



Building a Safer Idaho

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Concrete-encased electrodes

Issue:

I have received several questions recently regarding the Division of Building Safety's policy on concrete-encased electrodes (CEE'S). Following are the questions that I have been asked most frequently.

1. Just because a new building has structural rebar in it that meets the requirements of 250.52(A) (3) (1) does the structural rebar have to be considered a CEE?
2. What is the definition of "existing" referred to in the exception of article 250.50?
3. Does a CEE installed separately of the structural rebar in a foundation or footing that meets the criteria of 250.52(A) (3) (1) or (2) have to be attached to the structural rebar?
4. What is the maximum Grounding Electrode Conductor size required for connection to the CEE?

I submitted several of these questions to the Senior Electrical Engineer at the NFPA and received the following response.

"If rebar is installed and it meets the requirements for a concrete encased electrode (20 feet, etc.) it is present at the installation and is an electrode. This is true even if it was not intended to be used as an electrode. Before 250.52(A), 250.50 must be read. Section 250.50 requires all electrodes that are present (not things intended to be electrodes but things that are electrodes and are present) be used. These are not options. The option would have been to not put rebar in the concrete or only use rebar that is less than 20 feet long. Once an electrode is present it is present and must be used. There is an exception for concrete encased electrodes which does not apply to new construction. It takes coordination between the trades to have the rebar accessible in new construction."

This helps to answer a few of the questions.

1. Structural rebar that meets the criteria of a CEE as defined in 250.52(A) (3) (1) is a CEE and will be required by the Division of Building Safety to be bonded to the grounding electrode system.
2. The exception in article 250.50 does not apply to new construction projects. It is the responsibility of the electrical contractor to ensure a CEE is installed on new construction projects. It may take coordination between the trades to have the CEE accessible in new construction. Electrical contractors, who accept projects where construction has

previously begun, may need to take into consideration the costs involved in meeting the requirements of 250.50.

3. Ground Rods will no longer be accepted on new construction as meeting the requirement of 250.50, when the CEE was either not installed or was cut off. The installation of a minimum 20' CEE installed adjacent to that portion of a concrete foundation or footing that is in direct contact with the earth will be allowed in the event that a CEE was not installed or is not accessible. Exposing the structural rebar or "chipping" the concrete would be another acceptable means if allowed by the building inspector.
4. If a separate piece of rebar or copper that meets the criteria of 250.52(A) (3) (1) or (2) is installed in addition to the structural rebar it is not required to be bonded to the structural rebar.
5. A Grounding Electrode Conductor is not required to be larger than 4AWG where it is the sole connection to the CEE.

It is the goal of the Division of Building Safety to make all electrical installations in Idaho safe for workers, property owners and our employees. We sincerely ask for your help and cooperation in achieving this goal. Please contact us if you have any questions or concerns regarding this policy.

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