

Bulletin #22: UFER, Concrete Encased Electrode - Inspection

Date: January 14, 2019
Effective Date: June 1, 2013
Amended: July 26th, 2023
To: All Staff
From: Fred Clum
Chief Building Official

Subject: Per FBC - Chapter 27, National Electrical Code, 250.50 & 250.52 (A)(3) this bulletin is to clarify the *required* integration of foundation and structural steel installation as part of the grounding electrode system for all buildings or structures, per the NEC 250.50 & 250.52(A)(3)

Concrete Encased Electrode (UFER) - Installation Options #1, #2 or #3

1. Install #4 rebar or larger for at least 20 ft. along the bottom of the foundation or footing at least 2 inches above the bottom of the foundation or footing, vapor barrier removed and stubbing the end up below the service panel or service disconnect on the interior of the building in a dry location. All lap splices shall be a minimum of 24 inches with at least 3 ea. steel wire ties, twisted tight at equal distance apart. The rebar must be stubbed at least 12 inches above foundation surface or the stem wall sill plate, with the top 6 inches painted **GREEN** for identification.
2. Install a #4 AWG or larger **bare copper conductor** at least 20 ft along the bottom of the foundation or footing at least 2 inches above the bottom of the foundation or footing, vapor barrier removed and attached to the rebar with steel wire ties. The loose end shall be stubbed up below the service panel or service disconnect on the inside or outside of the building through the slab with a nonmetallic protective sleeve, leaving enough wire to terminate properly in the service disconnect, service panel or meter socket. The last 6 inches of the wire shall be painted **GREEN** for identification.
3. Install a #4 AWG or larger **insulated, covered, or bare copper conductor** as a jumper to the #4 rebar or larger that is installed along the bottom of the foundation or footing at least 2 inches above the bottom of the foundation or footing, vapor barrier removed. Bonding jumper must be attached to the rebar with an approved clamp or exothermically welded. The loose end shall be stubbed up below the service panel or service disconnect on the inside or outside of the building through the slab with a nonmetallic protective sleeve, leaving enough wire to terminate properly in the service disconnect, service panel or meter socket. The last 6 inches of the wire shall be painted **GREEN** for identification.

For any building with a monolithic slab, the vapor barrier must be removed for at least 20 ft directly under the footing portion for half the width of the footing in the area of the footing where the concrete encased electrode is installed.

All metal water piping and structural steel is still required to be part of the grounding electrode system if installed in the building or structure in accordance with NEC 250.50.

History: Replaces Building Block issued but never numbered.

