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GENERAL REQUIREMENTS AND DEFINITIONS

Chapter E 2

SCOPE, AUTHORITY, AND STATUTORY REFERENCES

E 2.01 Scope of code. The Wisconsin State Electrical Code comprising chapters E 1 through E 900 of the Wisconsin Administrative Code shall apply as minimum fire and safety requirements for the construction, installation and maintenance of all electrical power and communication circuits and equipment including signal, radio, and lightning rod equipment; and includes rules to be observed in the operation of electrical power and communication equipment and lines.

History: Cr. Register, January, 1968, No. 145, eff. 2–1–68.

E 2.02 Authority and statutory references. (1) STATUTORY AUTHORITY. The Wisconsin State Electrical Code constitutes a general order of the Department of Industry, Labor and Human Relations and the Public Service Commission of Wisconsin authorized by sections 227.014, 101.10 and 196.74, Wis. Stats., 1959.

(2) ADMINISTRATIVE AUTHORITY. The authority for the enforcement of this code is vested in the Public Service Commission with respect to the installation and operation of circuits or equipment by public utilities and railroads in the exercise of their functions as utilities and railroads; and in the Department of Industry, Labor and Human Relations with respect to the installation and operation of circuits or equipment affecting employees, employers, or the public.

(3) STATUTORY ENFORCEMENT. (a) Compliance with the requirements of the Wisconsin State Electrical Code is required before a utility may give electric service even though some portions of the code may not be directly enforceable by state agencies. (See section 167.16, Wis. Stats.)

(b) The requirements in the code are enforceable in the same manner as other orders of the administrative authorities. (See sections 102.57, 102.58, 195.07, 196.41, 196.64, 196.66, 196.74 and chapter 227, Wis. Stats.)

(4) OTHER LEGAL REQUIREMENTS. (a) There are state statutes that refer directly to certain electrical construction. Some of these are sections 66.047, 86.16, 98.25, 134.40, 134.41, 167.16, 182.017, 182.018, 196.171, 196.58, 196.67 and 196.72, Wis. Stats., 1959.

(b) Nothing in chapters E 1 through E 900 shall be construed to deprive a municipality of jurisdiction over utilities, places of employment, or public buildings except that no local requirement shall be contrary to the requirements in these chapters. (See sections 101.16 and 196.58, Wis. Stats.)

(c) A utility may file with the Public Service Commission, as a condition of a rate application, requirements covering subject matter which is a part of this code but such requirements must be acceptable and not contrary to the requirements in these chapters. (See section 196.19, Wis. Stats.)

(5) COMPLAINTS. If a complaint is filed with the administrative authority by any interested party to the effect that public safety requires changes in construction or methods of operation the administrative authority shall investigate and make recommendations. (See section 196.74, Wis. Stats., for procedure if changes in utility facilities are necessary.)

History: Cr. Register, January, 1968, No. 145, eff. 2–1–68.

(30) CONDUCTOR—GROUNDING: A conductor which is used to connect the equipment or the wiring system with a grounding electrode or electrodes.

(31) CONDUCTOR—LATERAL: In pole wiring work, a wire or cable extending in a general horizontal direction approximately at right angles to the general direction of the line conductors.

(32) CONDUCTOR—LINE: One of the wires or cables carrying electric current, supported by poles, towers, or other structures, but not including vertical or lateral connecting wires.

(33) CONDUCTOR—VERTICAL: In pole wiring work, a wire or cable extending in an approximately vertical direction.

(34) CONDUIT: A tube especially constructed for the purpose of enclosing electrical conductors.

(35) CONDUIT—FLEXIBLE METALLIC: A flexible raceway of circular cross-section, especially constructed for the purpose of drawing in or withdrawing of wires and cables after the conduit and its fittings are in place, and is made of metal strip, usually of steel, with metallic corrosion resistant coating, helically wound, and with interlocking edges.

(36) CONDUIT—RIGID METAL: A tubular raceway with threaded ends, for electric wires and cables; if of ferrous metal, having a corrosion resistant coating on all surfaces except threads, and if of corrosion resistant material, properly identified, and in either case with a uniformly smooth interior coating of enamel or like material. Conduit may be made of mild steel tubing of circular cross-section having walls which in the various electrical trade sizes comply with the measurements set forth in chapter E 900, table 4. For other materials, dimensions are to be the same.

