

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

Grounding Electrodes for Single Family Dwellings

Code: 2017 Electrical Code
Section: 250.53(A)(2) and (D)(2)

Date: June 12, 2018

Question 1:

If only ground rods are used as an electrode system for a single family dwelling, are two required?

Answer 1:

Single electrodes made of rod, pipe, or steel plates must have a resistance to ground of 25 ohms or less, or must be augmented by an additional electrode of a type specified by section 250.52(A)(2) through (A)(7). The installer is required to assure the system meets this requirement and submit proof that is acceptable to the local electrical inspector.

Note: In extensive testing throughout North Carolina soil conditions have found to be of types prohibiting conductivity meeting the 25 ohms or less requirement for resistance.

Question 2:

If a metal underground water pipe is used as part of an electrode system and is supplemented with a ground rod, is another grounding electrode required to supplement the supplemented ground rod?

Answer 2:

No. The requirement of section 250.53(D)(2) requires one supplement electrode of a type chosen from sections 250.52(A)(2) through (A)(8), in which a rod is listed in section 250.52(A)(5).

Both the water pipe and the rod must comply with the installation requirements of section 250.53(A). Because the water pipe and the rod make two electrodes, each supplement the other; thus, 250.53(A)(2) is satisfied.