

ORDINANCE NO. 8461

AN ORDINANCE OF THE CITY OF LAWRENCE, KANSAS PERTAINING TO THE ELECTRICAL CODE; REPEALING ARTICLE 4 OF CHAPTER V, THE EXISTING ELECTRICAL CODE; ADOPTING AND INCORPORATING BY REFERENCE THE NATIONAL ELECTRICAL CODE, 2008 EDITION, AND EXCEPTING, AMENDING AND MODIFYING CERTAIN OF ITS PROVISIONS

BE IT ORDAINED BY THE GOVERNING BODY OF THE CITY OF LAWRENCE, KANSAS:

- Section 1.** Article 4 of Chapter V of the Code of the City of Lawrence, 2009 Edition, and amendments thereto, is hereby repealed.
- Section 2.** Article 4 of Chapter V of the Code of the City of Lawrence, Kansas 2009 Edition, and amendments thereto, is hereby enacted to read as follows, the intent being to supersede the current provisions:

ARTICLE 4. ELECTRICAL CODE

- 5-401 **NATIONAL ELECTRICAL CODE INCORPORATED.**
The "National Electrical Code, 2008 Edition" published by the National Fire Protection Association, One Batterymarch Park, PO Box 9101, Quincy, Massachusetts 02269-9101, is hereby adopted and incorporated by reference and made a part of this Article as if fully set forth herein, save and except such articles, sections, parts or portions that are hereinafter omitted, deleted, modified or amended.
- 5-402 **SAME.**
At least one copy of the National Electrical Code, 2008 Edition, shall be marked or stamped "official copy as incorporated by Ordinance No. _____," with all sections or portions thereof intended to be omitted or changed clearly marked to show any such omission or change and to which shall be attached a copy of the incorporating ordinance, and filed with the City Clerk to be open to inspection and available to the public at all reasonable business hours. Official copies of such Code shall be supplied at the cost of the City to the officials and agencies in the manner listed and set forth in K.S.A. 12-3010. Subsequent references to the "National Electrical Code" shall mean the "National Electrical Code, 2008_Edition" as adopted and incorporated herein.
- 5-403 **AMENDMENTS MADE TO THE NATIONAL ELECTRICAL CODE, 2008 EDITION,**
The National Electrical Code, 2008 Edition is amended or changed as follows. The amendment of any section shall not serve to amend or repeal any other discretely numbered provision of the code, whether or not such provision is considered a section or subsection, unless that section or subsection is specifically referenced in the ordinance.
- 5-403.1 **Annex H of the National Electrical Code is hereby deleted.**
- 5-403.2 Section 90.2 of the National Electrical Code is hereby amended to read as follows:

90.2 Scope.

(A) Covered.

This *Code* covers the installation of electrical conductors, equipment, and raceways; signaling and communications conductors, equipment, and raceways; and optical fiber cables and raceways for the following:

- (1) Public and private premises, including buildings, structures, mobile homes, recreational vehicles, and floating buildings
- (2) Yards, lots, parking lots, carnivals, and industrial substations
- (3) Installations of conductors and equipment that connect to the supply of electricity
- (4) Installations used by the electric utility, such as office buildings, warehouses, garages, machine shops, and recreational buildings, that are not an integral part of a generating plant, substation, or control center.

(B) Not Covered.

This *Code* does not cover the following:

- (1) Installations in ships, watercraft other than floating buildings, railway rolling stock, aircraft, or automotive vehicles other than mobile homes and recreational vehicles

FPN: Although the scope of this *Code* indicates that the *Code* does not cover installations in ships, portions of this *Code* are incorporated by reference into Title 46, *Code of Federal Regulations*, Parts 110–113.

- (2) Installations underground in mines and self-propelled mobile surface mining machinery and its attendant electrical trailing cable
- (3) Installations of railways for generation, transformation, transmission, or distribution of power used exclusively for operation of rolling stock or installations used exclusively for signaling and communications purposes
- (4) Installations of communications equipment under the exclusive control of communications utilities located outdoors or in building spaces used exclusively for such installations
- (5) Installations under the exclusive control of an electric utility where such installations
 - a. Consist of service drops or service laterals, and associated metering, or
 - b. Are located in legally established easements or rights-of-way pursuant to a utility's tariff approved ~~designated by or recognized by~~ the public service commissions, utility commissions, or other regulatory agencies agency having jurisdiction ~~for~~ over such installations, utility, or pursuant to other applicable law or regulation, or
 - c. Are on property owned or leased by the electric utility for the purpose of communications, metering, generation, control, transformation, transmission, or distribution of electric energy.