(37) CONDUIT—THIN-WALL (ELECTRICAL METALLIC TUBING): A thin-walled steel or corrosion-resistant metal raceway of circular cross-section, constructed for the purpose of pulling in or withdrawing wires after it is installed in place, coated inside and out to be corrosion resistant, and connected by means of threadless fittings. The interior diameters should be the same as for the corresponding trade sizes of rigid conduit.

(38) CONFLICT—ANTENNA: An antenna or its guy wire is at a higher level than a supply or communication conductor and provided the breaking of the antenna or its support will be likely to result in contact between the antenna or guy wire and the supply or communication conductors.

(39) CONFLICT—CONDUCTORS: A conductor is so situated with respect to a conductor of another line at a lower level that the horizontal distance between them is less than the sum of the following values:

(a) 5 feet, plus

(b) One-half the difference of level between the conductors concerned, plus

(c) The value required in tables 6, 7 and 8 of section E 123.06 for horizontal separation between conductors on the same support for the highest voltage carried by either conductor concerned.

(40) CONFLICT—STRUCTURE: As applied to a pole line, the line is so situated with respect to a second line that the overturning (at the ground line) of the first line will result in contact between its poles or conductors and the conductors of the second line, assuming that no conductors are broken in either line.

(a) Exceptions: Lines are not considered as conflicting under the following conditions:

1. Where one line crosses another.

2. Where 2 lines are on opposite sides of a highway, street or alley and are separated by a distance not less than 60% of the height of the taller pole and not less than 20 feet.

(41) CONNECTOR—PRESSURE (SOLDERLESS): A pressure wire connector is a device which establishes the connection between 2 or more conductors or between one or more conductors and a terminal by means of mechanical pressure and without the use of solder.

(42) CONTROLLER: A device, or group of devices, which serves to govern, in some predetermined manner, the electric power delivered to the apparatus in which it is connected.

(43) 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.")

(44) CURRENT—CARRYING PART: A conducting part intended to be connected in an electric circuit. Non-current-carrying parts are those not intended to be so connected.

(45) CURRENT—LIMITING OVERCURRENT PROTECTIVE DEVICE: (See section E 240.27)

(46) 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.

(47) DEAD: Free from any electrical connection to a source of potential difference and from electric charge; not having a potential different from that of the earth. The term is used only with reference to current-carrying parts which are sometimes alive.

(48) DEMAND FACTOR: Of any system or part of a system, the ratio of the maximum demand of the system, or part of the system, to the total connected load of the system, or part of the system under consideration.

(49) DEVICE: A unit of an electrical system which is intended to carry but not utilize electrical energy.

(50) DISCONNECTING MEANS: A device, group of devices, or other means whereby the conductors of a circuit can be disconnected from their source of supply.

(51) DISCONNECTOR: A switch which is intended to open a circuit after the load has been thrown off by some other means.

Note: Manual switches designed for opening loaded circuits are usually installed in circuit with disconnectors, to provide a safe means for opening the circuit under load.

(52) DRY: See "location—dry".

(53) DUCT: In underground work, a single tubular runway for underground cables.

(54) DUSTPROOF: So constructed or protected that dust will not interfere with its successful operation.

(55) DUST-TIGHT: So constructed that dust will not enter the enclosing case.

(56) DUTY—CONTINUOUS: A requirement of service that demands operation at a substantially constant load for an indefinitely long time.

(57) DUTY—INTERMITTENT: A requirement of service that demands operation for alternate intervals of (a) load and no load, or (b) load and rest, or (c) load, no load and rest.

(58) DUTY—PERIODIC: A type of intermittent duty in which the load conditions are regularly recurrent.

(59) DUTY—SHORT-TIME: A requirement of service that demands operation at a substantially constant load for a short and definitely specified time.

(60) DUTY—VARYING: A requirement of service that demands operation at loads, and for intervals of time, both of which may be subject to wide variation.

Note: See table in section E 430.022 for illustrations of various types of duty.

(61) EFFECTIVELY GROUNDED: See "grounded".

(62) ELECTRIC SIGN: A fixed or portable, self-contained electrically illuminated appliance with words or symbols designed to convey information or attract attention.

(63) ELECTRICAL METALLIC TUBING: See "conduit".

