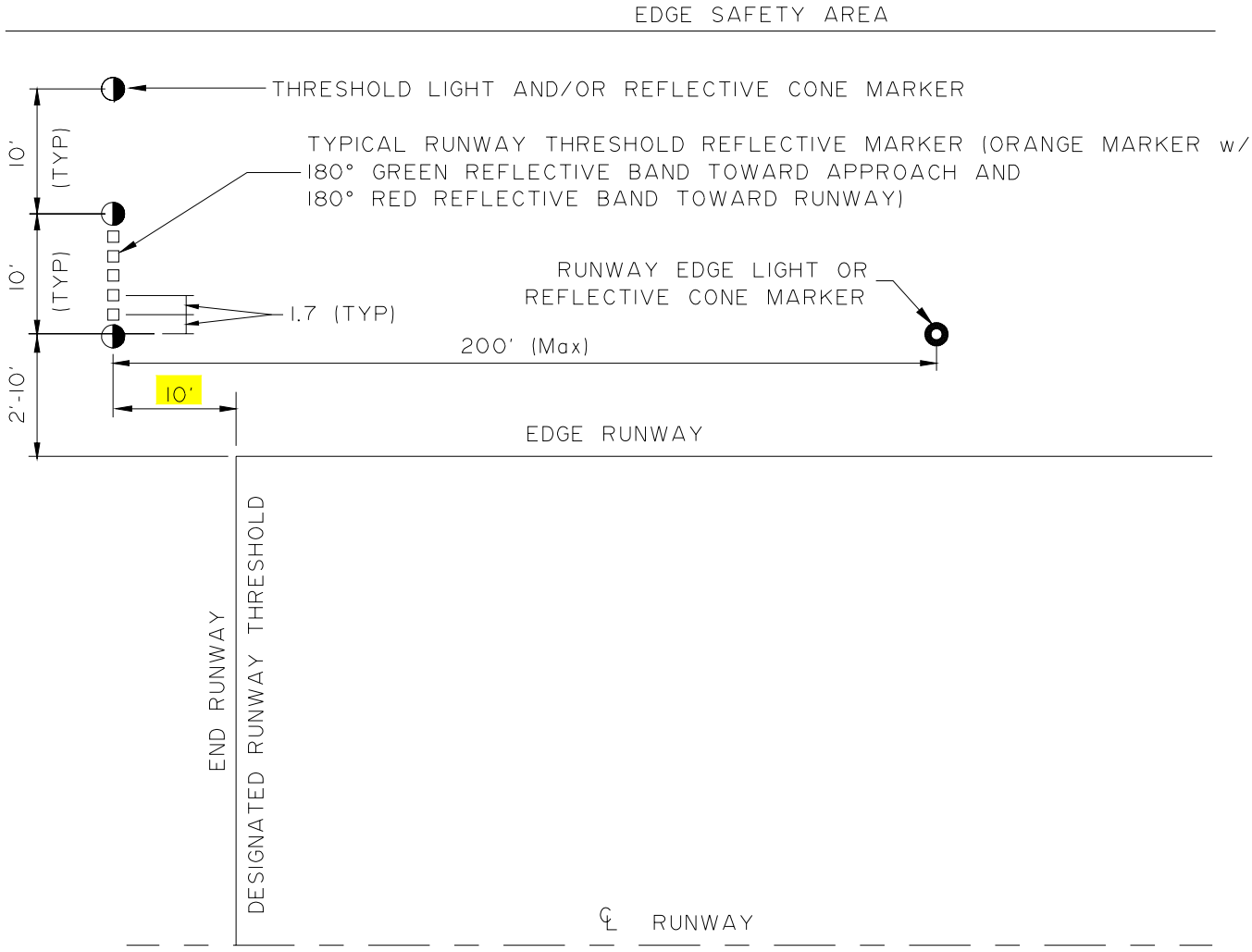


**Figure 660-1**
**Typical Threshold Detail**
**No Scale**

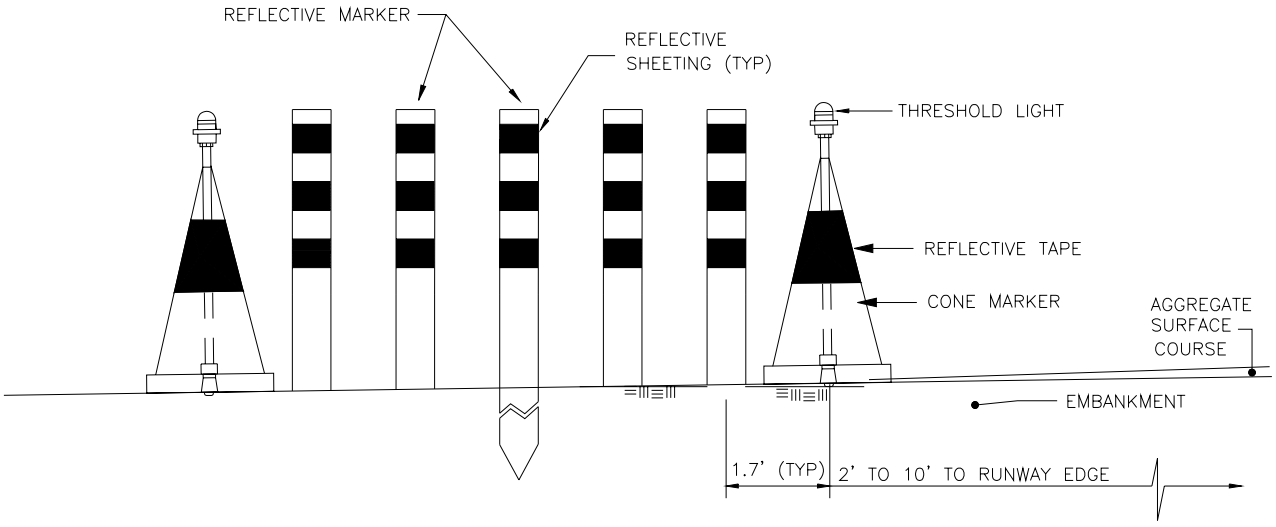


**Figure 660-2**
**Threshold Reflective Marker Details**
**No Scale**

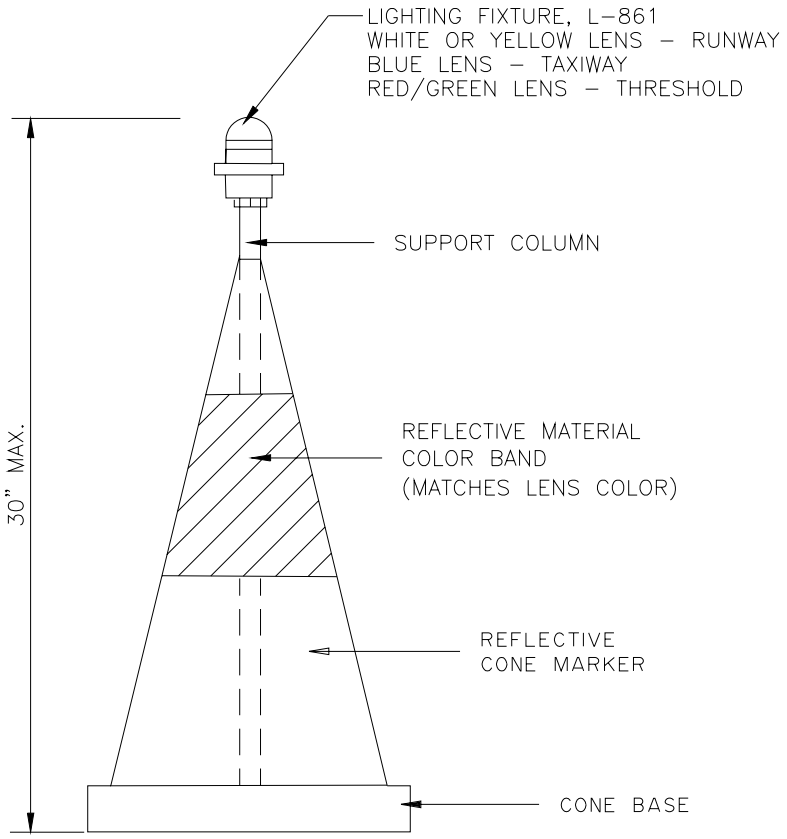


