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NATIONAL FIRE PROTECTION ASSOCIATION
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The National Fire Protection Association was organized in 1896 to promote the science and improve the methods of fire protection. Any-one interested may become an Associate Member; the annual dues are \$20.00. National and regional societies and associations are eligible to be Organization Members, annual dues are \$150. Full membership information is available on request.

This is one of a large number of publications on fire safety issued by the Association. All NFPA codes, standards, and recommended practices are prepared by NFPA Technical Committees and adopted at an Annual Meeting of the Association. They are intended to prescribe reasonable measures for minimizing losses of life and property by fire.

This and other NFPA codes, standards, and recommended practices are published in a ten-volume compilation of NFPA's official technical material. Following are the titles of the ten-volume set.

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- Vol. 4 Building Construction and Facilities
- Vol. 5 Electrical
- Vol. 6 Sprinklers, Fire Pumps and Water Tanks
- Vol. 7 Alarms and Special Extinguishing Systems
- Vol. 8 Portable and Manual Fire Control Equipment
- Vol. 9 Occupancy Standards and Process Hazards
- Vol. 10 Transportation

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National Electrical Code
1965 Edition
Third Printing

NFPA No. 70; ASA C1-1965
UDC No. 614.825

1965 Edition of NFPA No. 70

This 1965 Edition of the National Electrical Code (NFPA No. 70, ASA C1-1965) was adopted by the National Fire Protection Association at its Annual Meeting held May 17-21, 1965 in Washington D.C., and by the American Standards Association on July 6, 1965. The Universal Decimal Classification system number for this document is 614.825. It supersedes all previous editions of the National Electrical Code, the most recent previous edition being 1962.

Changes in this 1965 Edition of the National Electrical Code (as compared with the 1962 Edition) are indicated by vertical marginal rules on the affected pages. In certain cases, minor editorial changes are not so indicated. For editorial changes in this printing see page 70-ii.

Special attention is called to the inclusion in this 1965 Edition of Tentative Interim Amendments No. 127 and No. 128 affecting Sections 354-6 and 210-21. (b), respectively. These Tentative Interim Amendments are published in the Appendix. Attention is also called to the Appendix for the "Timetable for the 1968 National Electrical Code" which is the next regular edition. The "Method of Submitting Proposal to Revise the National Electrical Code" is included in the Appendix to guide anyone concerned with the proper procedures for handling proposed revisions.

This Code is purely advisory as far as the NFPA and the ASA are concerned but is offered for use in law and for regulatory purposes in the interest of life and property protection (see copyright statement on page ii). Anyone noticing any errors should please notify the NFPA Executive Office, the Chairman and the Secretary of the Committee.

This edition is also published by the NFPA in the current edition of Volume 5 of the National Fire Codes.

Origin and Development of No. 70

Consistent with the Rules of Procedure for the National Electrical Code Committee (see Appendix) a "PREPRINT" OF THE PROPOSED AMENDMENTS FOR THE 1965 NATIONAL ELECTRICAL CODE was published by the National Fire Protection Association in July 1964. This "PREPRINT" recorded the actions of the various Code-Making Panels and the Correlating Committee of the National Electrical Code Committee on each proposal that had been made to revise the 1962 Code. Subsequently, the various Code-Making Panels finalized their recommendations and their reports were processed through the Correlating Committee of the National Electrical Code Committee. This was preparatory to the formal presentation of this 1965 Edition of the National Electrical Code, in Volume 2 of the 1965 NFPA ADVANCE

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REPORTS. This latter publication was circulated to all members of the National Electrical Code Committee, to other interested NFPA members, and offered to the public through technical releases in the interested trade papers. The action of the 1965 NFPA Annual Meeting as to the adoption of the 1965 Edition is recorded in the PROCEEDINGS of that Meeting, published by the Association.