(64) ELECTRICAL SUPPLY EQUIPMENT: See "equipment".

(65) ELECTRICAL SUPPLY LINES: See "lines".

(66) ELECTRICAL SUPPLY STATION: Any building, room, or separate space within which electrical supply equipment is located and the interior of which is accessible, as a rule, only to properly qualified persons.

Note: This includes generating stations and substations and generator, storage battery, and transformer rooms, but excludes manholes and isolated transformer vaults on private premises. (See "transformer vault".)

(67) ENCLOSED: Surrounded by a case which will prevent a person from accidentally contacting live parts.

(68) EQUIPMENT: A general term including materials, fittings, devices, appliances, fixtures, apparatus, and the like, used as a part of, or in connection with, an electrical installation.

(69) EQUIPMENT—ELECTRICAL SUPPLY: Equipment which produces, modifies, regulates, controls, or safeguards a supply of electrical energy.

(70) EQUIPMENT—UTILIZATION: Equipment which utilizes electrical energy for mechanical, chemical, heating, lighting, testing, or similar

purposes and is not a part of supply equipment, supply lines or communication lines.

(71) EXPLOSION-PROOF 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 explosions of the gas or vapor within, and which operates at such an external temperature that a surrounding flammable atmosphere will not be ignited thereby.

(72) EXPOSED: (As applied to circuits or lines). In such a position that in case of failure of supports or insulation contact with another circuit or line may result.

(73) EXPOSED: (As applied to live parts). A live part can be inadvertently touched or approached nearer than a safe distance by any person. It is applied to parts not suitably guarded or isolated. (See "accessible" and "concealed".)

(74) EXPOSED: (As applied to wiring method). Not concealed.

(75) EXTERNALLY OPERABLE: (As applied to equipment in a case or cabinet). Capable of being operated without exposing the operator to contact with live parts.

(76) 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.

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

(78) FLEXIBLE METALLIC TUBING: See "conduit".

(79) GARAGE: A building, or part of a building, which accommodates or houses self-propelled vehicles. For the purpose of this code the term vehicle includes land, air and water vehicles.

(80) GENERAL-USE SWITCH: See "switch".

(81) GROUND: 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.

(82) GROUNDED: Connected to earth or to some conducting body which serves in place of the earth.

(83) GROUNDED CONDUCTOR: A conductor which is intentionally grounded, either solidly or through a current limiting device.

(84) GROUNDED-EFFECTIVELY: Permanently connected to earth through a ground connection or connections of sufficiently low impedance and having sufficient current-carrying capacity to prevent the building up of voltages which may result in undue hazard to connected equipment or to persons. Where the term "effectively grounded" is used in conjunction with cables, sheaths, messengers, or conductors it means effectively grounded throughout their lengths. (See section E 103.02(2)(e)).

(85) GROUNDED SYSTEM: A system of conductors in which at least one conductor or point (usually the middle wire, or neutral point of

transformer or generator windings) is intentionally grounded, either solidly or through a current limiting device. This ground connection may be at one or more points.

(86) GROUNDING CONDUCTOR: See "conductor".

(87) GUARDED: Covered, shielded, enclosed or otherwise protected, by means of suitable covers, casings, barriers, rails, or screens, or by means of mats or platforms, to remove the liability of dangerous contact or approach by persons or objects to a point of danger. Wires which are insulated, but not otherwise protected, are not considered as guarded. (See "insulated".)

(88) GUARD ZONE: The space at minimum clearance from guards to electrical parts where guards may be installed by workmen without definite engineering design. (See section E 112.05).

(89) HANDHOLE: An opening in an underground system into which workmen reach, but do not enter.

(90) HAZARDOUS LOCATIONS: See chapter E 500.

(91) HOISTWAY: Any shaftway, hatchway, wellhole, or other vertical opening or space in which an elevator or dumbwaiter is designed to operate.

(92) IDENTIFIED: As used in chapter E 200, the conductor or terminal to which it refers is to be recognized as grounded.

(93) INSULATED: Separated from other conducting surfaces by a dielectric substance or air space permanently offering a high resistance to the passage of current and to disruptive discharge through the substance or space.

Note: When any object is said to be insulated, it is understood to be insulated in a suitable manner for the conditions to which it is subjected. Otherwise, it is, within the purpose of these rules, uninsulated. Insulating covering of conductors is one means of making the conductors insulated. Wires which are insulated, but not otherwise protected, are not considered guarded.

