A FEASIBILITY STUDY ON THE USE OF CONCRETE POLE BASES AS A GROUNDING TOPOLOGY FOR DISTRIBUTION SYSTEMS

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This paper presents an analysis of the behavior of concrete pole bases under lightning impulse currents and their application as a grounding topology for overhead power distribution lines. For this purpose, the Transmission-Line Modeling Method (TLM) has been used to simulate the transient grounding impedance curve. An analytical expression has been developed to compute the ground resistance and a good agreement has been obtained between the models. Comparisons are presented with results corresponding to a single vertical rod.

The use of concrete pole bases as grounding structures is shown to be a viable and economical alternative to be applied in some power distribution grounding systems in substitution to single rods.