

Chapter E 167

TREES

E 167.01 Methods and materials

Note: The protection of trees against lightning has been done on an increasing scale during the last few years, especially trees of historical interest or of unusual value. The rules of this chapter for the installation of lightning conductors on trees are based on what appears to be the best information obtainable.

History: Cr. Register, November, 1961, No. 71, eff. 12-1-61.

E 167.01 Methods and materials. Where it appears desirable to protect trees against lightning the following rules shall apply:

(1) **CONDUCTORS.** Conductors may be copper, copper-clad steel, aluminum or galvanized-iron and shall conform to the requirements of section E 161.01.

(2) **COURSING OF CONDUCTORS.** In general a single conductor shall be run from the highest part of the tree along the trunk to a ground connection. If the tree is forked, branch conductors shall be extended to the highest parts of the principal limbs. If the tree is very large 2 down conductors may be run on opposite sides of the trunk and interconnected near the top.

(a) The conductors should be extended as close as practicable to the highest part of the tree.

(3) **ATTACHMENT OF CONDUCTORS.** Conductors shall be securely attached to the tree in such a way as to allow for continued growth of the trunk, and for swaying in the wind, without danger of breakage.

Note 1. A suitable method is to place loose girdles of wire encased in flexible tubing about the tree and attach the conductors to them. As the tree grows it is necessary to loosen the girdles from time to time to prevent checking of the flow of sap.

Note 2. Another method is to use screw-shank fasteners of the same metal as conductors which hold the conductor at a distance of about 2 inches from the trunk. With growth the fasteners become embedded and are replaced with others.

Note 3. To allow for swaying of the tree in the wind the conductor should be attached with an appreciable amount of slack between points of support.

(4) **GROUND CONNECTIONS.** Grounds for conductors on trees shall be made as follows: From each conductor, descending the trunk of the tree, extend 3 or more radial conductors in trenches 12 inches deep, spaced at equal intervals about the base where practicable, to a distance of 10 to 25 feet, depending upon the size of the tree. If the roots are very extensive the radial conductors may well be extended more than 25 feet. It is desirable as a further protective measure to connect the outer ends of the radial conductors together with a conductor which encircles the tree at the same depth as the radial conductors. In very dry soil the network should be supplemented with driven pipes, rods, or buried plates at its outer extremities.

Note: The object of the shallow network is to pick up the ground current accompanying a lightning flash near the surface and at a distance from the trunk rather than among the roots, which are as susceptible to damage as the top.

History: Cr. Register, November, 1961, No. 71, eff. 12-1-61.