(94) INSULATING: Where applied to the covering of a conductor or to clothing, guards, rods, and other safety devices, a device, when interposed between a person and current-carrying parts, protects the person making use of it against electric shock from the current-carrying parts with which the device is intended to be used. (The opposite of conducting.)

(95) ISOLATED: Not readily accessible to persons unless special means for access are used. (See "exposed".)

(96) ISOLATED PLANT: A private electrical installation deriving energy from its own generator driven by a prime mover.

(97) ISOLATING SWITCH: See "switch".

(98) ISOLATION BY ELEVATION: Elevated sufficiently so that persons may safely walk underneath. (See "exposed".)

(99) JOINT USE: The simultaneous use of facilities by two or more agencies not furnishing like services but having use for similar facilities.

(100) LATERAL CONDUCTOR: See "conductor".

(101) LATERAL WORKING SPACE: The space reserved for working between conductor levels outside the climbing space, and to its right and left.

(102) LIGHTING OUTLET: An outlet intended for the direct connection of a lampholder, a lighting fixture or a pendent cord terminating in a lampholder.

(103) LIGHTNING ARRESTER: As applied to supply circuits, a device which has the property of reducing the voltage of a surge applied to its terminals, is capable of interrupting follow current if present, and restores itself to its original operating condition.

(104) LINE CONDUCTOR: See "conductor".

(105) LINES—COMMUNICATION: The conductors and their supporting or containing structures which are located outside of buildings and are used for public or private signal or communication service and which operate at not exceeding 400 volts to ground or 750 volts between any two points of the circuit, and the transmitted power of which does not exceed 150 watts. When operating at less than 150 volts no limit is placed on the capacity of the system.

(a) Telephone, telegraph, railroad-signal, messenger-call, clock, fire, police alarm, community antenna, and other systems conforming with the above are included.

(b) Lines used for signalling purposes, but not included under the above definition are considered as supply lines of the same voltage and are to be so run.

1. Exception is made under certain conditions for communication circuits used in the operation of supply lines. (See section E 128.09 (1)).

(106) LINES; ELECTRICAL SUPPLY: Those conductors and their necessary supporting or containing structures which are located entirely outside of buildings and are used for transmitting a supply of electrical energy. Electrical supply lines do not include communication lines as defined in subsection (105) above.

(a) Does not include open wiring on buildings, in yard or similar locations where spans are less than 20 feet and all the precautions required for stations or utilization equipment, as the case may be, are observed.

(b) Railway-signal lines of more than 400 volts to ground are always supply lines within the meaning of these rules, and those of less than 400 volts may be considered as supply lines, if so run and operated throughout.

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

(108) LOCATION; DRY: 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.

(109) LOCATION; WET: A location subject to saturation with water or other liquids, such as locations exposed to the weather, wash rooms 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.

(110) 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 chapter E 725)

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

(111) LOW VOLTAGE PROTECTION: The effect of a device operative on the reduction or failure of voltage to cause and maintain the interruption of power supply to the equipment protected.

(112) LOW VOLTAGE RELEASE: The effect of a device operative on the reduction or failure of voltage to cause the interruption of power supply to the equipment, but not preventing the re-establishment of the power supply on return of voltage.

(113) MANHOLE: (More accurately termed splicing chamber or cable vault). An opening in an underground system which workmen or others may enter for the purpose of installing cables, transformers, junction boxes, and other devices, and for making connections and tests.

(114) MANUAL: Capable of being operated by personal intervention.

(115) MOTOR CIRCUIT SWITCH: See "switch".

(116) MULTI-OUTLET ASSEMBLY: A type of surface or flush raceway, designed to hold conductors and attachment plug receptacles, assembled in the field or at the factory.

(117) NEW CONSTRUCTION: All new electrical installations and all extensions and renewals which constitute a substantial portion of the installation.

(118) NON-AUTOMATIC: The implied action requires personal intervention for its control. (See "automatic")

Note: As applied to an electric controller, non-automatic control does not necessarily imply a manual controller, but only that personal intervention is necessary.

(119) OPEN WIRE: A conductor or pair of conductors separately supported above the surface of the ground.