Coincident with the above processing procedures, each of the Code-Making Panels and the Chairman of the Correlating Committee reported their recommendations to meetings of the Electrical Section at both the 1964 and 1965 Annual Meetings. The Electrical Section (See Rules of Procedure, Appendix) thus had opportunity to discuss and review the report of the National Electrical Code Committee prior to the adoption of this Edition of the Code by the Association.

Third Printing Corrections

This is the third printing of the National Electrical Code, 1965 Edition. Some editorial and typographical errors in the first and second printings have been corrected herein. They are:

- Page 19 — in 200-6(a), third line, change reference to 310-2(g).
- *Page 31 — marginal rule inserted opposite first paragraph of 220-3(b).
- *Page 43 — correct Section Number to 230-53 in lieu of 250-53.
- Page 45 — marginal rule inserted opposite fine print note to 230-70(g) and eliminated opposite fine print note to 230-70(h).
- Page 74 — marginal rule inserted opposite last three lines of the first paragraph of 250-81.
- *Page 79 — third footnote under Table 250-95 reset in "standard" type since it is a mandatory rule.
- *Page 86 — changed the word "or" to "of" in the third line of 300-6(a).
- Page 87 — 300-7 — marginal rule should be opposite the second paragraph and deleted from the first paragraph.
- Page 93 — Table 310-2(a) — additional operating temperatures for special applications inserted under "Mineral Insulation (Metal Sheathed)" conductors and "Silicone-Asbestos" conductors, eliminating data on maximum operating temperatures for special applications for both types of conductors in column headed "Application Provisions."
- *Page 113 — in the fourth line of 318-4(e) correct the reference to Section 318-2(b) in lieu of 218-2(b).
- Page 125 — the word "armored" changed to "metal-clad" in fifth line of the text of 334-10(b) as appearing on this page.
- Page 129 — the word "case" changed to "cable" in last line of 342-1.
- Page 159 — in the fifth line of 374-1, after "overcurrent devices" revised to read "appliances or other similar equipment."
- *Page 161 — correct the title of Table 374-9(d), second line, last word, to read "Gage."
- *Page 167 — in Section 384-22, the third line of the text (first line on Page 167) was inadvertently omitted; add the following words: "coils, except where the operation of the overcurrent device might in-"
- Page 286 — in 514-8, fourth line, change reference to: 347-2(d).
- Page 311 — in 550-8(e), second line, the word "armored" changed to "metal-clad."
- Pages 366 — headings for Tables 710-34(a) and 368 and 710-34(f) inserted.

* Indicates change also achieved in Second Printing.

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National Electrical Code

NFPA No. 70; ASA C1-1965

ARTICLE 90 — INTRODUCTION

90-1. Purpose.

(a) The purpose of this Code is the practical safeguarding of persons and of buildings and their contents from hazards arising from the use of electricity for light, heat, power, radio, signalling and for other purposes.

(b) This Code contains basic minimum provisions considered necessary for safety. Compliance therewith and proper maintenance will result in an installation essentially free from hazard, but not necessarily efficient, convenient, or adequate for good service or future expansion of electrical use.

Hazards often occur because of overloading of wiring systems by methods or usage not in conformity with the Code. This occurs because initial wiring did not provide for increases in use of electricity. For this reason it is recommended that the initial installation be adequate and that reasonable provisions for system changes be made as may be required for future increase in the use of electricity.

(c) This Code is not intended as a design specification nor an instruction manual for untrained persons.

90-2. Scope.

(a) **Covered.** It covers the electric conductors and equipment installed within or on public and private buildings and other premises, including yards, carnival and parking lots, and industrial substations; also the conductors that connect the installations to a supply of electricity, and other outside conductors adjacent to the premises; also mobile homes and travel trailers.

(b) **Not Covered.** It does not cover installations in mines, ships, railway cars, aircraft, automotive equipment, or the installations or equipment employed by a railway, electric or communication utility in the exercise of its function as a utility, and located outdoors or in buildings used exclusively for that purpose.

