Foreword

This foreword is not a part of Accredited Standards Committee C2-2012, National Electrical Safety Code.

This publication consists of the parts of the National Electrical Safety Code® (NESC®) (Accredited Standards Committee C2) currently in effect. The former practice of designating parts by editions has not been practical for some time. In the 1977 Edition, Parts 1 and 4 were 6th editions; Part 2 was a 7th edition; Part 3 was a revision of the 6th edition; Part 2, Section 29, did not cover the same subject matter as the 5th edition; and Part 3 was withdrawn in 1970. In the 1987 Edition, revisions were made in all parts, and revisions to all parts have been made in subsequent editions. It is therefore recommended that reference to the NESC be made solely by the year of the published volume and desired part number. Separate copies of the individual parts are not available.

Work on the NESC started in 1913 at the National Bureau of Standards (NBS), resulting in the publication of NBS Circular 49. The last complete edition of the Code (the 5th edition, NBS Handbook H30) was issued in 1948, although separate portions had been available at various times starting in 1938. Part 2—Definitions and the Grounding Rules, 6th edition, were issued as NBS Handbook H81, ANSI C2.2-1960, in November 1961, but work on other parts was not actively in process again until 1970.


The 1981 Edition included major changes in Parts 1, 2, and 3, minor changes in Part 4, and the incorporation of the rules common to all parts into Section 1. The 1984 Edition was revised to update all references and to list those references in a new Section 3. Converted metric values, for information only, were added. Gender-related terminology was deleted. Section 1—Introduction, Section 2—Definitions, Section 3—References, and Section 9—Grounding Methods, were made applicable to each of the Parts 1, 2, 3, and 4.

The 1987 Edition was revised extensively. Definitions were changed or added. Requirements affecting grounding methods, electric supply stations, overhead line clearances and loading, underground lines, and work rules were revised.

The 1990 Edition included several major changes. General rules were revised. A significant change to the method for specifying overhead line clearances was made and the rationale added as Appendix A. Requirements for clearances of overhead lines from grain bins and an alternate method for determining the strength requirements for wood structures was added. Rules covering grounding methods, electric supply stations, underground lines, and work rules were changed.

In the 1993 Edition, changes were made in the rules applicable to emergency and temporary installations. In Section 9 and Parts 1, 2, and 3, rules were extended or clarified to include HVDC systems. The requirements for random separation of direct-buried supply and communications systems were modified for consistency and clarity, as was the rule in Part 4 on tagging electric supply circuits.

In the 1997 Edition, the most notable general change that took place is the numerical values in the metric (SI) system are shown in the preferred position, with customary inch-foot-pound values (inside parentheses)

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1 Information on references can be found in Section 3.
following. A bibliography, Appendix B, which consists of a list of resources identified in notes or recommendations, was added. Changes were made to rules affecting grounding, electric supply stations, and overhead lines, particularly with regard to clearance rules applicable to emergency and temporary installations. Strength requirements contained in Sections 24, 25, and 26 were revised completely. Underground line requirements for random separation for underground lines of direct-buried cables were modified. The requirement for cable identification marking by means of sequentially placed logos was introduced. Work rules added a requirement that warning signs and tags comply with applicable ANSI standards, tagging requirements were clarified with regard to SCADA, and extensive requirements for fall protection were added.

In the 2002 Edition, several changes were made that affected all or several parts of the Code. Particularly, this edition clarifies interfaces between the NEC and NESC with regard to Code jurisdiction in the area of street lights and area lights. Also included is clarification for situations between utility workers and their authorized contractors and installations on industrial complexes.

The major revisions for the 2007 Edition included grounding, moving sag calculations to Section 23, moving guy and span wires insulator rules to Section 21, phasing out of the alternate method for load factors and strength factors, flammable materials transported, phase-to-phase cover-up, and minimum approach distance tables.

In the 2012 Edition, major changes include an updated scope, application, and definitions; greatly simplified minimum approach tables and voltage exposure for arc flash; the addition of K factor for wire attention; and added clarification of the ungrounded portions of guys and swimming pools.

The Scope, Application, and Definition rules were extensively revised in 2012 to better reflect the historical application of the NESC—in large measure to clarify the relative applicability of the NESC versus the NEC. The changes in language in Rules 010—Purpose and 011—Scope are not changes in either scope or purpose; they are clear statements of the almost 100-year application of the requirements of the NESC to the specified circumstances. Additional rules were changed for clarity or to support changes made in other sections of the Code.

In Rule 091, revisions were made to clarify where rules require conductors or equipment to be effectively grounded, meeting the requirements of Section 9, plus the definition of effectively grounded must be met.