(120) OUTLET: A point on the wiring system at which current is taken to supply utilization equipment.

(121) 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.

(122) OVEN, WALL-MOUNTED: A domestic oven for cooking purposes designed for mounting in or on a wall or other surface.

(123) PANELBOARD: A single panel, or group of panel units, designed for assembly in the form of a single panel; including busses 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 definition of "switchboard").

(124) PERMANENTLY GROUNDED: See "grounded, effectively".

(125) POLE FACE: That side of a pole on which cross arms are attached, or which is so designated by the companies owning or operating the pole.

(126) PORTABLE APPLIANCE: An appliance capable of being readily moved where established practice or the conditions of use make it necessary or convenient for it to be detached from its source of current by means of a flexible cord and attachment plug.

(127) QUALIFIED PERSON: One familiar with the construction and operation of the apparatus and the hazards involved for over 600 volts (see E 710.10 (1) Note 1).

(128) RACEWAY: Any channel for holding wires, cables or bus bars, which is designed expressly for, and used solely for, this purpose.

Note: Raceways may be of metal or insulating material and the term includes rigid metal conduit, rigid non-metallic 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.

(129) RAINTIGHT: So constructed or protected that exposure to a beating rain will not result in the entrance of water.

(130) READILY ACCESSIBLE: Capable of being reached quickly for operation, renewal or inspection, 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".)

(131) RECEPTACLE OUTLET: An outlet where one or more receptacles are installed.

(132) RECONSTRUCTION: Replacement of a substantial portion of an existing installation by new equipment or construction. Does not include ordinary maintenance replacements.

(133) REMOTE-CONTROL CIRCUIT: Any electrical circuit which controls any other circuit through a relay or an equivalent device.

(134) RURAL DISTRICTS: All places not urban, usually in the country, but in some cases within city limits. (See definition of "urban districts".)

(135) SAG: (a) *Apparent sag at any point:* The departure of the wire at the particular point in the span from the straight line between the 2 points of support of the span, at 60° F., with no wind.

(b) *Apparent sag of a span:* The maximum departure of the wire in a given span from the straight line between the 2 points of support of the span, at 60° F., with no wind loading.

(c) *Final unloaded sag:* The sag of a conductor after it has been subjected for an appreciable period to the loading prescribed, or equivalent loading, and the loading removed.

(d) *Initial unloaded sag:* The sag of a conductor prior to the application of any external load.

(e) *Maximum total sag:* The total sag at the midpoint of the straight line joining the 2 points of support of the conductor.

(f) *Total sag:* The distance, measured vertically, from any point of a conductor to the straight line joining its 2 points of support, under conditions of ice loading equivalent to the total resultant loading.

(g) *Unloaded sag:* (Of a conductor at any point in a span). The distance, measured vertically, from the particular point in the conductor to a straight line between its 2 points of support, without any external load.

(136) SEALABLE EQUIPMENT: Equipment enclosed in a case or cabinet that is provided with means for 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.

(137) 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 shafts nor shaft seals, the motor operating in the refrigerant atmosphere.

(138) SERVICE: The conductors and equipment for delivering energy from the electricity supply system to the wiring system of the premises served.

(139) SERVICE CABLE: Service conductors made up in the form of cable.

(140) SERVICE CONDUCTORS: The supply conductors which extend from the street main, or from transformers to the service equipment of the premises supplied.

(141) SERVICE DROP: The overhead service conductors between the last pole or other aerial support and the first point of attachment to the building.

(142) 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.

(143) SERVICE ENTRANCE CONDUCTORS, UNDERGROUND SYSTEM: The service conductors between the terminals of the service equipment and the point of connection to the service lateral.

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

(144) 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 cut-off for the supply to that building.

(145) 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.

(146) SERVICE RACEWAY: The rigid metal conduit, electrical metallic tubing, or other raceway, that encloses service entrance conductors.

(147) SETTING: (of circuit-breaker). The value of the current at which it is set to trip.

(148) SHALL: Is used to indicate requirements.

(149) SHOULD: Is used to indicate recommendations, or that which is advised but not required. In general, recommendations have the

form of fine-print notes or paragraphs supplementing the preceding text.

(150) SHOW WINDOW: 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.

(151) SIGN: See "electric sign".