90-3. **Code Arrangement.** Chapters 1, 2, 3 and 4 of the Code are of general application. Chapters 5, 6 and 7 apply to installations which involve special occupancies, special equipment or other special conditions. These chapters are supplementary to, or amendatory of, the general rules, and the latter apply under such circumstances except as so amended for the particular conditions. Chapter 8 governs installations of communication systems, and is independent of the preceding Chapters except as they may be specifically referred to. Some tables and examples are included in Chapter 9.

90-4. Definitions. Article 100 contains definitions of a number of terms that are used in two or more Articles. In general, terms used only in a single Article are defined in the Article concerned. For electrical terms not defined in the Code, refer to the American Standard Definitions of Electrical Terms, ASA C-42.

90-5. Fundamental Rules. Throughout the Code are paragraphs which state only fundamentals or objectives of safeguarding. These are followed by paragraphs setting forth the recognized methods and detail by which the purpose and intent of the fundamental may be satisfied. Accordingly, when employed, the rules stating a fundamental only will appear as the first paragraph of an Article or Section.

90-6. Interpretation. In order to promote uniformity of interpretation and application of this Code, the National Electrical Code Committee of the National Fire Protection Association has established a formal procedure for rendering interpretations in case of question. Applications for interpretations should be addressed to the National Fire Protection Association (see procedure for securing official interpretations of Code appearing in the Appendix).

90-7. Enforcement. This Code is intended to be suitable for mandatory application by governmental bodies exercising legal jurisdiction over electrical installations and for use by insurance inspectors. The administrative authority supervising such enforcement of the Code will have the responsibility for making interpretations of the rules, for deciding upon the approval of equipment and materials, and for granting the special permission contemplated in a number of the rules.

90-8. Examination of Equipment for Safety. For approval of specific items of equipment and materials covered by the Code, examinations for safety should be made under standard conditions, and the record made generally available through promulgation by organizations properly equipped and qualified for experimental testing, inspections of the run of goods at factories, and service-value determination through field inspections. This avoids the necessity for repetition of examinations by different examiners, frequently with inadequate facilities for such work, and the confusion that would result from conflicting reports as to the suitability of devices and materials examined for a given purpose.

90-9. Wiring Planning.

(a) It is recommended that electrical engineers and others when drawing plans and specifications make provision for ample raceways for wiring, spaces for equipment, and allowances for future increases in the use of electricity. In laying out an installation for constant-potential systems, provision should be made for distribution centers located in easily accessible places for convenience and safety of operation.

(b) It is elsewhere provided in this Code that the number of wires and circuits confined in a single enclosure be varyingly restricted. It is strongly recommended that electrical engineers and others who are planning installations provide similar restrictions wherever practicable, to the end that the effects of breakdowns from short-circuits or grounds, even though resulting fire and similar damage are confined to

wires, their insulation and enclosures, may not involve entire services to premises nor interruptions of essential and independent services.

90-10. Revisions. It is customary to revise this Code periodically to conform with developments in the art and the result of experience, and the latest edition of the Code should always be used.

Chapter 1. General

ARTICLE 100 — DEFINITIONS

General guides for this Article on Definitions include: (1) for simplicity, only definitions essential to the proper use of this Code are included; (2) only those terms used in two or more Articles are defined in full in Article 100, other definitions being defined in the individual Article where they apply; (3) in general, NEC definitions will be the same as definitions in the latest revision of ASA C-42, "Definitions of Electrical Terms," and are so identified by an asterisk*.

***Accessible:** (As applied to wiring methods.) Not permanently closed in by the structure or finish of the building; capable of being removed without disturbing the building structure or finish. (See "Concealed" and "Exposed.")

***Accessible:** (As applied to equipment.) Admitting close approach because not guarded by locked doors, elevation or other effective means. (See "Readily Accessible.")

Ampacity: Current-carrying capacity expressed in amperes.

Anesthetizing Location: See Section 517-1(b).

Appliance: An appliance is utilization equipment, generally other than industrial, normally built in standardized sizes or types, which is installed or connected as a unit to perform one or more functions such as clothes washing, air conditioning, food mixing, deep frying, etc.

