

Electrical Code Update

Grounding Electrode Systems

Minnesota Electrical Code

On July 1, 2005, the **2005 National Electrical Code** (NEC) became effective in Minnesota. The National Electrical Code is developed and published by the National Fire Protection Association (NFPA) and is incorporated by reference as a part of the **Minnesota State Building Code**. The scope of the **Minnesota Electrical Code** is found in Minnesota Rules, Chapter 1315.



New Electrical Code Requirement Effects Building Contractors

The 2005 NEC, Section 250.50, requires that when steel reinforcing bars or rods are located within and near the bottom of a concrete foundation or footing that is in direct contact with the earth, the reinforcing steel **must be** used as a grounding electrode for the building. This new requirement does not mandate the use of rebar in footings. However, **when rebar is used**, it must be bonded together to form a grounding electrode. Such a concrete-encased electrode grounding system is commonly referred to as an “ufer” ground connection. Concrete-encased electrodes are defined in Section 250.52(A)(3) of the 2005 NEC. **The building contractor will need to coordinate with the masonry contractor and the electrical contractor to obtain compliance with this requirement.**

Rationale

The Minnesota State Board of Electricity reports that due to the increased use of nonmetallic piping and isolation fittings, underground water piping systems have become less reliable as grounding electrodes. Also, the long-term effectiveness of ground rods has been questioned. In many buildings, this 2005 Electrical-Code change will provide a more effective grounding system.

Methods for Compliance

The requirement for a concrete-encased electrode grounding system can be met by one of the following methods.

1. Encase at least twenty feet of #4 AWG bare copper conductor in the concrete footing; or
2. Connect a length of #4 AWG copper to the reinforcing steel with a clamp, such as a common ground rod clamp, that is suitable for concrete encasement; or
3. Stub a piece of reinforcing rod, which is tied into the rest of the reinforcing system, out of the footing at a convenient location.

Reinforcing rods are permitted to be bonded together by the usual steel tie wires or other effective means.

Enforcement

In Goodhue County, enforcement of this requirement and all other provisions of the Minnesota State Electrical Code are under the authority of the State Electrical Inspector.