NFPA® 73

Standard for Electrical Inspections for Existing Dwellings

2016 Edition

NFPA, 1 Batterymarch Park, Quincy, MA 02169-7471
An International Codes and Standards Organization

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NFPA®73

Standard for

Electrical Inspections for Existing Dwellings

2016 Edition

This edition of NFPA 73, *Standard for Electrical Inspections for Existing Dwellings*, was prepared by the Technical Committee on Electrical Systems Maintenance and released by the Correlating Committee on *National Electrical Code® (NEC®)*. It was issued by the Standards Council on May 26, 2015, with an effective date of June 15, 2015, and supersedes all previous editions.

This edition of NFPA 73 was approved as an American National Standard on June 15, 2015.

Origin and Development of NFPA 73

NFPA began the development of NFPA 73, *Standard for Electrical Inspections for Existing Dwellings,* in 1990. The document was initiated in response to data obtained from studies conducted on older homes by NFPA, the National Institute of Standards and Technology (NIST), the Consumer Product Safety Commission (CPSC), and other groups involved with fire investigations. The studies indicated that fires and other hazards attributed to electrical causes would be significantly reduced if electrical systems were installed and maintained in accordance with *NFPA 70, National Electrical Code (NEC).*

One of the studies reported that only 5 percent of fires occurred in dwellings under 10 years of age, an indication of the effectiveness of the *NEC* and electrical inspections at the time of construction. The study also suggested that identification and correction of unsafe conditions in existing dwellings by means of appropriate inspections could effectively eliminate a significant portion of the residential fire occurrences and other associated hazards.

The original code was developed as a result of the united efforts of various insurance, electrical, construction, inspection, utility, and other allied interests. A first draft was published in 1993, which allowed the study and evaluation of the document prior to formal action at the 1993 NFPA Fall Meeting. The first edition of NFPA 73, *Residential Electrical Maintenance Code for One- and Two-Family Dwellings,* was adopted as the 1994 edition. The second edition of the document was submitted for formal adoption at the 1996 NFPA Annual Meeting

Significant changes to the 2000 edition included a new title, *Electrical Inspection Code for Existing Dwellings,* and an expanded scope. Because deterioration of electrical systems could occur in existing multifamily dwellings and mobile and manufactured homes as well as one- and two-family dwellings, the scope was changed to include all dwelling units, including multifamily dwellings and mobile and manufactured homes. The code could then be used to improve the safety of electrical systems in all dwelling units. The change in the title from "maintenance" to "inspection" reflected the intended purpose of the document.

The 2006 edition consisted of editorial revisions of the code to comply with the 2004 edition of the *Manual of Style for NFPA Technical Committee Documents.*

For the 2011 edition, the title was again changed, to *Standard for Electrical Inspections for Existing Dwellings* to facilitate its use within the home inspection community. This change was made to assist inspectors, who are not code enforcement officials, by allowing them to utilize the standard for inspections and thereby improve the electrical safety in dwelling units.

Several changes were made to address issues identified in the Fire Protection Research Foundation's technical report *Residential Electrical System Aging Research Project.* The dismantling of 30 homes, originally constructed from 1892 to 1972, revealed several areas that required investigation, examination, or inspection. Potential fire hazards were identified, including incorrect conductor insulation for wiring of luminaires, multiple conductors terminated on a single terminal, and insulation in direct contact with luminaires not designed for the application. Shock hazards were also identified, such as conductors or cables used inappropriately, ground-fault circuit interrupter

(GFCI) receptacles incorrectly wired, and the grounded conductor attached to normally non-current-carrying metal parts. Changes were made to the standard to address those concerns.

Annex tables were added to assist in determining when requirements for arc-fault circuit interrupters (AFCIs) and GFCI were added to the *NEC*. With the knowledge of which *NEC* edition was in place at the time of the construction or renovation, users of the standard could easily determine where AFCI and GFCI protection was necessary.

Several minor changes have been made to the 2016 edition to correlate the text with that in the *NEC*. Annex tables for AFCI and GFCI protection have been reformatted to provide easier reference to areas within a dwelling and to the *NEC* edition in effect. Carbon monoxide detectors have been added to the inspection criteria, and fire alarm requirements have been clarified.

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Committee Scope: This Committee shall have primary responsibility for documents on minimizing the risk of electricity as a source of electric shock and as a potential ignition source of fires and explosions. It shall also be responsible for text to minimize the propagation of fire and explosions due to electrical installations.

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NOTE: Membership on a committee shall not in and of itself constitute an endorsement of the Association or any document developed by the committee on which the member serves.

Committee Scope: This Committee shall have primary responsibility for documents on the maintenance of electrical systems in existing one-family, two-family, and multifamily dwellings. This Committee shall report to the Technical Correlating Committee of the National Electrical Code.

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NOTICE: An asterisk (*) following the number or letter designating a paragraph indicates that explanatory material on the paragraph can be found in Annex A.

A reference in brackets [ ] following a section or paragraph indicates material that has been extracted from another NFPA document. As an aid to the user, the complete title and edition of the source documents for extracts in mandatory sections of the document are given in Chapter 2 and those for extracts in informational sections are given in Annex D. Extracted text may be edited for consistency and style and may include the revision of internal paragraph references and other references as appropriate. Requests for interpretations or revisions of extracted text shall be sent to the technical committee responsible for the source document.

Information on referenced publications can be found in Chapter 2 and Annex D.

Chapter 1 Administration

1.1 Scope. This standard provides criteria for identification of hazardous conditions of electrical systems in existing one-family, two-family, and multifamily dwellings, including mobile homes and manufactured homes.

1.2* Purpose. The purpose of this standard is to provide inspection and testing procedures and practices for evaluating the safety of installed electrical systems within and associated with existing dwellings.