Appliance — Fixed: An appliance which is fastened or otherwise secured at a specific location.

Appliance — Portable: An appliance which is actually moved or can easily be moved from one place to another in normal use.

Appliance — Stationary: An appliance which is not easily moved from one place to another in normal use.

Approved: Acceptable to the authority enforcing this Code.

***Arcarel:** A synthetic nonflammable insulating liquid which, when decomposed by the electric arc, evolves only nonflammable gaseous mixtures.

***Attachment Plug (Plug Cap) (Cap):** An attachment plug is a device which, by insertion in a receptacle, establishes connection between the conductors of the attached flexible cord and the conductors connected permanently to the receptacle.

***Automatic:** Automatic means self-acting, operating by its own mechanism when actuated by some impersonal influence, as for example, a change in current strength, pressure, temperature, or mechanical configuration. (See "Nonautomatic.")

Block (City, Town, or Village): See Section 800-2.

***Branch Circuit:** A branch circuit is that portion of a wiring system extending beyond the final overcurrent device protecting the circuit.

A device not approved for branch circuit protection such as a thermal cutout or motor overload protective device is not considered as the overcurrent device protecting the circuit.

*** Branch Circuit—Appliance:** An appliance branch circuit is a circuit supplying energy to one or more outlets to which appliances are to be connected; such circuits to have no permanently connected lighting fixtures not a part of an appliance.

Branch Circuit — General Purpose: A branch circuit that supplies a number of outlets for lighting and appliances.

Branch Circuit — Individual: A branch circuit that supplies only one utilization equipment.

Branch Circuit, Multiwire: A multiwire branch circuit is a circuit consisting of two or more ungrounded conductors having a potential difference between them, and an identified grounded conductor having equal potential difference between it and each ungrounded conductor of the circuit and which is connected to the neutral conductor of the system.

Building: A structure which stands alone or which is cut off from adjoining structures by fire walls with all openings therein protected by approved fire doors.

***Cabinet:** An enclosure designed either for surface or flush mounting, and provided with a frame, mat or trim in which swinging doors are hung.

Cell (As Applied to Raceways): See Section 356-1 and 358-1.

Circuit Breaker: A device designed to open and close a circuit by nonautomatic means, and to open the circuit automatically on a predetermined overload of current, without injury to itself when properly applied within its rating.

Communication Circuit: See Section 800-1.

***Concealed:** Rendered inaccessible by the structure or finish of the building. Wires in concealed raceways are considered concealed, even though they may become accessible by withdrawing them.

Conductor:

BARE: A bare conductor is one having no covering or insulation whatsoever. (See "Conductor, Covered.")

COVERED: A covered conductor is one having one or more layers of nonconducting materials that are not recognized as insulation under the Code. (See "Conductor, Bare.")

***Connector, Pressure (Solderless):** A pressure wire connector is a device which establishes the connection between two or more conductors or between one or more conductors and a terminal by means of mechanical pressure and without the use of solder.

Continuous Load: A load where the maximum current is expected to continue for three hours or more.

Control Circuit: See Section 430-71.

Controller: A device, or group of devices, which serves to govern, in some predetermined manner, the electric power delivered to the apparatus to which it is connected. See also Section 430-81(a).

Cooking Unit, Counter-Mounted: An assembly of one or more domestic surface heating elements for cooking purposes designed for flush mounting in, or supported by, a counter, and which assembly is complete with inherent or separately mountable controls and internal wiring. (See "Oven, Wall-Mounted.")

Current Limiting Overcurrent Protective Device: (See Section 240-27.)

***Cutout Box:** An enclosure designed for surface mounting and having swinging doors or covers secured directly to and telescoping with the walls of the box proper. (See "Cabinet.")

***Demand Factor:** The demand factor of any system, or part of a system, is the ratio of the maximum demand of the system, or part of a system, to the total connected load of the system, or of the part of the system under consideration.