FPN to (4) and (5): Examples of utilities may include those entities that are typically designated or recognized by governmental law or regulation by public

service/utility commissions and that install, operate, and maintain electric supply (such as generation, transmission, or distribution systems) or communication data services). Utilities may be subject to compliance with codes and standards covering their regulated activities as adopted under governmental law or regulation. Additional information can be found through consultation with the appropriate governmental bodies, such as state regulatory commissions, the Federal Energy Regulatory Commission, and the Federal Communications Commission.

(C) Special Permission.

The authority having jurisdiction for enforcing this *Code* may grant exception for the installation of conductors and equipment that are not under the exclusive control of the electric utilities and are used to connect the electric utility supply system to the service entrance conductors of the premises served, provided such installations are outside a building or terminate immediately inside a building wall.

5-403.3

Section 210.8 of the National Electrical Code is hereby amended to read as follows:

210.8 Ground-Fault Circuit-Interrupter Protection for Personnel:

FPN: See 215.9 for ground-fault circuit-interrupter protection for personnel on feeders.

(A) Dwelling Units. All 125-volt, single-phase, 15- and 20-ampere receptacles installed in the locations specified in (1) through (8) shall have ground-fault circuit interrupter protection for personnel.

- (1) Bathrooms
- (2) Garages, and also accessory buildings that have a floor located at or below grade level not intended as habitable rooms and limited to storage areas, work areas, and areas of similar use.

Exception to (2): A single receptacle outlet for refrigerators, freezers, garage door openers, and sump pumps located within dedicated space for each appliance that, in normal use, are not easily moved from one place to another and that are cord-and-plug connected in accordance with 400.7(A)(6), (A)(7), or (A)(8).

- (3) Outdoors

Exception to (3): Receptacles that are not readily accessible and are supplied by a dedicated branch circuit for electric snow-melting or deicing equipment shall be permitted to be installed in accordance with 426.28.

- (4) Crawl spaces – at or below grade level
- (5) Unfinished basements – for purposes of this section, unfinished basements are defined as portions or areas of the basement not intended as habitable rooms and limited to storage areas, work areas, and the like

Exception No. 1 to (5): A single receptacle outlet for refrigerators, freezers, garage door openers, and sump pumps located within dedicated space for each appliance that, in normal use, are not easily moved from one place to another and that are cord-and-plug connected in accordance with 400.7(A)(6), (A)(7), or (A)(8).

Exception No. 2 to (5): A receptacle supplying only a permanently installed fire alarm or burglar alarm system shall not be required to have ground-fault circuit-interrupter protection.

FPN: See 760.41(B) and 760.121(B) for power supply requirements for fire alarm systems.

Receptacles installed under the exception to 210.8(A)(5) shall not be considered as meeting the requirements of 210.52(G).

- (6) Kitchens – where the receptacles are installed to serve the countertop surfaces
- (7) Laundry, utility, and wet bar sinks – where the receptacles are installed within 1.8 m (6 ft) of the outside edge of the sink
- (8) Boathouses

(B) Other Than Dwelling Units. All 125-volt, single-phase, 15- and 20-ampere receptacles installed in the locations specified in (1) through (5) shall have ground-fault circuit-interrupter protection for personnel:

- (1) Bathrooms
- (2) Kitchens
- (3) Rooftops
- (4) Outdoors

Exception No. 1 to (1) Bathrooms located in guest rooms of hotels and motels shall have ground-fault circuit interrupter (GFCI) protection provided by a receptacle device that does not serve as protection for receptacles in any other guest rooms.

Exception No. 1 to (3) and (4): Receptacles that are not readily accessible and are supplied from a dedicated branch circuit for electric snow-melting or deicing equipment

shall be permitted to be installed without GFCI protection.