1.3 Application.

1.3.1 This standard shall apply to hazardous conditions of electrical systems including, but not limited to, the following:

(1) Safety hazards
(2) Fire hazards
(3) Shock hazards
(4) Overheating conditions
(5) Physical deterioration
(6) Abuse
(7) Noncompliant installations

1.3.2 This standard applies to accessible electrical equipment.

1.3.3 The removal of faceplates or other covers or luminaires (fixtures) to identify hazards shall be permitted.

1.3.4 These inspection procedures shall not damage the building structure, wiring, or equipment.

1.3.5 Inspections in accordance with this standard do not necessarily identify future conditions such as failure of components or other portions of equipment or wiring.

1.3.6 This standard does not apply to the inspection of new construction, recreational vehicles, or the factory-installed internal wiring and construction of appliances and utilization equipment.

1.3.7 This standard does not define installation requirements that might be desired for convenience or utilitarian purposes.

1.3.8 This standard is intended to require only the remedial action necessary to correct identified hazards.

1.4 Equivalency.

1.4.1 Devices, systems, or methods that differ from those in this standard shall be permitted to be examined or tested according to the intent of this standard.

1.4.2 The authority having jurisdiction shall be permitted to approve devices, systems, or methods found to be in compliance with 1.4.1.

1.4.3 Technical documentation shall be submitted to the authority having jurisdiction to demonstrate compliance with 1.4.1.

Chapter 2 Referenced Publications

2.1 General. The documents or portions thereof listed in this chapter are referenced within this standard and shall be considered part of the requirements of this document.

2.2 NFPA Publications. National Fire Protection Association, 1 Batterymarch Park, Quincy, MA 02169-7471.

NFPA 70®, National Electrical Code®, 2014 edition.

2.3 Other Publications.

Merriam-Webster's Collegiate Dictionary, 11th edition, Merriam-Webster, Inc., Springfield, MA, 2003.

2.4 References for Extracts in Mandatory Sections.

NFPA 70®, National Electrical Code®, 2014 edition.

Chapter 3 Definitions

3.1 General. The definitions contained in this chapter shall apply to the terms used in this standard. Where terms are not defined in this chapter or within another chapter, they shall be defined using their ordinarily accepted meanings within the

context in which they are used. *Merriam-Webster's Collegiate Dictionary*, 11th edition, shall be the source for the ordinarily accepted meaning.

3.2 NFPA Official Definitions.

3.2.1* Approved. Acceptable to the authority having jurisdiction.

3.2.2* Authority Having Jurisdiction (AHJ). An organization, office, or individual responsible for enforcing the requirements of a code or standard, or for approving equipment, materials, an installation, or a procedure.

3.2.3* Listed. Equipment, materials, or services included in a list published by an organization that is acceptable to the authority having jurisdiction and concerned with evaluation of products or services, that maintains periodic inspection of production of listed equipment or materials or periodic evaluation of services, and whose listing states that either the equipment, material, or service meets appropriate designated standards or has been tested and found suitable for a specified purpose.

3.2.4 Standard. An NFPA Standard, the main text of which contains only mandatory provisions using the word "shall" to indicate requirements and that is in a form generally suitable for mandatory reference by another standard or code or for adoption into law. Nonmandatory provisions are not to be considered a part of the requirements of a standard and shall be located in an appendix, annex, footnote, informational note, or other means as permitted in the NFPA Manuals of Style. When used in a generic sense, such as in the phrase "standards development process" or "standards development activities," the term "standards" includes all NFPA Standards, including Codes, Standards, Recommended Practices, and Guides.

3.3 General Definitions.

3.3.1 Accessible.

3.3.1.1 ***Accessible (as applied to equipment).*** Admitting close approach; not guarded by locked doors, elevation, or other effective means. [**70:**100]

3.3.1.2 ***Accessible (as applied to wiring methods).*** Capable of being removed or exposed without damaging the building structure or finish, or not permanently closed in by the structure or finish of the building. [**70:**100]

3.3.1.3 ***Readily Accessible.*** Capable of being reached quickly for operation, renewal, or inspections without requiring those to whom ready access is requisite to actions such as to use tools, to climb over or remove obstacles, or to resort to portable ladders, and so forth. [**70:**100]

3.3.2 Appliance. Utilization equipment, generally other than industrial, that is normally built in standardized sizes or types, and is installed or connected as a unit to perform one or more functions such as clothes washing, air conditioning, food mixing, deep frying, and so forth. [**70:**100]

3.3.3 Arc-Fault Circuit Interrupter. (AFCI) A device intended to provide protection from the effects of arc faults by recognizing characteristics unique to arcing and by functioning to de-energize the circuit when an arc fault is detected. [**70:**100]

3.3.4 Bonded (Bonding). Connected to establish electrical continuity and conductivity. [**70:**100]

3.3.5 Branch Circuit. The circuit conductors between the final overcurrent device protecting the circuit and the outlet(s). [**70:**100]

3.3.6 Conductor.

3.3.6.1 ***Grounded Conductor.*** A system or circuit conductor that is intentionally grounded. [**70:**100]

3.3.6.2 ***Grounding Conductor, Equipment (EGC).*** The conductive path(s) installed to connect normally non-current-carrying metal parts of equipment together and to the system grounded conductor or to the grounding electrode conductor, or both. [**70:**100]

3.3.6.3 ***Grounding Electrode Conductor (GEC).*** A conductor used to connect the system grounded conductor or the equipment to a grounding electrode or to a point on the grounding electrode system. [**70:**100]

3.3.7 Dwelling Unit. A single unit, providing complete and independent living facilities for one or more persons, including permanent provisions for living, sleeping, cooking, and sanitation. [**70:**100]

3.3.7.1 ***Dwelling, Multifamily.*** A building that contains three or more dwelling units. [**70:**100]

3.3.7.2 ***Dwelling, One-Family.*** A building that consists solely of one dwelling unit. [**70:**100]

3.3.7.3 ***Dwelling, Two-Family.*** A building that consists solely of two dwelling units. [**70:**100]

3.3.8 Equipment. A general term including fittings, devices, appliances, luminaires, apparatus, machinery, and the like used as a part of, or in connection with, an electrical installation.