Device: A unit of an electrical system which is intended to carry but not utilize electric energy.

Disconnecting Means: A device, or group of devices, or other means whereby the conductors of a circuit can be disconnected from their source of supply.

Dry: (See "Location — Dry.")

Dust-Ignition-Proof: See Section 502-1.

***Dustproof:** So constructed or protected that dust will not interfere with its successful operation.

***Dust-tight:** So constructed that dust will not enter the enclosing case.

Duty:

***CONTINUOUS:** Continuous duty is a requirement of service that demands operation at a substantially constant load for an indefinitely long time.

***INTERMITTENT:** Intermittent duty is a requirement of service that demands operation for alternate intervals of (1) load and no load; or (2) load and rest; or (3) load, no load and rest.

***PERIODIC:** Periodic duty is a type of intermittent duty in which the load conditions are regularly recurrent.

***SHORT TIME:** Short time duty is a requirement of service that demands operation at a substantially constant load for a short and definitely specified time.

***VARYING:** Varying duty is a requirement of service that demands operations at loads, and for intervals of time, both of which may be subject to wide variation.

See Table 430-22 (a—Exception) for illustrations of various types of duty.

Duty Cycle (Welding): See Section 630-31(c).

***Electric Sign:** A fixed or portable, self-contained electrically illuminated appliance with words or symbols designed to convey information or attract attention.

***Enclosed:** Surrounded by a case which will prevent a person from accidentally contacting live parts.

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

***Explosion-proof Apparatus:** Apparatus enclosed in a case which is capable of withstanding an explosion of a specified gas or vapor which may occur within it and of preventing the ignition of a specified gas or vapor surrounding the enclosure by sparks, flashes, or explosion of the gas or vapor within, and which operates at such an external temperature that a surrounding flammable atmosphere will not be ignited thereby.

Exposed: (As applied to live parts.) Exposed means that a live part can be inadvertently touched or approached nearer than a safe distance by a person. It is applied to parts not suitably guarded, isolated or insulated. (See "Accessible" and "Concealed.")

***Exposed:** (As applied to wiring method.) Exposed means not concealed.

***Externally Operable:** Externally operable means capable of being operated without exposing the operator to contact with live parts.

This term is applied to equipment, such as a switch, that is enclosed in a case or cabinet.

Feeder: A feeder is the circuit conductors between the service equipment, or the generator switchboard of an isolated plant, and the branch circuit overcurrent device.

Fitting: An accessory such as a locknut, bushing or other part of a wiring system which is intended primarily to perform a mechanical function rather than an electrical function.

Garage: A building or portion of a building in which one or more self-propelled vehicles carrying volatile, flammable liquid for fuel or power are kept for use, sale, storage, rental, repair, exhibition or demonstrating purposes, and all that portion of a building which is on or below the floor or floors in which such vehicles are kept and which is not separated therefrom by suitable cutoffs.

Ground: A ground is a conducting connection, whether intentional or accidental, between an electrical circuit or equipment and earth, or to some conducting body which serves in place of the earth.

Grounded: Grounded means connected to earth or to some conducting body which serves in place of the earth.

Grounded (Effectively Grounded Communication System): See Section 800-2(d).

Grounded Conductor: A conductor which is intentionally grounded, either solidly or through a current limiting device.

Grounding Conductor: A conductor used to connect an equipment, device or wiring system with a grounding electrode or electrodes.

Guarded: Covered, shielded, fenced, enclosed or otherwise protected, by means of suitable covers or casings, barriers, rails or screens, mats or platforms, to remove the liability of dangerous contact or approach by persons or objects to a point of danger.

Hazardous Locations: See Article 500.

Header: See Section 356-1.

Header Ducts: See Section 358-1.

Hoistway: Any shaftway, hatchway, wall hole, or other vertical opening or space in which an elevator or dumbwaiter is designed to operate.