Exception No. 2 to (4): In industrial establishments only, where the conditions of maintenance and supervision ensure that only qualified personnel are involved, an assured equipment grounding conductor program as specified in 590.6(B) (2) shall be permitted for only those receptacle outlets used to supply equipment that would create a greater hazard if power is interrupted or having a design that is not compatible with GFCI protection.

(5) Sinks — where receptacles are installed within 1.8 m (6 ft) of the outside edge of the sink.

Exception No 1 to (5): In industrial laboratories, receptacles used to supply equipment where removal of power would introduce a greater hazard shall be permitted to be installed without GFCI protection.

Exception No 2 to (5): For receptacles located in patient care areas of health care facilities other than those covered under 210.8(B) (1), GFCI protection shall not be required.

(C) Boat Hoists. GFCI protection shall be provided for outlets not exceeding 240 volts that supply boat hoists installed in dwelling unit locations.

5-403.4

Section 210.12 of the National Electrical Code is hereby amended to read as follows:

210.12 Arc-Fault Circuit Interrupter Protection.

(A) Definition: 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.

(B) Dwelling Units. All 120-volt, single phase, 15- and 20-ampere branch circuits supplying outlets installed in dwelling unit ~~family rooms, dining rooms, living rooms, parlors, libraries, dens, bedrooms, sunrooms, recreation rooms, closets, hallways, or similar rooms or areas~~ shall be protected by a listed arc-fault circuit interrupter, ~~combination type,~~ installed to provide protection of the branch circuit.

FPN No. 1: For information on types of arc-fault circuit interrupters, see UL 1699-1999, *Standard for Arc-Fault Circuit Interrupters*.

FPN No. 2: See 11.6.3(5) of NFPA 72®-2007, *National Fire Alarm Code®*, for information related to secondary power supply requirements for smoke alarms installed in

dwelling units.

FPN No. 3: See 760.41(B) and 760.121(B) for power supply requirements for fire alarm systems.

Exception No. 1: Where RMC, IMC, EMT or steel armored cable, Type AC, meeting the requirements of 250.118 using metal outlet and junction boxes is installed for the portion of the branch circuit between the branch-circuit overcurrent device and the first outlet, it shall be permitted to install a combination AFCI at the first outlet to provide protection for the remaining portion of the branch circuit.

Exception No. 2: Where a branch circuit to a fire alarm system installed in accordance with 760.41(B) and 760.121(B) is installed in RMC, IMC, EMT, or steel armored cable, Type AC, meeting the requirements of 250.118, with metal outlet and junction boxes, AFCI protection shall be permitted to be omitted.

5-403.5

Section 210.23 of the National Electrical Code is hereby amended to read as follows:

210.23 Permissible Loads. In no case shall the load exceed the branch-circuit ampere rating. An individual branch circuit shall be permitted to supply any load for which it is rated. A branch circuit supplying two or more outlets or receptacles shall supply any load for which it is rated. A branch circuit supplying two or more outlets or receptacles shall supply only the loads specified according to its size as specified in 210.23(A) through (D) and as summarized in 210.24 and Table 210.24.

(A) 15- and 20-Ampere Branch Circuits. A 15- or 20-ampere branch circuit shall be permitted to supply lighting units or other utilization equipment, or a combination of both, and shall comply with 210.23(A) (1) and (A) (2)

Exception: The small appliance branch circuits, laundry branch circuits, and bathroom branch circuits required in a dwelling unit(s) by 210.11(C)(1), (C)(2), and (C)(3) shall supply only the receptacle outlets specified in that section.

(1) **Cord-and-Plug-Connected Equipment Not Fastened in Place.** The rating of any one cord-and-plug-connected utilization equipment not fastened in place shall not exceed 80 percent of the branch-circuit ampere rating.

(2) **Utilization Equipment Fastened in Place.** The total rating of utilization equipment fastened in place, other than luminaries (lighting fixtures), shall not exceed 50 percent of the branch-circuit ampere rating where lighting units, cord-and-plug-connected utilization equipment not fastened in place, or both, are also supplied.

(3) Sump pumps shall be served by an individual branch circuit. The circuit and its single receptacle outlet shall be in addition to any outlets required by 210.52.