(152) SIGNAL CIRCUIT: Any electrical circuit which supplies energy to an appliance which gives a recognizable signal.

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

(153) SPAN LENGTH: The horizontal distance between two adjacent supporting points of a conductor.

(154) SPECIAL PERMISSION: The written consent of the Department of Industry, Labor and Human Relations or Public Service Commission.

(155) STRUCTURE CONFLICT: See "conflict".

(156) SUBSTANTIAL: So constructed and arranged as to be of adequate strength and durability for the service to be performed under the prevailing conditions.

(157) SWITCHES: (a) *Switches:* A device for opening and closing or for changing connection of a circuit. A switch will always be understood to be manually operated, unless otherwise stated.

(b) *General use switch:* A switch intended for use as a switch in general distribution and branch circuits. It is rated in amperes and is capable of interrupting its rated current at its rated voltage.

(c) *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.

(d) *AC general use snap switch:* A form of general use snap switch suitable only for use on alternating current circuits for controlling the following:

1. Resistive and inductive loads (including electric discharge lamps) not exceeding the ampere rating at the voltage involved.
2. Tungsten filament lamp loads not exceeding the ampere rating at 120 volts.
3. Motor loads not exceeding 80% of the ampere rating of the switches at the rated voltage.

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

(e) *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:

1. Resistive loads not exceeding the ampere rating at the voltage involved.
2. 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.

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

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

(f) *Isolating switch:* A switch intended for isolating an electric circuit from its source of power. It has no interrupting rating and is intended to be operated only after the circuit has been opened by some other means.

(g) *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.

(158) SWITCHBOARD: When referred to in connection with the supply of electricity is 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").

(159) TAGS: Tags or other markers of distinctive appearance, indicating that men are at work on the equipment or lines so designated.

(160) TENSION: (a) *Final unloaded conductor tension:* The longitudinal tension in a conductor after the conductor has been stretched by the application for an appreciable period, and subsequent release, of the heavy loading of ice and wind, and temperature decrease, specified in these rules (or equivalent loading).

(b) *Initial conductor tension:* The longitudinal tension in a conductor prior to the application of any external load.

(161) 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 circuits.

(162) THERMAL PROTECTION: (As applied to motors). The words "thermal protection" appearing on the name plate of a motor indicate that the motor is provided with a thermal protector.

(163) 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.

(164) TRANSFORMER VAULT: An isolated fire-resistant enclosure, either above or below ground, in which transformers and related equipment are installed and which is not continuously attended during operation.

(165) URBAN DISTRICT: Thickly settled area, whether in cities or not, or where congested traffic often occurs. A highway, even though in the country, on which the traffic is often heavy, is considered as urban.

(166) UTILIZATION EQUIPMENT: See "equipment".

(167) VAPOR-TIGHT: So enclosed that vapor will not enter the enclosure.

(168) VENTILATED: Provided with a means to permit circulation of the air sufficiently to remove an excess of heat, fumes, or vapors.

(169) VERTICAL CONDUCTOR: See "conductor".

(169a) VOLATILE FLAMMABLE LIQUID: A flammable liquid having a flash point below 100° F., or where temperature is above its flash point.

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

(b) (to ground) Voltage to ground in grounded circuits is 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.

(c) (of direct connected circuit) If one circuit is directly connected to another circuit of higher voltage (as in the case of an autotransformer) both are considered as of the higher voltage, unless the circuit of lower voltage is effectively grounded, in which case its voltage is not determined by the circuit of higher voltage. Direct connection implies electric connection as distinguished from connection merely through electromagnetic or electrostatic induction.

(d) When the term "volts" or voltage is used in Volume 1 without qualification, it means the voltage between conductors in an ungrounded system and voltage to ground in a grounded system. A system grounded through a Peterson coil or similar device is not considered grounded.

(171) WATERTIGHT: So constructed that moisture will not enter the enclosing case.

(172) WEATHERPROOF: So constructed or protected that exposure to the weather will not interfere with its successful operation.

(a) *Weatherproof* (As applied to the protective covering on a conductor): A covering made up of braids of fibrous material which are thoroughly saturated with a dense moisture-proof compound after they have been placed on the conductor, or an equivalent protective covering designed to withstand weather conditions.

(173) WET: (See "location—wet").

History: Cr. Register, January, 1968, No. 145, eff. 2–1–68.