Identified: Identified, as used in this Code in reference to a conductor or its terminal, means that such conductor or terminal is to be recognized as grounded. See Article 200.

***Isolated:** Isolated means that an object is not readily accessible to persons unless special means for access are used.

***Lighting Outlet:** An outlet intended for the direct connection of a lampholder, a lighting fixture or a pendant cord terminating in a lampholder.

Location:

DAMP LOCATION: A location subject to a moderate degree of moisture, such as some basements, some barns, some cold storage warehouses, and the like.

DRY LOCATION: A location not normally subject to dampness or wetness. A location classified as dry may be temporarily subject to dampness or wetness, as in the case of a building under construction.

WET LOCATION: A location subject to saturation with water or other liquids, such as locations exposed to weather, washrooms in garages, and like locations. Installations underground or in concrete slabs or masonry in direct contact with the earth shall be considered as wet locations.

Low-Energy Power Circuit: A circuit which is not a remote-control or signal circuit but which has the power supply limited in accordance with the requirements of Class 2 remote control circuits. See Article 725.

Such circuits include electric door openers and circuits used in the operation of coin operated phonographs.

Multioutlet Assembly: A type of surface or flush raceway designed to hold conductors and attachment plug receptacles, assembled in the field or at the factory.

***Nonautomatic:** Nonautomatic means that the implied action requires personal intervention for its control. (See "Automatic.")

As applied to an electric controller, nonautomatic control does not necessarily imply a manual controller, but only that personal intervention is necessary.

***Outlet:** A point on the wiring system at which current is taken to supply utilization equipment.

***Outline Lighting:** An arrangement of incandescent lamps or gaseous tubes to outline and call attention to certain features such as the shape of a building or the decoration of a window.

Oven, Wall-Mounted: A domestic oven for cooking purposes designed for mounting in or on a wall or other surface.

Panelboard: A single panel or group of panel units designed for assembly in the form of a single panel; including buses, and with or without switches and/or automatic overcurrent protective devices for the control of light, heat or power circuits of small individual as well as aggregate capacity; designed to be placed in a cabinet or cutout box placed in or against a wall or partition and accessible only from the front. (See "Switchboard.")

Projector, Nonprofessional: See Section 540-30.

Projector, Professional: See Section 540-10.

Qualified Person: One familiar with the construction and operation of the apparatus and the hazards involved.

Raceway: Any channel for holding wires, cables or busbars, which is designed expressly for, and used solely for, this purpose.

Raceways may be of metal or insulating material and the term includes rigid metal conduit, rigid nonmetallic conduit, flexible metal conduit, electrical metallic tubing, underfloor raceways, cellular concrete floor raceways, cellular metal floor raceways, surface metal raceways, structural raceways, wireways and busways.

***Raintight:** So constructed or protected that exposure to a beating rain will not result in the entrance of water.

***Readily Accessible:** Capable of being reached quickly, for operation, renewal, or inspections, without requiring those to whom ready access is requisite to climb over or remove obstacles or to resort to portable ladders, chairs, etc. (See "Accessible.")

Receptacle (Convenience Outlet): A receptacle is a contact device installed at an outlet for the connection of an attachment plug and flexible cord.

***Receptacle Outlet:** An outlet where one or more receptacles are installed.

Refrigeration Compressor, Sealed (Hermetic Type): See Section 430-2.

Remote-Control Circuit: Any electrical circuit which controls any other circuit through a relay or an equivalent device.

Sealable Equipment: Equipment enclosed in a case or cabinet that is provided with means of sealing or locking so that live parts cannot be made accessible without opening the enclosure. The equipment may or may not be operable without opening the enclosure.

Sealed (Hermetic Type) Refrigeration Compressor: A mechanical compressor consisting of a compressor and a motor, both of which are enclosed in the same sealed housing, with no external shaft nor shaft seals, the motor operating in the refrigerant atmosphere.

Service: The conductors and equipment for delivering energy from the electricity supply system to the wiring system of the premises served.