3.3.9 Exposed (as applied to live parts). Capable of being inadvertently touched or approached nearer than a safe distance by a person. It is applied to parts that are not suitably guarded, isolated, or insulated. [**70:**100]

3.3.10 Feeder. All circuit conductors between the service equipment, the source of a separately derived system, or other power supply source and the final branch-circuit overcurrent device.

3.3.11 Grounded (Grounding). Connected (connecting) to ground or to a conductive body that extends the ground location. [**70:**100]

3.3.11.1 ***Grounded, Solidly.*** Connected to ground without inserting any resistor or impedance device. [**70:**100]

3.3.12* Ground-Fault Circuit Interrupter (GFCI). A device intended for the protection of personnel that functions to de-energize a circuit or portion thereof within an established period of time when a current to ground exceeds the values established for a Class A device. [**70:**100]

3.3.13 Grounding Electrode. A conducting object through which a direct connection to earth is established. [**70:**100]

3.3.14* Identified (as applied to equipment). Recognizable as suitable for the specific purpose, function, use, environment, application, and so forth, where described in a particular Code requirement. [**70:**100]

3.3.15 Luminaire. A complete lighting unit consisting of a light source such as a lamp or lamps, together with the parts

designed to position the light source and connect it to the power supply. It may also include parts to protect the light source or the ballast or to distribute the light. A lampholder itself is not a luminaire. [**70:**100]

3.3.16 Manufactured Home. A structure, transportable in one or more sections, that, in the traveling mode, is 2.4 m (8 body-ft) or more in width or 12.2 m (40 body-ft) or more in length, or, when erected on site, is 29.7 m^2 (320 ft^2) or more and that is built on a permanent chassis and designed to be used as a dwelling, with or without a permanent foundation, when connected therein. The term *manufactured home* includes any structure that meets all the provisions of this paragraph except the size requirements and with respect to which the manufacturer voluntarily files a certification required by the regulatory agency, and except that such term does not include any self-propelled recreational vehicle. Calculations used to determine the number of square meters (square feet) in a structure are based on the structure's exterior dimensions, measured at the largest horizontal projections when erected on site. These dimensions include all expandable rooms, cabinets, and other projections containing interior space but do not include bay windows. [**70:**550.2]

3.3.17 Mobile Home. A factory-assembled structure or structures transportable in one or more sections that are built on a permanent chassis and designed to be used as a dwelling without a permanent foundation where connected to the required utilities and that include the plumbing, heating, air-conditioning, and electrical systems contained therein. [**70:**550.2]

3.3.18 Outlet. A point on the wiring system at which current is taken to supply utilization equipment. [**70:**100]

3.3.19 Overcurrent Protective Device. A device that automatically interrupts the circuit when current in excess of a given rating flows through the circuit because of a short circuit, overload, or ground fault.

3.3.19.1* ***Circuit Breaker.*** A device designed to open and close a circuit by nonautomatic means and to open the circuit automatically on a predetermined overcurrent without damage to itself when properly applied within its rating. [**70:**100]

3.3.19.2 ***Fuse.*** An overcurrent protective device containing a conductor that melts when heated by an overcurrent condition, thus opening the circuit.

3.3.20 Panelboard. A single panel or group of panel units designed for assembly in the form of a single panel, including buses and automatic overcurrent devices, and equipped with or without switches for the control of light, heat, or power circuits; designed to be placed in a cabinet or cutout box placed in or against a wall, partition, or other support; and accessible only from the front. [**70:**100]

3.3.21 Raceway. An enclosed channel of metal or nonmetallic materials designed expressly for holding wires, cables, or busbars, with additional functions as permitted in *NFPA 70*. Raceways include, but are not limited to, rigid metal conduit, rigid nonmetallic conduit, intermediate metal conduit, liquid-tight flexible conduit, flexible metallic tubing, flexible metal conduit, electrical nonmetallic tubing, electrical metallic tubing, underfloor raceways, cellular concrete floor raceways, cellular metal floor raceways, surface raceways, wireways, and busways. [**70:**100]

3.3.22 Receptacle. A receptacle is a contact device installed at the outlet for the connection of an attachment plug. A single receptacle is a single contact device with no other contact device on the same yoke. A multiple receptacle is two or more contact devices on the same yoke. [**70:**100]

3.3.23 Service. The conductors and equipment for delivering electric energy from the serving utility to the wiring system of the premises served. [**70:**100]

3.3.24 Switch, General-Use. A switch intended for use in general distribution and branch circuits. It is rated in amperes, and it is capable of interrupting its rated current at its rated voltage. [**70:**100]

3.3.25 Utilization Equipment. Equipment that utilizes electric energy for electronic, electromechanical, chemical, heating, lighting, or similar purposes. [**70:**100]

Chapter 4 General Requirements

4.1 General Examination and Use of Installed Equipment.

4.1.1 Installation and Use. Listed or labeled equipment shall be installed and used in accordance with any instructions included in the listing or labeling. [**70:**110.3(B)]

4.1.2 Deteriorating Agents. Unless identified for use in the operating environment, no conductors or equipment shall be located in damp or wet locations; where exposed to gases, fumes, vapors, liquids, or other agents that have a deteriorating effect on the conductors or equipment; or where exposed to excessive temperatures. [**70:**110.11]

