

**NC Department of Insurance
Office of the State Fire Marshal - Engineering Division
1202 Mail Service Center, Raleigh, NC 27699-1202
919-647-0001**

Grounding Electrode Conductor Bonding to Neutral

Code: 2017 Electrical Code
Section: 250.24(A)

Date: January 20, 2021

Question 1:

If a transfer switch is added to an existing service as the new service disconnecting means, must the existing grounding electrode conductor in the existing main panel (that becomes a subpanel when the transfer switch is installed as the service disconnect) be removed and terminated in the transfer switch?

Answer 1:

250.24 Grounding Service-Supplied Alternating-Current Systems.

(A) System Grounding Connections. A premises wiring system supplied by a grounded ac service shall have a grounding electrode conductor connected to the grounded service conductor, at each service, in accordance with 250.24(A)(1) through (A)(5).

(1) General. The grounding electrode conductor connection shall be made at any accessible point from the load end of the overhead service conductors, service drop, underground service conductors, or service lateral to, including the terminal or bus to which the grounded service conductor is connected at the service disconnecting means.

Section 250.24(A) of the State Electrical Code (2017 NEC with State Amendments) requires the grounding electrode conductor be connected to the grounded service conductor (neutral in most installations). Once the transfer switch is installed as the new service disconnect making the existing main panel a subpanel, the existing grounding electrode conductor connected to the neutral in the former main panel is no longer connected to the neutral service conductor at the service disconnecting means. Instead the existing grounding electrode conductor becomes connected to the neutral feeder conductor within a subpanel.

Therefore, section 250.24(A) requires the grounding electrode conductor be removed from the subpanel and connected to the neutral service conductor as described in 250.24(A)(1), which includes the neutral terminal bar in the transfer switch.

Question 2:

If the grounding electrode conductor is terminated on the equipment grounding terminal bar inside service equipment, can the metal enclosure via bonding screws be the only means of connection to the grounded service conductor (neutral in most installations)?

Answer 2:

250.24 Grounding Service-Supplied Alternating-Current Systems.

(A) System Grounding Connections. A premises wiring system supplied by a grounded ac service shall have a grounding electrode conductor connected to the grounded service conductor, at each service, in accordance with 250.24(A)(1) through (A)(5).

(4) Main Bonding Jumper as Wire or Busbar. Where the main bonding jumper specified in 250.28 is a wire or busbar and is installed from the grounded conductor terminal bar or bus to the equipment grounding terminal bar or bus in the service equipment, the grounding electrode conductor shall be permitted to be connected to the equipment grounding terminal, bar, or bus to which the main bonding jumper is connected.

Section 250.24(A) of the State Electrical Code allows the grounding electrode conductor to be terminated on the equipment grounding terminal bar only if the service equipment's neutral terminal bar and equipment grounding terminal bar are bonded via a wire or busbar.

Therefore, bonding screws and the metal enclosure are not allowed to create a code compliant connection between the grounding electrode conductor and the neutral service conductor. This requirement also applies to temporary services, commonly referred to as T-Poles and Saw Services.