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FAA Advisory - Catenary Markers and Lighting

Catenary refers to the power line itself. Spherical markers are the preferred choice of the FAA so that pilots of aircraft can see the markers from all angles. Catenary spherical markers are recommended for lines crossing rivers and deep valleys where there is air traffic.

FAA Advisory

43. CATENARY LIGHTING

Lighted markers are available for increased night conspicuity of high-voltage (69KV or greater) transmission line catenary wires. These markers should be used on transmission line catenary wires near airports, heliports, across rivers, canyons, lakes, etc. The lighted markers should be manufacturer certified as recognizable from a minimum distance of 4,000 feet (1219m) under nighttime conditions, minimum visual flight rules (VFR) conditions or having a minimum intensity of at least 32.5 candela.

The lighting unit should emit a steady burning red light. They should be used on the highest energized line. If the lighted markers are installed on a line other than the highest catenary, then markers specified in paragraph 34 should be used in addition to the lighted markers. (The maximum distance `:' between the line energizing the lighted markers and the highest catenary above the lighted marker should be no more than 20 feet (6m).) Markers should be distinctively shaped, i.e., spherical, cylindrical, so they are not mistaken for items that are used to convey other information. They should be visible in all directions from which aircraft are likely to approach.

The area in the immediate vicinity of the supporting structure's base should be clear of all items and/or objects of natural growth that could interfere with the line-of sight between a pilot and the structure's lights. Where a catenary wire crossing requires three or more supporting structures, the inner structures should be equipped with enough light units per level to provide a full coverage.

Catenary lights are now available which can be mounted on the energized power line and be lighted [energized] by the electrical field of the power line itself. The P&R PowerLITE cylindrical light is some 24" long, steady red, and emits more than the 32,5 candella of the FAA advisory. PowerLITEs are most effective, and smaller, on 230500 KV systems. They need much more capacitance areas at 69-132 KV.

Note that the FAA specifies that the "lights be installed on the highest energized line. If the lighted markers are installed on a line other than the highest catenary then [passive] markers should be used [on the shieldwire] in addition to the lighted markers."

The ideal arrangement from the standpoint of initial cost and installation for both day and night conspicuity is to have the lighted marker mounted on the shield wire next to the passive daytime marker. Contact P&R for the new ShieldLITE product line.

34. MARKERS

Markers are used to highlight structures"" when it is impractical to make them conspicuous by painting. Markers may also be used in addition to aviation orange and white paint when additional conspicuity is necessary for aviation safety. They should be displayed in conspicuous positions on or adjacent to the structures so as to retain the

general definition of the structure. They should be recognizable in clear air from a distance of at least 4,000 feet (1219m) and in all directions from which aircraft are likely to approach. Markers should be distinctively shaped, i.e., spherical or cylindrical, so they are not mistaken for items that are used to convey other information. They should be replaced when faded or otherwise deteriorated.

a. Spherical Markers: Spherical markers are used to identify overhead wires. Markers may be of another shape, i.e., cylindrical, provided the projected area of such markers will not be less than that presented by a spherical marker.

1. Size and Color.

The diameter of the markers used on extensive catenary wires across canyons, lakes, rivers, etc., should be not less than 36 inches (91 cm). Smaller: 20-inch (51 cm) , spheres are permitted on less-, extensive power lines or on power lines below 50 feet (15m) above the ground and within 1,500 feet (458m) of an airport runway end. Each marker should be a° solid color such as aviation orange, white, or yellow.

2. Installations.

(a) Spacing. Markers should be spaced equally along the wire at intervals of approximately 200 feet - (61 m) or a fraction thereof. Intervals between markers- should be less in critical area near runway ends (i.e., 30 to 50 feet (10m to 15m)). They should be displayed on the highest wire or by another means at the same height as the highest wire. Where there is more than one wire at the highest point, the markers may be installed alternately along each:

if the distance between adjacent markers meets the spacing standard. This method allows the weight and wind loading factors to be distributed.

(b) Pattern. An alternating color scheme provides the most conspicuity against all backgrounds. Mark overhead wires by alternating solid colored markers of aviation orange, white, and yellow. Normally, an orange sphere is placed at each end of a line and the spacing is adjusted (not-to exceed 200 feet (61m)) to accommodate the rest of the markers. .When, less than four markers are' used they should all be aviation orange.