***Service Cable:** The service cable is the service conductors made up in the form of a cable.

Service Conductors: The supply conductors which extend from the street main, or from transformers to the service equipment of the premises supplied.

Service Drop: The overhead service conductors between the last pole or other aerial support and the first point of attachment to the building or other structure.

Service-Entrance Conductors, Overhead System: The service conductors between the terminals of the service equipment and a point usually outside the building, clear of building walls, where joined by tap or splice to the service drop.

Service-Entrance Conductors, Underground System: The service conductors between the terminals of the service equipment and the point of connection to the service lateral.

Where service equipment is located outside the building walls, there may be no service-entrance conductors, or they may be entirely outside the building.

Service Equipment: The necessary equipment, usually consisting of circuit-breaker or switch and fuses, and their accessories, located near point of entrance of supply conductors to a building and intended to constitute the main control and means of cutoff for the supply to that building.

Service Lateral: The underground service conductors between the street main, including any risers at a pole or other structure or from transformers, and the first point of connection to the service entrance conductors in a terminal box inside or outside the building wall. Where there is no terminal box, the point of connection shall be considered to be the point of entrance of the service conductors into the building.

Service Raceway: The rigid metal conduit, electrical metallic tubing, or other raceway, that encloses the service entrance conductors.

Setting: (Of Circuit-breaker.) The value of the current at which it is set to trip.

Show-Window: A show-window is any window used or designed to be used for the display of goods or advertising material, whether it is fully or partly enclosed or entirely open at the rear, and whether or not it has a platform raised higher than the street floor level.

Sign: See "Electric Sign."

Signal Circuit: Any electrical circuit which supplies energy to an appliance which gives a recognizable signal.

Such circuits include circuits for door bells, buzzers, code-calling systems, signal lights, and the like.

Special Permission: The written consent of the authority enforcing this Code.

Switches:

***GENERAL USE SWITCH:** A general use switch is 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.

GENERAL USE SNAP SWITCH: A form of general use switch so constructed that it can be installed in flush device boxes, or on outlet box covers, or otherwise used in conjunction with wiring systems recognized by this Code.

AC GENERAL USE SNAP SWITCH: A form of general use snap switch suitable only for use on alternating current circuits for controlling the following:

(a) Resistive and inductive loads (including electric discharge lamps) not exceeding the ampere rating at the voltage involved.

(b) Tungsten filament lamp loads not exceeding the ampere rating at 120 volts.

(c) Motor loads not exceeding 80 per cent of the ampere rating of the switches at the rated voltage.

All AC general use snap switches are marked "AC" in addition to their electrical rating.

AC-DC GENERAL USE SNAP SWITCH: A form of general use snap switch suitable for use on either direct or alternating current circuits for controlling the following:

(a) Resistive loads not exceeding the ampere rating at the voltage involved.

(b) Inductive loads not exceeding one-half the ampere rating at the voltage involved, except that switches having a marked horsepower rating are suitable for controlling motors not exceeding the horsepower rating of the switch at the voltage involved.

(c) Tungsten filament lamp loads not exceeding the ampere rating at 125 volts, when marked with the letter "T".

AC-DC general use snap switches are not generally marked AC-DC, but are always marked with their electrical rating.

***ISOLATING SWITCH:** An isolating switch is a switch intended for isolating an electric circuit from the source of power. It has no interrupting rating, and it is intended to be operated only after the circuit has been opened by some other means.

MOTOR CIRCUIT SWITCH: A switch, rated in horsepower, capable of interrupting the maximum operating overload current of a motor of the same horsepower rating as the switch at the rated voltage.

Switchboard: A large single panel, frame, or assembly of panels, on which are mounted, on the face or back or both, switches, overcurrent and other protective devices, buses and usually instruments. Switchboards are generally accessible from the rear as well as from the front and are not intended to be installed in cabinets. (See "Panelboard.")

Thermal Cutout: An overcurrent protective device which contains a heater element in addition to and affecting a renewable fusible member which opens the circuit. It is not designed to interrupt short circuit currents.