4.1.3 Unused Openings.

4.1.3.1 Unused openings, other than those intended for the operation of equipment, those intended for mounting purposes, or those permitted as part of the design for listed equipment, shall be closed to afford protection substantially equivalent to the wall of the equipment. [**70:**110.12(A)]

4.1.3.2 Where metallic plugs or plates are used with nonmetallic enclosures, they shall be recessed at least 6 mm (¼ in.) from the outer surface of the enclosure. [**70:**110.12(A)]

4.1.4 Integrity of Electrical Equipment and Connections. Internal parts of electrical equipment, including busbars, wiring terminals, insulators, and other surfaces, shall not be damaged or contaminated by foreign materials such as paint, plaster, cleaners, abrasives, or corrosive residues. There shall be no damaged parts that may adversely affect safe operation or mechanical strength of the equipment such as parts that are broken; bent; cut; or deteriorated by corrosion, chemical action, or overheating. [**70:**110.12(B)]

4.1.5* Electrical Connections. Conductors of dissimilar metals shall not be intermixed in a terminal or splicing connector where physical contact occurs between dissimilar conductors (such as copper and aluminum, copper and copper-clad aluminum, or aluminum and copper-clad aluminum), unless the device is identified for the purpose and conditions of use.

4.1.6 Spaces About Electrical Equipment. Access and working space shall be provided and maintained about all electrical equipment to permit ready and safe operation and maintenance of such equipment. [**70:**110.26].

4.2 Services, Outside Feeders, and Outside Branch Circuits.

4.2.1 Interior metal water piping systems shall be bonded to the electrical service grounding system.

4.2.2 The service shall be sized or rated to serve the connected load.

4.2.3 Weatherheads shall be fastened in place.

4.2.4 Service-entrance conductors shall not show evidence of deterioration of conductor insulation or cable sheath.

4.2.5 Service conductors, outside feeders, and outside branch circuits shall have the required clearances above roofs, from ground, from building openings, and from swimming pools to prevent accidental contact.

4.2.6 Service-entrance raceways or cables shall be fastened in place.

4.2.7 Service-entrance raceways and cables shall be terminated with fittings or connectors that are approved for the type of raceways, cables, and environmental conditions.

4.2.8 Service-Entrance Equipment.

4.2.8.1 Service-entrance equipment shall be readily accessible.

4.2.8.2 Service-entrance equipment, cables, raceways, or conductors shall not show evidence of physical damage, overheating, corrosion, or other deterioration.

4.2.9 Service Equipment Grounding.

4.2.9.1 Service equipment shall be grounded.

4.2.9.2 The grounding electrode conductor shall be sized, terminated, and connected to one or more grounding electrode(s) to provide low impedance and have current carrying capacity to prevent the buildup of voltages that result in undue hazard to connected equipment or to persons.

4.2.10 Grounding Electrode Conductors.

4.2.10.1 The connection of a grounding electrode conductor or bonding jumper to a grounding electrode shall be made in a manner that will ensure a permanent and effective grounding path.

4.2.10.2 The grounding electrode conductor shall be connected to the grounding electrode or to a point on the grounding electrode system.

4.2.10.3 The grounding electrode conductor and connector shall not show evidence of physical damage or deterioration.

4.2.10.4 The grounding electrode conductor shall be protected against physical damage as needed to safeguard the integrity of the grounding electrode conductor.

4.2.10.5 Metal enclosures providing physical protection of the grounding electrode conductor shall be bonded at each end to the grounding electrode conductor.

4.2.10.6 The grounding electrode conductor shall be continuous in its length unless otherwise permitted to be spliced or joined.

4.2.10.7 Where tap conductors are connected to the grounding electrode conductor, they shall be connected in such a manner that the grounding electrode conductor remains without a splice.

4.2.10.8 The dwelling grounding electrode system and other grounding systems, such as those for communications, CATV, and satellite, shall be bonded together.

4.3 Panelboards and Distribution Equipment.

4.3.1 Panelboards and distribution equipment shall be readily accessible.

4.3.2* Panelboards and distribution equipment shall not show evidence of physical damage, overheating, corrosion, or other deterioration.

4.3.3 All cables entering the equipment shall be fastened with approved connectors.

4.3.4 All unused openings shall be closed using a material that meets or exceeds the wall thickness or characteristic of the panelboard or distribution equipment.

4.3.5 All metal parts shall be effectively grounded or bonded using approved fittings.

4.3.6 Dead-front panels, partitions, or parts of the enclosure shall be installed to ensure protection from live parts.

4.3.7 Disconnecting means marking shall comply with 4.3.7.1 and 4.3.7.2.

4.3.7.1 Each disconnecting means for motors and appliances, and each service, feeder, or branch circuit at the point where it originates, shall be legibly marked to indicate its purpose unless located and arranged so the purpose is evident.

4.3.7.2 The marking shall be capable of withstanding the environment involved.

4.4 Overcurrent Protective Devices.

4.4.1 Overcurrent protective devices shall be rated for the conductor under the conditions of use.

4.4.2 Overcurrent protective devices shall not show evidence of physical damage or overheating.

4.4.3 Connections and terminations of overcurrent protective devices shall not be loose or corroded.

4.4.4 Listed overcurrent protective devices, including circuit breakers and fuses, shall be used or installed in accordance with any instructions included in the listing or labeling.

4.4.5 Where evidence of overfusing of or tampering with Edison-based-type fuses exists, Type S nontamperable adapters and fuses shall be installed.

4.5 Cables, Cable Assemblies, and Conductors.

4.5.1 Physical Support.

4.5.1.1 Exposed cables and cable assemblies, including exposed knob-and-tube wiring, shall be supported to prevent physical damage to the cable or cable assembly.