In Rule 094B7, the length and thickness requirements for using a directly embedded metal pole as an acceptable grounding electrode were deleted. Text was added to specify the distance required for a supplemental ground electrode to be installed with an embedded metal pole. Also, the Exception within the Rule added the words “or type metal” that recognize other length, configuration, and material may be allowed if supported by a qualified engineering study.

In Rule 099B, the grounding electrode conductor for grounding communication apparatus was changed from an AWG No. 14 to AWG No. 6.

The revisions in Part 1 consisted of improving Rule 110A2 to reduce clearance to live parts for an impenetrable fence and simplifying the Table 111-1 list of illumination levels for generating stations and substations.

Additional revisions were also made as follows:

- Updating the standard revision dates that contain information regarding safety signs.
- Storing material, equipment, and vehicles in supply stations.
- Outdoor lighting at unattended stations (not required).
— Noting that permanently installed fire-extinguishing equipment is not a requirement.
— Use of “taut-string distance” measurements for vertical clearances to energized part.

Rule 214A5 was revised; multiple change proposals attempted to add consistency to the application of the terms grounded and effectively grounded. Subcommittee 4 retained both terms and retained the requirement that guys be effectively grounded. Subcommittee 4 also revised Rules 215B1 and 215B2, applied a revision to the application of guy insulators, and clarified the voltage between line conductors.

A footnote to Table 251-1 was inserted to clarify the application of the K factor for wire tensions when a messenger supports multiple conductors using spacing. It states that when each conductor is separately loaded with ice and wind as described in Rule 251A3b, the K factor should be applied to all cables.

Rule 261H1 addresses tensions of overhead supply conductors and shield wires. One change proposal added tension limits when Rule 250C and Rule 250D loads apply. Similar to what already existed for splices and deadend fittings, conductors and shield wires will now be limited to 80% of the rated breaking strength when those extreme load conditions are applied along with a load factor of 1.0. Another change in the same rule modified the application of the secondary conductor tension limits from 16 °C (60 °F) to the applicable temperature listed in Table 250-1 for Rule 250B district loads. Reducing the temperatures at which tension limits are applied is in line with recommendations from conductor manufacturers and will reduce the risk of conductor damage due to acolian vibration.

Rule 313 was reworded to include the recording and correction of conditions, not just defects, that affect compliance with the Code. In Rule 314B, the voltage level for grounding riser guards and ducts was deleted. Rule 320B5 now requires not less than 300 mm (12 in) separation from gas and other lines that transport flammable materials. New Rule 323E5 requires clearances based on Rule 110A2 for aboveground vaults with ventilation opening not protected with baffles or louvers. Figure 323-1 and Figure 323-2 were revised to comply with the latest figures in ASTM C857. The title for Section 35 was revised to include cable in duct not part of a conduit system. Recommendations concerning color coding for direct-buried cables and duct not part of a conduit system were added to Rules 350F and 350G. Installation rules for cable in duct were included in Rule 352. An Exception was added to Rule 354A2 to allow less than 300 mm (12 in) separation between supply conductors operating at not more than 300 V between conductors and gas and other lines that transport flammable materials where supplemental mechanical protection is provided. New Rule 355 contains rules for duct not part of a conduit system. Rule 384 was rewritten to require bonding between aboveground metallic communication and supply enclosures only.

Two significant changes were made to the work rules in Part 4, specifically in the Rule 441 minimum approach distanced tables, and also in Rule 410A3 on arc flash exposure. Revisions to IEEE Std 516™-2009 (NESC’s source for calculated minimum approach distances) required changes to be made to the minimum approach distances in Part 4. Prior NESC editions included several tables containing minimum approach distances based on voltage levels and overvoltage levels. In the 2012 Edition, the minimum approach tables have been greatly simplified (accurate to the current IEEE 516 calculations) providing distances at the accepted historic maximum overvoltage levels. An engineering study of circuit overvoltage will have to be completed to use a reduced minimum approach distance.

Rule 410A3 was revised to recognize exposures at less than 1000 V. Significant testing was conducted by two separate major utilities and a research institute, providing the opportunity to establish appropriate incident energy levels for many common industry applications. The result of the review of the testing supported the development of new Table 410-1 that establishes arc energy thresholds for different equipment/exposures at voltage levels below 1000 V.

Table A-1 of Appendix A was revised only in the manner of presentation by the Overhead Clearances Subcommittee. However, the extreme wind calculations of Appendix C were revised by the Overhead Strengths and Loadings Subcommittee to reflect changes in Rule 250C.