(B) 30-Ampere Branch Circuits. A 30-ampere branch circuit shall be permitted to supply fixed lighting units with heavy-duty lampholders in other than a dwelling

unit(s) or utilization equipment in any occupancy. A rating of any one cord-and-plug-connected utilization equipment shall not exceed 80 percent of the branch-circuit ampere rating.

(C) 40- and 50-Ampere Branch Circuits. A 40- or 50-ampere branch circuit shall be permitted to supply cooking appliances that are fastened in place in any occupancy. In other than dwelling units, such circuits shall be permitted to supply fixed lighting units with heavy-duty lampholders infrared heating units, or other utilization equipment.

(D) Branch Circuits Larger Than 50 Amperes. Branch circuits larger than 50 amperes shall supply only nonlighting outlet loads.

5-403.6

Section 210.52 of the National Electrical Code is hereby amended to read as follows:

210.52 Dwelling Unit Receptacle Outlets. This section provides requirements for 125-volt, 15- and 20-ampere receptacle outlets. The receptacles required by this section shall be in addition to any receptacle that is:

- (1) Part of a luminaire or appliance, or
- (2) Controlled by a wall switch in accordance with 210.70(A) (1), Exception No. 1, or
- (3) Located within cabinets or cupboards, or
- (4) Located more than 1.7 m (5 1/2 ft) above the floor

Permanently installed electric baseboard heaters equipped with factory-installed receptacle outlets or outlets provided as a separate assembly by the manufacturer shall be permitted as the required outlet or outlets for the wall space utilized by such permanently installed heaters. Such receptacle outlets shall not be connected to the heater circuits.

FPN: Listed baseboard heaters include instructions that may not permit their installation below receptacle outlets.

(A) General Provisions. In every kitchen, family room, dining room, living room, parlor, library, den, sunroom, bedroom, recreation room, or similar room or area of dwelling units, receptacle outlets shall be installed in accordance with the general provisions specified in 210.52 (A)(1) through (A)(3).

(1) **Spacing.** Receptacles shall be installed so that no point measured horizontally along the floor line in any wall space is more than 1.8 m (6 ft) from a receptacle outlet.

(2) **Wall Space.** As used in this section, a wall space shall include the following:

(1) Any space 600 mm (2 ft) or more in width (including space measured around corners) and unbroken along the floor line by doorways, fireplaces, and similar openings

(2) The space occupied by fixed panels in exterior walls, excluding sliding panel

(3) The space afforded by fixed room dividers such as freestanding bar-type counters or railings

(3) **Floor Receptacles.** Receptacle outlets in floors shall not be counted as part of the required number of receptacle outlets unless located within 450 mm (18 in.) of the wall.

(B) Small Appliances.

(1) **Receptacle Outlets Served.** In the kitchen, pantry, breakfast room, dining room, or similar area of a dwelling unit, the two or more 20-ampere small-appliance branch circuits required by 210.11 (C)(1) shall serve all wall and floor receptacle outlets covered by 210.52(A), all countertop outlets covered by 210.52 (C), and receptacle outlets for refrigeration equipment.

Exception No. 1: In addition to the required receptacles specified by 210.52, switched receptacles supplied from a general-purpose branch circuit as defined in 210.70(A)(1), Exception No. 1, shall be permitted.

Exception No. 2: The receptacle outlet for refrigeration equipment shall be permitted to be supplied from an individual branch circuit rated 15 amperes or greater.

(2) **No Other Outlets.** The two or more small-appliance branch circuits specified in 210.52(B) (1) shall have no other outlets.

Exception No. 1: A receptacle installed solely for the electrical supply to and support of an electric clock in any of the rooms specified in 210.52(B) (1).

Exception No. 2: Receptacles installed to provide power for supplemental equipment and lighting on gas-fired ranges, ovens, or counter-mounted cooking units.

(3) **Kitchen Receptacle Requirements.** Receptacles installed in a kitchen to serve countertop surfaces shall be supplied by not fewer than two small-appliance branch circuits, either or both of which shall also be permitted to supply receptacle outlets in the same kitchen and in other rooms specified in 210.52(B)(1). Additional small-appliance branch circuits shall be permitted to supply receptacle outlets in the kitchen and other rooms specified in 210.52(B) (1). No small-appliance branch circuit shall serve more than one kitchen.