4.5.1.2 Cables and cable assemblies entering panelboards, boxes, and devices shall be fastened and supported to ensure that stress is not transmitted to the conductors and termination(s).

4.5.2 Conductors and Cables.

4.5.2.1 The conductor size shall be not less than the ampere rating of the circuit unless otherwise permitted for specific types of utilization equipment.

4.5.2.2 Except for older knob-and-tube wiring, single conductors that are not part of an approved cable or cable assembly shall be installed with an approved wiring method.

4.5.2.3 Type AC cable and Type NM cable shall not be used in damp or wet locations.

4.5.2.4 Conductors, cables, and cable assemblies shall not show evidence of overheating or deterioration.

4.5.2.5 Conductors, cables, and cable assemblies shall not show evidence of fraying, damage, or physical abuse.

4.5.3 Conductor Terminations and Splices.

4.5.3.1 Conductors shall be terminated at panelboards, devices, and boxes to ensure a secure connection without damage to the connection or the conductors.

4.5.3.2 More than one conductor shall not be installed in any terminal unless identified or approved for such use.

4.5.3.3 Splices and taps shall be made in an approved box or enclosure, or other approved manner.

4.5.4 Grounded Conductors.

4.5.4.1 An insulated grounded conductor of 6 AWG or smaller shall be identified by a continuous white or gray outer finish along its entire length.

4.5.4.2 No other conductors shall be identified by the color white or gray.

4.5.4.3 Grounded circuit conductors in branch circuits shall not be connected to non-current-carrying metal parts, except for existing branch-circuit installations for electric ranges, wall-mounted ovens, counter-mounted cooking units, clothes dryers, and outlet or junction boxes that are part of the circuit for these appliances where an equipment grounding conductor is not present. The frames for these appliances shall be permitted to be connected to the grounded circuit conductor if all the following conditions are met:

(1) The supply circuit is 120/240-volt, single-phase, 3-wire; or 208Y/120-volt derived from a 3-phase, 4-wire, wye-connected system.
(2) The grounded conductor is not smaller than 10 AWG copper or 8 AWG aluminum.
(3) The grounded conductor is insulated, or the grounded conductor is uninsulated and part of a Type SE service-entrance cable and the branch circuit originates at the service equipment.
(4) Grounding contacts of receptacles furnished as part of the equipment are bonded to the equipment.

4.5.5 Equipment Grounding Conductors.

4.5.5.1 Equipment grounding conductors shall be permitted to be bare, covered, or insulated.

4.5.5.2 Individually covered or insulated equipment grounding conductors shall have a continuous outer finish that is either green or green with one or more yellow stripes.

4.5.5.3 Ungrounded and grounded Class 1 conductors shall not be identified by the color green or green with one or more yellow stripes.

4.6 Flexible Cords and Cables.

4.6.1 Flexible cords and cables shall not be used as follows:

(1) As a substitute for the fixed wiring of a structure
(2) Where run through holes in walls, ceilings, or floors
(3) Where run through doorways or windows, under carpets, and so forth
(4) Where attached to building surfaces

4.6.2 Flexible cords or cables used as a substitute for fixed wiring to supply outlets in rooms or areas shall be removed and, where required, shall be replaced with permanently installed receptacles using an approved wiring method.

4.7 Raceways.

4.7.1 Raceways shall be fastened in place.

4.7.2 Raceways shall be terminated in fittings or connectors that are designed for the specific wiring method with which they are used.

4.7.3 Raceways shall not show evidence of deterioration or physical damage.

4.8 Permanently Connected Luminaires (Lighting Fixtures).

4.8.1 Luminaire taps and branch-circuit supply conductors shall not show evidence of damage or deterioration from overheating.

4.8.2 Luminaire canopies shall be fastened in place.

4.8.3 Where identified, luminaires shall be lamped in accordance with available instructions and shall not exceed marked maximum ratings.

4.8.4 Where luminaire tap conductors or terminals and branch-circuit conductors are identified for polarization, luminaire (lighting fixture) connections shall be correctly polarized.

4.8.5 Polarization of Luminaires.

4.8.5.1 Luminaires shall be wired so that the screw shells of lampholders are connected to the same luminaire or circuit conductor or terminal.

4.8.5.2 The grounded conductor, where connected to a screw-shell lampholder, shall be connected to the screw shell.

4.8.6 Incandescent luminaires with open or partially enclosed lamps and pendent luminaires or lampholders shall not be installed in clothes closets.

4.8.7 Luminaires marked with a minimum supply wire temperature rating shall not be installed with supply wiring having a lower temperature rating.

4.8.8 Recessed luminaires not intended for contact with insulation shall not be installed within 13 mm (½ in.) of combustible materials or within 75 mm (3 in.) of thermal insulation.

4.8.9 Luminaires installed in wet locations shall be identified for use in wet locations.

4.9 Boxes and Enclosures.

4.9.1 Boxes and covers shall be fastened in place.

4.9.2 Boxes, covers, and enclosures installed in wet locations shall be identified for use in wet locations. Where boxes, covers, or enclosures are equipped with a gasket or other means to seal an opening and prevent water from entering, the gasket or other means shall not have deteriorated to jeopardize the integrity of the seal.

4.9.3 Boxes and enclosures installed in damp locations shall be placed or equipped so as to prevent moisture from entering or accumulating.

4.9.4 All unused openings in boxes or enclosures shall be closed using a material that meets or exceeds the wall thickness or characteristic of the box or enclosure.

4.9.5 Where an equipment grounding conductor is provided, all non-current-carrying metal parts that are likely to become energized shall be effectively grounded.

