Grounding of Concrete Poles

Background

The ESA has been informed that reinforcing metal in concrete poles has not been effectively grounded by some Electrical Distributors, when the effectively grounded option was used to satisfy the requirements of CSA C22.3 No.1 Overhead Systems.

This bulletin contains direction on how an Electrical Distributor may demonstrate compliance with Regulation 22/04, Section 5 with respect to effectively grounding the reinforcing metal of concrete poles.

ESA Direction

Reinforcing metal of concrete poles shall be effectively grounded, guarded or isolated.

CSA 22.3 No.1 Overhead Systems states the following requirements for the grounding of concrete poles:

> **9.1.7 Grounding metal and concrete poles**
>
> Metal poles or the reinforcing metal of concrete poles, where such poles carry supply-line conductors or are in contact with metal-sheathed supply cable or the metal cases of supply equipment, shall be effectively grounded, guarded, or isolated.

CSA 22.3 No.1 Overhead Systems defines the following applicable terms:

> **Effectively grounded** — permanently connected to earth through a ground connection of sufficiently low impedance and having sufficient current-carrying capacity to prevent the buildup of voltages that can result in undue hazard to connected equipment or to persons.
>
> **Multi-grounded neutral** — a supply-line neutral conductor that is grounded at multiple locations so that the neutral is effectively grounded.

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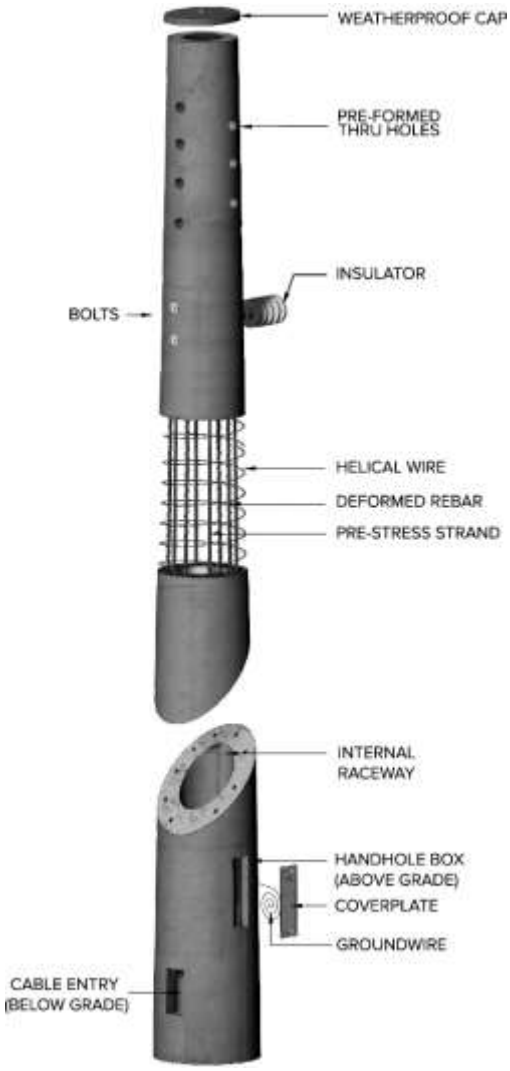
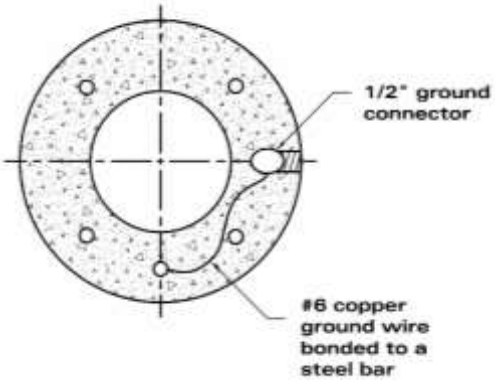
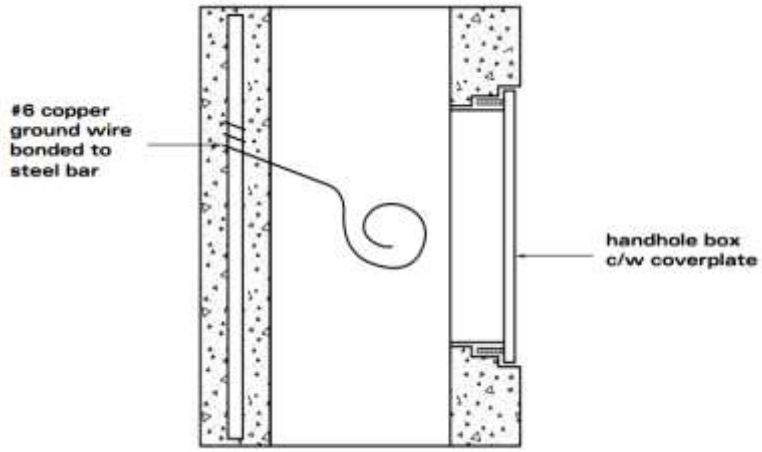
The following figures illustrate typical concrete utility pole components and provisions for grounding:







ESA Recommendation

The ESA recommends that Electrical Distributors review their design standards with staff and contractors to ensure that reinforcing metal of concrete poles are being effectively grounded. The ESA also recommends that handhole frames and cover plates are grounded to the pole grounding system if there is a potential for them to become energized, such as with conductors in the pole for streetlighting.

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