~~(C) **Countertops.** In kitchens and dining rooms of dwelling units, receptacle outlets for counter spaces shall be installed in accordance with 210.52(C)(1) through (C)(5).~~

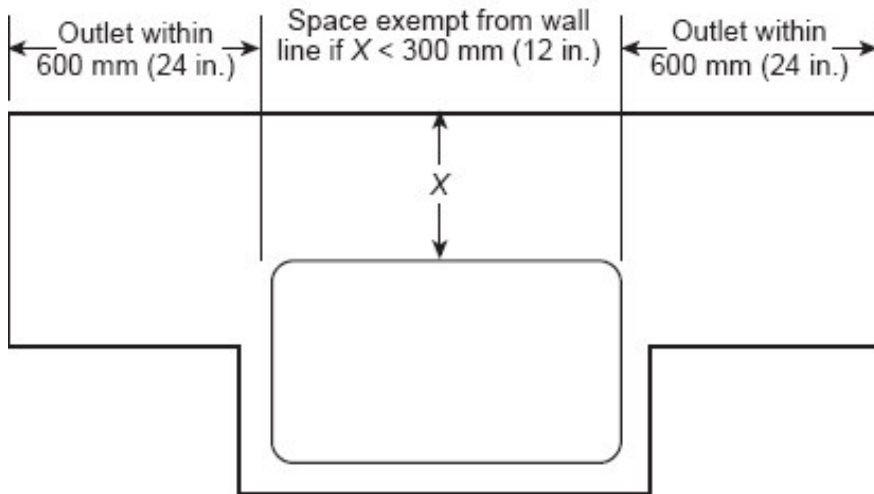
In kitchens, pantries, breakfast rooms, dining rooms, and similar areas of dwelling units, receptacle outlets for countertop spaces shall be installed in accordance with 210.52(C) (1) through (C)(5).

Where a range, counter-mounted cooking unit, or sink is installed in an island or peninsular countertop and the width of the countertop behind the range, counter-mounted

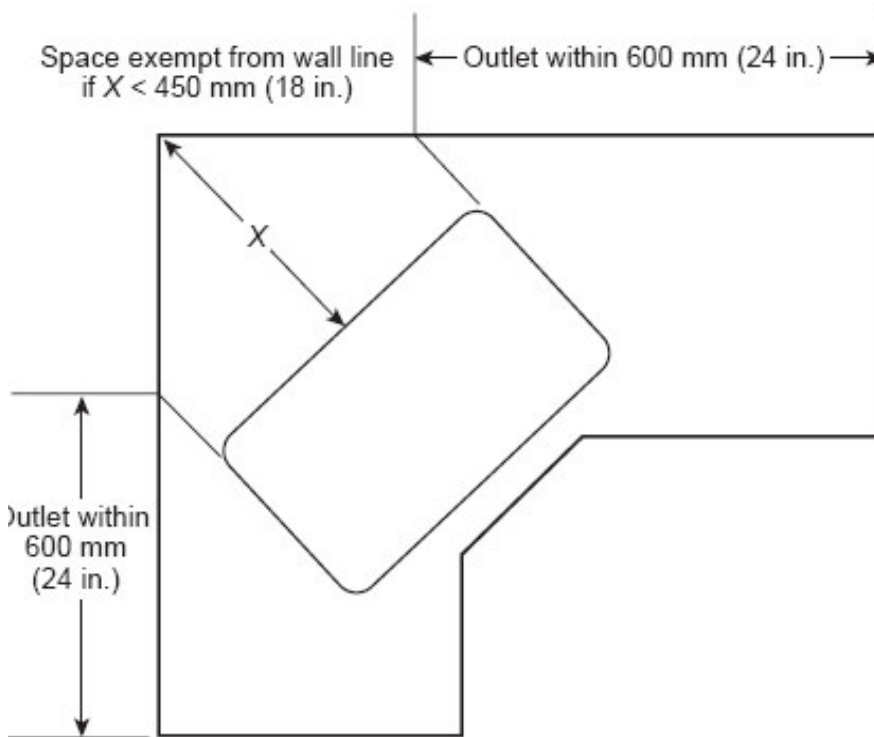
~~cooking unit, or sink is less than 300 mm (12 in.), the range, counter-mounted cooking unit, or sink- it is considered to divide the countertop space into two separate countertop spaces as defined in 210.52(C)(4). Each separate countertop space shall comply with the applicable requirements in 210.52(C).~~