4.9.6 In walls and ceilings constructed of wood or other combustible surface material, boxes shall be flush with the finished surface or project therefrom.

4.9.7 Plaster, drywall, or plasterboard surfaces that are broken or incomplete shall be repaired so there will be no gaps or open spaces greater than 3 mm (⅛ in.) at the edge of the box or fitting.

4.10 General-Use Switches and Receptacles.

4.10.1 Enclosures shall be fastened in place.

4.10.2 Faceplates shall not be damaged or missing.

4.10.3 Connection of conductors to termination points shall ensure tight connections without showing evidence of arcing or overheating.

4.10.4 Switches and receptacles shall be fastened in place and shall not show evidence of overheating or physical damage.

4.10.5 The function of switches and receptacles shall not be impaired by physical damage.

4.10.6 Switches and receptacles shall not be painted or have other coatings applied unless listed for such use.

4.10.7* Receptacle wiring shall comply with 4.10.7.1 through 4.10.7.3.

4.10.7.1 Testing.

4.10.7.1.1 Receptacles shall have correct wiring when tested with a listed receptacle tester.

4.10.7.1.2 The tester shall provide indications when branch circuit conductors are not connected to the intended terminals on the receptacle.

4.10.7.2 Where receptacles and branch-circuit conductors are identified for polarization, receptacles shall be correctly polarized.

4.10.7.3 All grounding-type receptacles shall be grounded or shall have ground-fault circuit-interrupter protection where installed on a circuit that does not have an equipment grounding conductor.

4.10.8 Receptacles shall be replaced when found to be worn to the extent that blade retention is adversely affected.

4.10.9 Switches shall be rated for the connected load.

4.10.10 The grounded conductor of branch circuits shall not be switched unless both grounded and ungrounded conductors are simultaneously disconnected.

Chapter 5 Appliances and Special Equipment

5.1* Ground-Fault Circuit Interrupters.

5.1.1 Where ground-fault circuit interrupters are installed, they shall operate correctly when tested with their integral test function.

5.1.2 For a receptacle type ground-fault circuit interrupter, this shall include determining that the outlet is deenergized when the integral test function is performed and reenergized when the reset function is performed.

5.2 Smoke Alarms and Carbon Monoxide Alarms.

5.2.1 Where smoke alarms or carbon monoxide alarms are installed, the alarms shall operate correctly when tested with their integral test function.

5.2.2 Smoke alarms shall be replaced when they fail to respond to operability tests and in no case shall an alarm remain in service longer than 10 years from the date of manufacture.

5.2.3 Carbon monoxide alarms shall be replaced when the end-of-life signal is activated, the manufacturer's replacement date is reached, or when an alarm fails to respond to operability tests.

5.2.4 Combination smoke/carbon monoxide alarms shall be replaced when the end-of-life signal activates or 10 years from the date of manufacture, whichever comes first.

5.2.5 The integrity of interconnected alarms shall be maintained.

5.2.6 AC-powered alarms shall not have been replaced with battery-powered alarms.

5.3 Appliances and Utilization Equipment.

5.3.1 Appliances and utilization equipment shall have a disconnecting means to disconnect all ungrounded conductors.

5.3.2 If a protective device rating is marked on an appliance, the branch circuit overcurrent device rating shall not exceed the protective device rating marked on the appliance.

5.3.3 All cables entering the equipment shall be fastened with approved connectors.

5.3.4 All non–current-carrying metal parts shall be effectively grounded.

5.4* Arc-Fault Circuit Interrupters. Where arc-fault circuit interrupters are installed, they shall operate correctly when tested with their integral test function.

5.5 Ceiling-Suspended (Paddle) Fans. Ceiling-suspended (paddle) fans shall be secured to the ceiling structure to allow the fan to operate as designed without visible vertical movement and with minimal vibration or wobble.

Annex A Explanatory Material

Annex A is not a part of the requirements of this NFPA document but is included for informational purposes only. This annex contains

explanatory material, numbered to correspond with the applicable text paragraphs.

A.1.2 Purpose. This standard is intended to be suitable for mandatory application by governmental bodies and other inspection agencies exercising legal jurisdiction over electrical installations.

A.3.2.1 Approved. The National Fire Protection Association does not approve, inspect, or certify any installations, procedures, equipment, or materials; nor does it approve or evaluate testing laboratories. In determining the acceptability of installations, procedures, equipment, or materials, the authority having jurisdiction may base acceptance on compliance with NFPA or other appropriate standards. In the absence of such standards, said authority may require evidence of proper installation, procedure, or use. The authority having jurisdiction may also refer to the listings or labeling practices of an organization that is concerned with product evaluations and is thus in a position to determine compliance with appropriate standards for the current production of listed items.

A.3.2.2 Authority Having Jurisdiction (AHJ). The phrase "authority having jurisdiction," or its acronym AHJ, is used in NFPA documents in a broad manner, since jurisdictions and approval agencies vary, as do their responsibilities. Where public safety is primary, the authority having jurisdiction may be a federal, state, local, or other regional department or individual such as a fire chief; fire marshal; chief of a fire prevention bureau, labor department, or health department; building official; electrical inspector; or others having statutory authority. For insurance purposes, an insurance inspection department, rating bureau, or other insurance company representative may be the authority having jurisdiction. In many circumstances, the property owner or his or her designated agent assumes the role of the authority having jurisdiction; at government installations, the commanding officer or departmental official may be the authority having jurisdiction.

A.3.2.3 Listed. The means for identifying listed equipment may vary for each organization concerned with product evaluation; some organizations do not recognize equipment as listed unless it is also labeled. The authority having jurisdiction should utilize the system employed by the listing organization to identify a listed product.

