

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) C2-2023, “National Electrical Safety Code” (NESEC), as published on August 1, 2022, including issued Correction Sheets, 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 commission.

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

a. Introduction to the National Electrical Safety Code. NESEC 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 joint users are notified in a timely manner, and
- “4. Prior approval is obtained from the Iowa utilities commission.”

b. Minimum clearances.

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

(2) The following clearances apply to all lines regardless of date of construction: NESEC 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 NESEC 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 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 commission will consider compliance with the overhead vertical line clearance requirements of Subsection 232 and Table 232-1 of the 1987 NESEC indicative of compliance with the 1990 through 2017 editions of the NESEC. (For an explanation of the differences between 1987 and subsequent code edition clearances, see Appendix A of the 1990 through 2017 editions of the NESEC.)

c. Rule 217C1 is changed to read: “The ground end of at least one guy per anchor 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. Noncomplying guy markers shall be replaced as part of the utility’s inspection and maintenance plan.”

d. 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 applies to all signs placed or replaced after June 18, 2003.”

e. There is added to the first paragraph of Rule 110A1, 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 latched or fastened if there is a gate-latching mechanism.”

f. Lines crossing railroad tracks will comply with the additional requirements of rule 199—42.6(476), “Engineering standards for electric and communications lines.”

25.2(3) *Grain bins.*

a. Electric utilities shall conduct or participate in 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 that does not provide the clearances required by the ANSI C2-2023 “National Electrical Safety Code,” Rule 234F. This paragraph applies 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 that it carries. 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 70-2023, as published on December 7, 2022, 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 rule 661—504.1(103).

b. “The Lineman’s and Cableman’s Handbook,” Fourteenth 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 rule 199—25.3(476,478).

c. “ANSI S12.9-2013/Part 1” as published February 27, 2013; “ANSI S12.9-2013/Part 3” as published February 13, 2015; “ANSI S1.4-2014/Part 1” as published July 21, 2014; and “Institute of Electrical and Electronics Engineers Standard 656-2018” as published February 15, 2018, are adopted as standards for determining noise from electric transmission lines.

d. The “Institute of Electrical and Electronics Engineers Standard 644-2019” as published November 7, 2019, is adopted as the standard for measuring the electric field strength from electric transmission lines.

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