(1) **Wall Countertop Spaces.** A receptacle outlet shall be installed at each wall countertop space that is 300 mm (12 in.) or wider. Receptacle outlets shall be installed so that no point along the wall line is more than 600 mm (24 in.) measured horizontally from a receptacle outlet in that space.

Exception: Receptacle outlets shall not be required on a wall directly behind a range, counter-mounted cooking unit, or sink in the installation described in Figure 210.52(C) (1).



Range, counter-mounted cooking unit extending from face of counter



Range, counter-mounted cooking unit mounted in corner

Figure 210.52(C)(1) Determination of Area Behind a Range, or Counter-Mounted Cooking Unit or Sink.

(2) **Island Countertop Spaces.** At least one receptacle shall be installed at each island countertop space with a long dimension of 600 mm (24 in.) or greater and a short dimension of 300 mm (12 in.) or greater.

(3) **Peninsular Countertop Spaces.** At least one receptacle outlet shall be installed at each peninsular countertop space with a long dimension of 600 mm (24 in.) or greater and a short dimension of 300 mm (12 in.) or greater. A peninsular countertop is measured from the connecting edge.

(4) **Separate Spaces.** Countertop spaces separated by rangetops, refrigerators, or sinks shall be considered as separate countertop spaces in applying the requirements of 210.52(C)(1), (C)(2), and (C)(3).

(5) **Receptacle Outlet Location.** Receptacle outlets shall be located above, but not more than 500 mm (20 in.) above, the countertop. Receptacle outlets rendered not readily accessible by appliances fastened in place, appliance garages, sinks, or rangetops as covered in 210.52(C)(1), Exception, or appliances occupying dedicated space shall not be considered as these required outlets.

Exception to (5): To comply with the conditions specified in (1) or (2), receptacle outlets shall be permitted to be mounted not more than 300 mm (12 in.) below the countertop. Receptacles mounted below a countertop in accordance with this exception shall not be located where the countertop extends more than 150 mm (6 in.) beyond its support base.

(1) Construction for the physically impaired

(2) On island and peninsular countertops where the countertop is flat across its entire surface (no backsplashes, dividers, etc.) and there are no means to mount a receptacle within 500 mm (20 in.) above the countertop, such as an overhead cabinet.

(D) Bathrooms. In dwelling units, at least one receptacle outlet shall be installed in bathrooms within 900 mm (3 ft.) of the outside edge of each basin. The receptacle outlet shall be located on a wall or partition that is adjacent to the basin or basin countertop, or installed on the side or face of the basin cabinet not more than 300 mm (12 in.) below the countertop.

(E) Outdoor Outlets.

Outdoor receptacle outlets shall be installed in accordance with (E)(1) through (E)(3). [See 210.8(A)(3).]

(1) One-Family and Two-Family Dwellings. For a one family dwelling and each unit of a two-family dwelling that is at grade level, at least one receptacle outlet accessible while standing at grade level and located not more than 2.0 m (6 1/2 ft) above grade shall be installed at the front and

back of the dwelling.

(2) Multifamily Dwellings. For each dwelling unit of a multifamily dwelling where the dwelling unit is located at grade level and provided with individual exterior entrance/egress, at least one receptacle outlet accessible from grade level and not more than 2.0 m (6 1/2 ft) above grade shall be installed.

(3) Balconies, Decks, and Porches. Balconies, decks, and porches that are accessible from inside the dwelling unit shall have at least one receptacle outlet installed within the perimeter of the balcony, deck, or porch. The receptacle shall not be located more than 2.0 m (6 1/2 ft) above the balcony, deck, or porch surface.

~~Exception to (3): Balconies, decks, or porches with a usable area of less than 1.86 m² (20 ft²) are not required to have a receptacle installed.~~

(F) Laundry Areas. In dwelling units, at least one receptacle outlet shall be installed for the laundry.