A.3.3.12 Ground-Fault Circuit Interrupter (GFCI). Class A ground-fault circuit interrupters trip when the current to ground is 6 mA or higher and do not trip when the current to ground is less than 4 mA. For further information, see ANSI/UL 943, *Standard for Ground-Fault Circuit Interrupters.* [**70:**100]

A.3.3.14 Identified (as applied to equipment). Some examples of how to determine the suitability of equipment for a specific purpose, environment, or application include investigations by a qualified testing laboratory (listing and labeling), an inspection agency, or other organizations concerned with product evaluation.

A.3.3.19.1 Circuit Breaker. The automatic opening means can be integral, direct acting with the circuit breaker, or remote from the circuit breaker. [**70:**100]

A.4.1.5 This is a partial extraction from *NFPA 70*, Section 110.14.

A.4.3.2 When replacing a panelboard or distribution equipment that contains overcurrent protection devices for lighting and appliance branch circuits that supply 125-volt, single-phase, 15- and 20-ampere outlets, additional protection can be accomplished by providing arc-fault circuit interrupter protection for the circuits that existed prior to the replacement.

A.4.10.7 Additional protection can be provided for nongrounding type receptacles by replacing the devices with a ground-fault circuit interrupter-type receptacle or a grounding-type receptacle in accordance with 406.3(D)(3)(b) or (c) of *NFPA 70*.

A.5.1 Additional protection can be accomplished by providing ground-fault circuit interrupter protection in accordance with 210.8(A) and 406.3(D)(2) of *NFPA 70*.

A.5.4 Additional protection can be accomplished by providing arc-fault circuit interrupter protection in accordance with 210.12 of *NFPA 70*.

Annex B National Electrical Code References

This annex is not part of the requirements of this NFPA document but is included for informational purposes only.

B.1 The age of the dwelling unit plays a role in defining when electrical safety items were required by *NFPA 70 (NEC)*. Table B.1(a) through Table B.1(c) permit the home inspector to easily share, with anyone questioning cited safety concerns, the safety requirements that should be in place in accordance with the age of the dwelling unit.

Annex C Sample Ordinance Adopting NFPA 73

This annex is not a part of the requirements of this NFPA document but is included for informational purposes only.

C.1 ORDINANCE NO._____

An ordinance of the *[jurisdiction]* adopting the 2016 edition of NFPA 73, *Standard for Electrical Inspections for Existing Dwellings,* and documents listed in Chapter 2 of that code; prescribing regulations governing conditions hazardous to life and property from fire or explosion; providing for the issuance of permits and collection of fees; repealing Ordinance No._____ of the *[jurisdiction]* and all other ordinances and parts of ordinances in conflict therewith; providing a penalty; providing a severability clause; and providing for publication; and providing an effective date.

BE IT ORDAINED BY THE *[governing body]* OF THE *[jurisdiction]*:

SECTION 1 That NFPA 73, *Standard for Electrical Inspections for Existing Dwellings,* and documents adopted by Chapter 2, three (3) copies of which are on file and are open to inspection by the public in the office of the *[jurisdiction's keeper of records]* of the *[jurisdiction]*, are hereby adopted and incorporated into this ordinance as fully as if set out at length herein, and from the date on which this ordinance shall take effect, the provisions thereof shall be controlling within the limits of the *[jurisdiction]*. The same are hereby adopted as the code of the *[jurisdiction]* for the purpose of prescribing regulations governing conditions hazardous to life and property from fire or explosion and providing for issuance of permits and collection of fees.

Table B.1(a) NEC GFCI Protection Requirements (for Dwelling Units) — Alphabetical Listing by Area

Area	Description	NEC Edition
Appliances	Cord-and-plug-connected appliances subject to immersion	2002
Basement	Receptacles in basements	1987
Basements, unfinished	Receptacles in unfinished basements	1990
Bathroom	Receptacles in bathrooms	1975
Boathouses	Receptacles in boathouses	1987
Crawl spaces	Receptacles at or below grade level	1990
Dwelling unit	Receptacles within 6 ft of all sinks	2014
	Receptacles within 6 ft of bathtubs or shower stalls	2014
Electric drinking fountains	Electric drinking fountains	2008
Fountains	Branch circuits supplying fountain equipment	1975
Garage	Receptacles in garages	1978
Kitchen	Countertop receptacles within 6 ft of a kitchen sink	1987
	All countertop receptacles	1996
	Dishwasher outlets	2014
Laundry areas	Receptacles near laundry and utility sinks	2005
	All receptacles in laundry areas	2014
Other than kitchens	Receptacles within 6 ft of all sinks	2011
Outdoor	Outdoor receptacles	1975
Spas and hot tubs	Outdoor installations – receptacles near the inside walls of a spa or hot tub	1981
	Outdoor installations – nearby luminaires and lighting outlets	1981
	Indoor installations – receptacles located near the inside walls of a spa or hot tub	1981
	Indoor installations – receptacles that provide power for a spa or hot tub	1981
Swimming pools	Underwater lighting	1962
	Receptacles near swimming pools	1971
	Luminaires and lighting outlets near a swimming pool	1975
	All electric equipment, including power supply cords, used with storable swimming pools	1975
	Cord connected pool filter pumps	2008
	Outlets supplying pool pump motors	2008
Temporary wiring	Receptacles not a part of the permanent wiring	1975
Vending machines	Cord-and-plug-connected vending machines	2005
Wet bar sinks	Receptacles near wet bar sinks	1993

Note: Exceptions may apply. Refer to the appropriate NEC edition and section.