Thermal Protection: (As applied to motors.) The words, "Thermal Protection," appearing on the nameplate of a motor indicate that the motor is provided with a thermal protector.

Thermal Protector: (As applied to motors.) An inherent overheating protective device which is responsive to motor current and temperature and which, when properly applied to a motor, protects the motor against dangerous overheating due to overload or failure to start.

***Utilization Equipment:** Utilization equipment is equipment which utilizes electric energy for mechanical, chemical, heating, lighting, or similar useful purposes.

***Ventilated:** Provided with a means to permit circulation of air sufficient to remove an excess of heat, fumes or vapors.

Volatile Flammable Liquid: A flammable liquid having a flash point below 100°F. or whose temperature is above its flash point.

***Voltage (of a circuit):** Voltage is the greatest root-mean-square (effective) difference of potential between any two conductors of the circuit concerned.

On various systems such as 3-phase 4 wire, single phase 3 wire and 3 wire direct current, there may be various circuits of various voltages.

Voltage to Ground: In grounded circuits the voltage between the given conductor and that point or conductor of the circuit which is grounded; in ungrounded circuits, the greatest voltage between the given conductor and any other conductor of the circuit.

Watertight: So constructed that moisture will not enter the enclosing case.

***Weatherproof:** Weatherproof means so constructed or protected that exposure to the weather will not interfere with successful operation.

Raintight or watertight equipment may fulfill the requirements for "weatherproof." However, weather conditions vary and consideration should be given to conditions resulting from snow, ice, dust, or temperature extremes.

Welder, Electric.

RATED PRIMARY CURRENT: Section 630-31(c).

ACTUAL PRIMARY CURRENT: Section 630-31(c).

Wet: (See "Location — Wet.")

X-ray:

CONTINUOUS RATING: Section 660-4.

LONG TIME RATING: Section 660-4.

MOMENTARY RATING: Section 660-4.

ARTICLE 110 — GENERAL

110-1. Scope. This Article includes provisions applicable generally in installations of electric wiring and equipment.

110-2. Approval. The conductors and equipment required or permitted by this Code shall be acceptable only when approved. See definition of "Approved" in Article 100.

110-3. Mandatory and Advisory Rules. Mandatory rules of this Code are characterized by the use of the word, "shall." Advisory rules are characterized by the use of the word, "should," or are stated as recommendations of that which is advised but not required.

110-4. Examination of Equipment. Materials, devices, fittings, apparatus and appliances designed for use under this Code shall be judged chiefly with reference to the following considerations which also determine the classification by types, size, voltages, current capacities, and specific use.

(a) Suitability for installation and use in conformity with the provisions of this Code.

(b) Mechanical strength and durability, including, for parts designed to enclose and protect other equipment, the adequacy of the protection thus provided.

(c) Electrical insulation.

(d) Heating effects under normal conditions of use and also under abnormal conditions likely to arise in service.

(e) Arcing effects.

110-5. Voltages. Throughout this Code the voltage considered shall be that at which the circuit operates, whether the current is supplied by a battery, generator, transformer, rectifier, or a thermopile.

110-6. Conductor Gages. Conductor sizes are given in American Wire Gage (AWG).

110-7. Conductors. Conductors normally used to carry current shall be of copper unless otherwise provided in this Code. Where conductor sizes are given in this Code, they shall apply to copper conductors. Where other materials are used, the size shall be changed accordingly.

For aluminum conductors, see Tables 310-14 and 310-15.

110-8. Wiring Methods. Only wiring methods recognized as suitable are included in this Code. The recognized methods of wiring may be installed in any type of building or occupancy except as otherwise provided in this Code.

110-9. Interrupting Capacity. Devices intended to break current shall have an interrupting capacity sufficient for the voltage employed and for the current which must be interrupted.

110-10. Circuit Impedance and Other Characteristics. The overcurrent protective devices, the total impedance and other characteristics of