Exception No. 1: In a dwelling unit that is an apartment or living area in a multifamily building where laundry facilities are provided on the premises and are available to all building occupants, a laundry receptacle shall not be required.

Exception No. 2: In other than one-family dwellings where laundry facilities are not to be installed or permitted, a laundry receptacle shall not be required.

(G) Basements and Garages.

For a one-family dwelling, the following provisions shall apply:

(1) At least one receptacle outlet, in addition to those for specific equipment, shall be installed in each basement, in each attached garage, and in each detached garage with electric power.

(2) Where a portion of the basement is finished into one or more habitable rooms, each separate unfinished portion shall have a receptacle outlet installed in accordance with this section.

(+) (3) Garage Door Opener Receptacle Outlets.

A single receptacle outlet shall be installed in the garage ceiling for each vehicle entry door. The single receptacle outlet shall be located near the center of the finished edges of the opening. The single receptacle outlet shall be located from the opening by the sum total of the height of the door plus a minimum of two feet.

(H) Hallways. In dwelling units, hallways of 3.0 m (10 ft) or more in length shall have at least one receptacle outlet. As used in this subsection, the hall length shall be considered the length along the centerline of the hall without passing through a doorway.

5-403.7

Section 210.62 of the National Electrical Code is hereby amended to read as follows:

210.62 Show Windows. At least one receptacle outlet shall be installed within 450 mm (18 in.) of the top of a show window for each 3.7 linear m (12 linear ft) or major fraction thereof of show window area measured horizontally at its maximum width.

(A) Show windows of buildings in a commercial occupancy, for the purpose of this section, shall consider each exterior window as a show window unless exempted by the enforcing authority.

5-403.8

Section 225.17 of the National Electrical Code is hereby amended to read as follows

225.17 Masts as Supports. Where a mast is used for the support of final spans of feeders or branch circuits, ~~it shall be of adequate strength or be supported by braces or guys to withstand safely the strain imposed by the overhead drop.~~ it shall be a galvanized rigid conduit with a minimum trade size diameter of two inches. Where the mast projects above the roof surface in excess of 3 feet the mast shall be supported by braces or guys to withstand safely the strain imposed by the drop. Where raceway-type masts are used, all raceway fittings shall be identified for use with masts. Only the feeder or branch circuit conductors specified within this section shall be permitted to be attached to the feeder and/or branch circuit mast.

5-403.9

Section 230.2 of the National Electrical Code is hereby amended to read as follows:

230.2 Number of Services. A building or other structure served shall be supplied by only one service unless permitted in 230.2(A) through (D). for the purpose of 230.40, Exception No. 2 only, underground sets of conductors, 1/0 AWG and larger, running to the same location and connected together at their supply end but not connected together at their load end shall be considered to be supplying one service.

(A) Special Conditions. Additional services shall be permitted to supply the following:

~~(1) Fire pumps~~

~~(2) Emergency systems~~

(3)(1) Legally required standby systems

(4)(2) Optional standby systems

(5)(3) Parallel power production systems

(6)(4) Systems designed for connection to multiple sources of supply for the purpose of enhanced reliability

(B) Special Occupancies. By special permission, additional services shall be permitted for either of the following:

(1) Multiple-occupancy buildings where there is no available space for service equipment accessible to all occupants

(2) A single building or other structure sufficiently large to make two or more services necessary

(C) Capacity Requirements. Additional services shall be permitted under any of the following:

(1) Where the capacity requirements are in excess of 2000 amperes at a supply voltage of 600 volts or less

(2) Where the load requirements of a single-phase installation are greater than the serving agency normally supplies through one service

(3) By special permission

(D) Different Characteristics. Additional services shall be permitted for different voltages, frequencies, or phases, or for different uses, such as for different rate schedules.

(E) Identification. Where a building or structure is supplied by more than one service, or any combination of branch circuits, feeders, and services, a permanent plaque or directory shall be installed at each service disconnect location denoting all other services, feeders, and branch circuits supplying that building or structure and the area served by each. See 225.37.

