

**199—25.2 (476,476A,478) Iowa electrical safety code defined.** The standard minimum requirements for the installation and maintenance of electric substations, generating stations, and overhead and underground electric supply or communications lines adopted below, collectively constitute the “Iowa Electrical Safety Code.”

**25.2(1) National Electrical Safety Code.** The American National Standards Institute (ANSI) C2-2007 “National Electrical Safety Code” (NESC) as ultimately conformed to the ANSI-approved draft by correction of publishing errors through issuance of printed corrections is adopted as part of the Iowa electrical safety code, except Part 4, “Rules for Operation of Electric Supply and Communications Lines and Equipment,” which is not adopted by the board.

**25.2(2) Modifications and qualifications to ANSI C2.** The standards set forth in ANSI C2 are modified or qualified as follows:

*a.* Introduction to the National Electrical Safety Code.

(1) The following paragraph replaces NESC 011B: “The National Electrical Safety Code (NESC) covers utility facilities and functions from the point of generation by the utility, or delivery from another entity, of electricity or communications signals through the utility system to the point of delivery to a customer’s facilities.”

(2) NESC 013A2 is modified to read as follows: “Types of construction and methods of installation other than those specified in the rules may be used experimentally to obtain information, if done where:

1. Qualified supervision is provided,
2. Equivalent safety is provided,
3. On joint-use facilities, all affected parties agree, and
4. Prior approval is obtained from the Iowa utilities board.”

*b.* Minimum clearances.

(1) In any instance where minimum clearances are provided in Iowa Code chapter 478 which are greater than otherwise required by these rules, the statutory clearances shall prevail.

(2) The following clearances shall apply to all lines regardless of date of construction: NESC 232, vertical clearances for “Water areas not suitable for sailboating or where sailboating is prohibited,” “Water areas suitable for sailboating . . .,” and “Established boat ramps and associated rigging areas . . .”; and NESC 234E, “Clearance of Wires, Conductors, Cables or Unguarded Rigid Live Parts Installed Over or Near Swimming Areas With No Wind Displacement.”

(3) Table 232-1, Footnote 21, is changed to read: “Where the U.S. Army Corps of Engineers or the state, or a surrogate thereof, issues a crossing permit, the clearances of that permit shall govern if equal to or greater than those required herein. Where the permit clearances are less than those required herein and water surface use restrictions on vessel heights are enforced, the permit clearances may be used.”

(4) Except for clearances near grain bins, for measurements made under field conditions, the board will consider compliance with the overhead vertical line clearance requirements of Subsection 232 and Table 232-1 of the 1987 NESC indicative of compliance with the 1990 through 2007 editions of the NESC. (For an explanation of the differences between 1987 and subsequent code edition clearances, see Appendix A of the 1990 through 2007 editions of the NESC.)

*c.* Reserved.

*d.* Rule 217C.1 is changed to read:

“The ground end of anchor guys exposed to pedestrian or vehicle traffic shall be provided with a substantial marker not less than eight feet long. The guy marker shall be of a conspicuous color such as yellow, orange, or red. Green, white, gray or galvanized steel colors are not reliably conspicuous against plant growth, snow, or other surroundings. Noncomplying guy markers shall be replaced as part of the utility’s inspection and maintenance plan.”

*e.* There is added to Rule 381G:

(3) Pad-mounted and other aboveground equipment not located within a fenced or otherwise protected area shall have affixed to its outside access door or cover a prominent “Warning” or other appropriate sign of highly visible color, warning of hazardous voltage and including the name of the utility. This rule shall apply to all signs placed or replaced after June 18, 2003.

*f.* There is added to the first paragraph of Rule 110.A.1, after the sentence stating, “Entrances not under observation of an authorized attendant shall be kept locked,” the following sentences:

Entrances may be unlocked while authorized personnel are inside. However, if unlocked, the entrance gate must be fully closed, and must also be latched or fastened if there is a gate-latching mechanism.

*g.* Lines crossing railroad tracks shall comply with the additional requirements of 199 IAC 42.6(476), “Engineering standards for electric and communications lines.”

**25.2(3) Grain bins.**

*a.* Electric utilities shall conduct annual public information campaigns to inform farmers, farm lenders, grain bin merchants, and city and county zoning officials of the hazards of and standards for construction of grain bins near power lines.

*b.* An electric utility may refuse to provide electric service to any grain bin built near an existing electric line which does not provide the clearances required by the American National Standards Institute (ANSI)C2-2007 “National Electrical Safety Code,” Rule 234F. This paragraph “*b*” shall apply only to grain bins loaded by portable augers, conveyors or elevators and built after September 9, 1992, or to grain bins loaded by permanently installed augers, conveyors, or elevator systems installed after December 24, 1997.

**25.2(4) General rules.**

*a. Joint-use construction.* Where it is mutually agreeable between an electric utility and a communication or cable television company, communication circuits or cables may be buried in the same trench or attached to the same supporting structure, provided this joint use is permitted by, and is constructed in compliance with, the Iowa electrical safety code.

*b. Lines.* In order to limit the residual currents and voltages arising from line unbalances, the resistance, inductance, capacitance and leakage conductance of each phase conductor of an electric supply circuit in any section shall be as nearly equal as practical to the corresponding quantities in the other phase conductors in the same section.

The ampacity of a multigrounded neutral conductor of an electric supply circuit shall be adequate for the load which it is required to carry. The ampacity of a multigrounded neutral conductor of an electric supply circuit shall not be less than 60 percent of that of any phase conductor with which it is associated, except for three phase four wire wye circuits where it shall have ampacity not less than 50 percent of that of any associated phase conductor. In no case shall the resistance of a multigrounded neutral conductor exceed 3.6 ohms per mile. (This does not modify the mechanical strength requirements for conductors.) A multigrounded conductor installed and utilized primarily for lightning shielding of the associated phase conductors need not comply with the above percentage ampacity requirements for neutral conductors.

Where the neutral conductor of the electric supply circuit is not multigrounded or in an inductive exposure involving communication or signal circuits and equipment where the controlling frequencies are 360 Hertz or lower, any neutral conductor shall have the same ampacity as the phase conductors with which it is associated.

**25.2(5) Other references adopted.**

*a.* The “National Electrical Code,” ANSI/NFPA 70-2008, is adopted as a standard of accepted good practice for customer-owned electrical facilities beyond the utility point of delivery, except for installations subject to the provisions of the state fire marshal standards in 661 IAC 504.1(103).

*b.* “The Lineman’s and Cableman’s Handbook,” Eleventh Edition; Shoemaker, Thomas M. and Mack, James E.; New York, McGraw-Hill Book Co., is adopted as a recommended guideline to

implement the “National Electrical Safety Code” or “National Electrical Code,” and for developing the inspection and maintenance plans required by 199 IAC 25.3(476,478).

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