



TEXAS DEPARTMENT OF LICENSING AND REGULATION

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Industrialized Housing and Buildings

Technical Bulletin

IHB TB 09-01 – Concrete-encased grounding electrodes

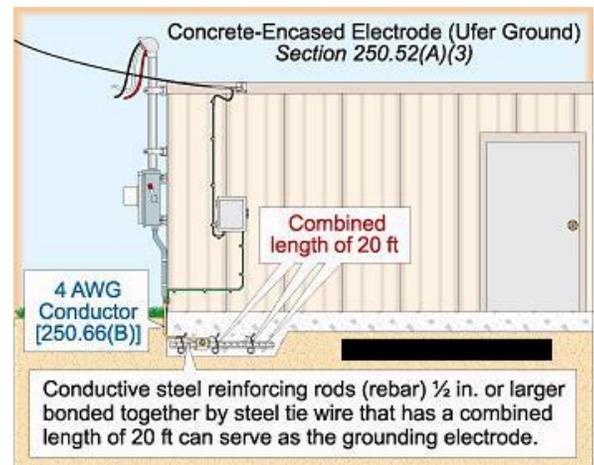
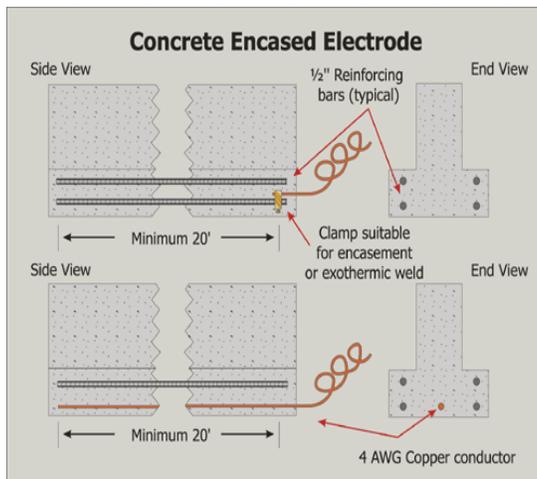
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Section 250.50 of the 2011 National Electric Code (NEC) requires grounding electrodes as described in 250.52(A)(1) through (A)(7) that are present at each building to be bonded together to form the grounding electrode system. Where none of these grounding electrodes exist, one or more of those specified in 250.52(A)(4) through (A)(8) shall be installed and used.

the inclusion of at least one concrete-encased electrode (reinforcement) in the grounding electrode system for buildings or structures having a concrete footing or foundation with not less than 20 ft of surface area in direct contact with the earth. Per section 250.52(A)(3), electrically conductive steel reinforcing bars at least ½ inch in diameter or 4 AWG copper conductor can serve as a grounding electrode if the bar or conductor is at least 20 feet long (conductive length), encased in at least 2 inches of concrete, and within and near the bottom of a foundation or footer that is in direct contact with earth. Reinforcing bars shall be permitted to be bonded together by the usual steel tie wires or other effective means. Where multiple concrete encased electrodes (reinforcement) are present at a building or structure, it shall be permissible to bond only ONE into the grounding electrode system.

The reinforcement in the concrete is required to be bonded by use of an “Ufer” or other clamping device or shall have 4AWG copper conductor encased in the concrete to serve as the grounding electrode. The clamp must be attached to the rebar prior to pour, and have concrete cover of at 2 inches – the rebar and clamp cannot be exposed to the elements after the pour of concrete.



A plastic vapor barrier under the footings of the foundation will prevent the “DIRECT CONTACT” to earth required by the code. The plastic vapor barrier acts as an insulator to prevent grounding to earth. A least 20 feet of the concrete must have direct contact to earth or another grounding electrode system, as described in sections 250.52(A)(4) through (A)(7) is required.



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Page 2 of 2