**Figure 660-3**
**Reflective Cone Marker with Light**
**No Scale**

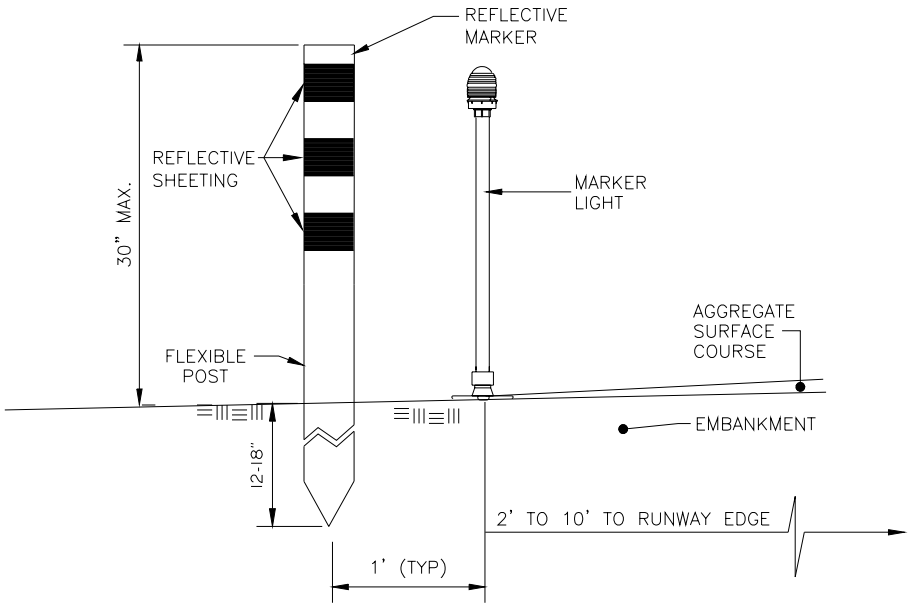


**Figure 660-4**
**Example Detail for Runway/Taxiway Edge Reflective Marker**
**No Scale**