SECTION 2 Any person who shall violate any provision of this code or standard hereby adopted or fail to comply therewith; or who shall violate or fail to comply with any order made thereunder; and from which no appeal has been taken; or who shall fail to comply with such an order as affirmed or modified by or by a court of competent jurisdiction, within the time fixed herein, shall severally for each and every such violation and noncompliance, respectively, be guilty of a misdemeanor, punishable by a fine of not less than $_____ nor more than $_____ or by imprisonment for not less than_____ days nor more than_____ days or by both such fine and imprisonment. The imposition of one penalty for any violation shall not excuse the violation or permit it to continue; and all such persons shall be required to correct or remedy such violations or defects within a reasonable time; and when not otherwise specified the application of the above penalty shall not be held to prevent the enforced removal of prohibited conditions. Each day that prohibited conditions are maintained shall constitute a separate offense.

SECTION 3 Additions, insertions, and changes — that the 2016 edition of NFPA 73 is amended and changed in the following respects:

List Amendments

SECTION 4 That ordinance No._____ of *[jurisdiction]* entitled *[fill in the title of the ordinance or ordinances in effect at the present time]* and all other ordinances or parts of ordinances in conflict herewith are hereby repealed.

SECTION 5 That if any section, subsection, sentence, clause, or phrase of this ordinance is, for any reason, held to be invalid or unconstitutional, such decision shall not affect the validity or constitutionality of the remaining portions of this ordinance. The *[governing body]* hereby declares that it would have passed this ordinance, and each section, subsection, clause, or phrase hereof, irrespective of the fact that any one or more sections, subsections, sentences, clauses, and phrases be declared unconstitutional.

Table B.1(b) NEC GFCI Protection Requirements (for Dwelling Units) — Listed by NEC Edition

Area	Description	NEC Edition
Swimming pools	Underwater lighting	1962
	Receptacles near swimming pools	1971
Bathroom	Receptacles in bathrooms	1975
Fountains	Branch circuits supplying fountain equipment	1975
Outdoor	Outdoor receptacles	1975
Swimming pools	Luminaires and lighting outlets near a swimming pool	1975
	All electric equipment, including power supply cords, used with storable swimming pools	1975
Temporary wiring	Receptacles not a part of the permanent wiring	1975
Garage	Receptacles in garages	1978
Spas and hot tubs	Outdoor installations – receptacles near the inside walls of a pool	1981
	Outdoor installations – nearby luminaires and lighting outlets	1981
	Indoor installations – receptacles located near the inside walls of a spa or hot tub	1981
	Indoor installations – receptacles that provide power for a spa or hot tub	1981
Basement	Receptacles in basements	1987
Boathouses	Receptacles in boathouses	1987
Kitchen	Countertop receptacles within 6 ft of a kitchen sink	1987
Basements, unfinished	Receptacles in unfinished basements	1990
Crawl spaces	Receptacles at or below grade level	1990
Wet bar sinks	Receptacles near wet bar sinks	1993
Kitchen	All countertop receptacles	1996
Appliances	Cord and plug connected appliances subject to immersion	2002
Laundry areas	Receptacles near laundry and utility sinks	2005
Vending machines	Cord-and-plug-connected vending machines	2005
Electric drinking fountains	Electric drinking fountains	2008
Swimming pools	Cord-connected pool filter pumps	2008
	Outlets supplying pool pump motors	2008
Other than kitchens	Receptacles within 6 ft of all sinks	2011
Dwelling unit	Receptacles within 6 ft of all sinks	2014
	Receptacles within 6 ft of bathtubs or shower stalls	2014
Kitchen	Dishwasher outlets	2014
Laundry areas	All receptacles in laundry areas	2014

Note: Exceptions may apply. Refer to the appropriate NEC edition and section.

Table B.1(c) NEC AFCI Protection Requirements (for Dwelling Units) — Listed by NEC Edition

Area	Description	NEC Edition
Bedrooms	Bedroom receptacles	1999*
	Bedroom outlets	2002†
Family rooms	Family room outlets	2008
Dining rooms	Dining room outlets	2008
Living rooms	Living room outlets	2008
Parlors	Parlor outlets	2008
Libraries	Library outlets	2008
Dens	Den outlets	2008
Sunrooms	Sunroom outlets	2008
Recreation rooms	Recreation room outlets	2008
Closets	Closet outlets	2008
Hallways	Hallway outlets	2008
Kitchen	Kitchen outlets	2014
Laundry areas	Laundry area outlets	2014

* 1999 NEC required AFCI protection for circuits with bedroom receptacle outlets effective 1/1/02

† 2005 NEC required listed combination type AFCI devices effective as of 1/1/08

SECTION 6 That the *[jurisdiction's keeper of records]* is hereby ordered and directed to cause this ordinance to be published.

[NOTE: An additional provision may be required to direct the number of times the ordinance is to be published and to specify that it is to be in a newspaper in general circulation. Posting may also be required.]

SECTION 7 That this ordinance and the rules, regulations, provisions, requirements, orders, and matters established and adopted hereby shall take effect and be in full force and effect *[time period]* from and after the date of its final passage and adoption.

Annex D Informational References

D.1 Referenced Publications. The documents or portions thereof listed in this annex are referenced within the informational sections of this standard and are not part of the requirements of this document unless also listed in Chapter 2 for other reasons.

D.1.1 NFPA Publications. National Fire Protection Association, 1 Batterymarch Park, Quincy, MA 02169-7471.

NFPA 70®, National Electrical Code®, 2014 edition.

D.1.2 Other Publications.

D.1.2.1 UL Publications. Underwriters Laboratories Inc., 333 Pfingsten Road, Northbrook, IL 60062-2096.

ANSI/UL 943, *Standard for Ground-Fault Circuit Interrupters*, 2006, revised 2008.

D.2 Informational References. (Reserved)

D.3 References for Extracts in Informational Sections.

NFPA 70®, *National Electrical Code®*, 2014 edition.

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