

# National Electrical Safety Code Committee, Accredited Standards Committee C2

## National Electrical Safety Code®

### Interpretation

#### Section 1.

#### Introduction to the National Electrical Safety Code®

#### Section 9.

#### Grounding Methods for Electric Supply and Communications Facilities

##### **Rule 017B Units of Measure (2002 Edition, page 3)**

**(25 May 2004) IR536**

##### **Rule 094B2 Driven Rods (2002 Edition, page 22)**

**(25 May 2004) IR536**

Does Rule 017B of the 2002 Edition of the National Electrical Safety Code (NESC) apply to the provisions specified in Rule 094B2a of the 2002 Edition of the NESC? More specifically, may the Code user interpret lengths and diameters of driven rods specified in Rule 094B2a as “nominal values?”

**Discussion:** In spite of Rule 017B's specific reference to “ground rods,” opinions differ as to the applicability of Rule 017B relative to Rule 094B2a. Some individuals contend that Rule 017B does not apply to Rule 094B2a because:

- (1) Rule 094B2a text does not at all convey the meaning of “nominal values” with respect to driven rod lengths or diameters, as is the case with many conductor sizes referenced throughout the NESC. Rule 094B2a instead explicitly specifies minimum values allowed for driven rod lengths and diameters using the “shall” requirements, the mandate language of the NESC. Although there may be an inferred tolerance allowed on the plus side, Rule 094B2a indicates (mandates) a zero tolerance on the negative side.
- (2) The last sentence of Rule 017B indicates that the “tolerance” intent is to accommodate manufacturing limitations or other restraints. Since there are no known manufacturing limitations or restraints in the driven rod manufacturing industry, there seems to be no reason to believe the Rule 017B provision pertains to 094B2a.
- (3) Incorrect terminology is used in Rule 017B as Rule 094B2a addresses “driven rods” not “ground rods” as cited in Rule 017B.

There are others who believe that the provisions of Rule 017B are pertinent and that tolerances can and do apply, such as the tolerances included in National Electrical Manufacturers Association (NEMA) Standards Publication GR 1-2001 Grounding Rod Electrodes and Grounding Rod Electrode Couplings.

Because some manufacturers are indeed designing some rods using a standard's prescribed tolerance provision and producing some rods that are smaller in diameter than prescribed by the Code, an official interpretation from the NESC responding to this interpretation request would be helpful.

## Interpretation

The Interpretations Subcommittee has considered the subject Interpretation Request for Rule 017B and 094B2 and has developed a consensus report as follows:

“Rule 017B is general in nature and applies to all parts of the Code, as do all of the rules in Section 1—Introduction. This rule was specifically codified to answer questions raised in the 1980s about the acceptable range of tolerances for NESC-specified ground rod diameters. Consequently, Rule 017B, covering “nominal values,” was intended to apply to the lengths and diameters of driven rods specified in Rule 094B2a.

For your information, Rule 017B was introduced in the 1993 Edition. Tolerances for ground rods at that time were covered by ANSI C135.30 (1988) Zinc-Coated Ferrous Ground Rods for Overhead or Underground Line Construction which states:  $\pm 1/32$  in for a 5/8 in diameter rod or a range of 0.594 in to 0.656 in. The NESC Grounding Subcommittee reviewed C135.30 when Rule 017B was adopted and determined that the tolerances stated in C135.30 were appropriate for ground rods used to meet NESC grounding requirements.

ANSI C135.30 has since been replaced by NEMA GR-1. Under this GR-1 standard, the diameter of a 5/8 in trade size ground rod was reduced to range from 0.539 in to 0.555 in. This range does not include the nominal diameter (5/8 in or 0.625 in) specified in Rule 94B2a. The NESC Grounding Subcommittee did not consider GR-1 trade sizes when Rule 017B was adopted, and the Interpretations Subcommittee cannot conclude whether or not the reduced sizes in GR-1 meet the intent of the NESC grounding requirements.

Also, as additional information but not as a part of this interpretation, the Interpretations Subcommittee has referred this request for interpretation to the Grounding Subcommittee for its consideration.