5-403.10

Section 230.28 of the National Electrical Code is hereby amended to read as follows:

230.28 Service Masts as Supports. Where a service mast is used for the support of service-drop conductors, ~~it shall be of adequate strength or be supported by braces or guys to withstand safely the strain imposed by the service drop.~~ it shall be a galvanized rigid conduit with a minimum trade size diameter of two inches. Where the service mast projects above the roof surface in excess of 3 feet the mast shall be supported by braces or guys to withstand safely the strain imposed by the service drop. Where raceway-type service masts are used, all raceway fittings shall be identified for use with service masts.

Only power service-drop conductors shall be permitted to be attached to a service mast.

5-403.11

Section 230.40 of the National Electrical Code is hereby amended to read as follows:

230.40 Number of Service-Entrance Conductor Sets. Each service drop or lateral shall supply only one set of service-entrance conductors.

~~Exception No. 1: A building with more than one occupancy shall be permitted to have one set of service-entrance conductors for each service, as defined in 230.2, run to each occupancy or group of occupancies.~~

Exception No. 2 1: Where two to six service disconnecting means in separate enclosures are grouped at one location and supply separate loads from one service drop or lateral, one set of service-entrance conductors shall be permitted to supply each or several such service equipment enclosures.

Exception No. 3-2: A single-family dwelling unit and a separate structure shall be permitted to have one set of service-entrance conductors run to each from a single service drop or lateral.

Exception No. 4-3: A two-family dwelling or a multifamily dwelling shall be permitted to have one set of service-entrance conductors installed to supply the circuits covered in 210.25.

Exception No. 5 4: One set of service-entrance conductors connected to the supply side of the normal service disconnecting means shall be permitted to supply each or several systems covered by 230.82(4) or 230.82 (5).

5-403.12

Section 230.43 of the National Electrical Code is hereby amended to read as follows:

230.43. Wiring Methods for 600 volts, Nominal or Less. Service-entrance conductors shall be installed in accordance with the applicable requirements of this *Code* covering the type of wiring method used and shall be limited to the following methods:

- (1) Open wiring on insulators
- (2) Type IGS cable
- (3) Rigid metal conduit
- (4) Intermediate metal conduit
- (5) Electrical metallic tubing
- ~~(6) Electrical nonmetallic tubing (ENT)~~
- ~~(7) Service-entrance cables~~
- (8)(6) Wireways

- (9)(7) Busways
- (10)(8) Auxiliary gutters
- (11)(9) Rigid nonmetallic conduit
- (12)(10) Cablebus
- (13)(11) Type MC cable
- (14)(12) Mineral-insulated, metal-sheathed cable
- (15)(13) Flexible metal conduit not over 1.8 m (6 ft) long or liquidtight flexible metal conduit not over 1.8 m (6. ft) long between raceways, or between raceway and service equipment, with equipment bonding jumper routed with the flexible metal conduit or the liquidtight flexible metal conduit according to the provisions of 250.102(A), (B), (C), and (E)
- (16)(14) Liquidtight flexible nonmetallic conduit

5-403.13

Section 230.70 of the National Electrical Code is hereby amended to read as follows:

230.70 General. Means shall be provided to disconnect all conductors in a building or other structure from the service-entrance conductors.

(A) Location. The service disconnecting means shall be installed in accordance with 230.70(A)(1), (A)(2), and (A)(3).

(1) Readily Accessible Location. ~~The service disconnecting means shall be installed at a readily accessible location either outside of a building or structure or inside nearest the point of entrance of the service conductors.~~

The location of the service disconnecting means shall be limited to a distance not to exceed 6 feet from the point of penetration of the service entrance raceway into the structure.

(2) Bathrooms. Service disconnecting means shall not be installed in bathrooms.

(3) Remote Control. Where a remote control device(s) is used to actuate the service disconnecting means, the service disconnecting means shall be located in accordance with 230.70(A)(1).

(B) Marking. Each service disconnect shall be permanently marked to identify it as a service disconnect.

(C) Suitable for Use. Each service disconnecting means shall be suitable for the prevailing conditions. Service equipment installed in hazardous (classified) locations shall comply with the requirements of Articles 500 through 517.

5-403.14

Section 230.72 of the National Electrical Code is hereby amended to read as follows:

230.72 Grouping of Disconnects.

- (A) **General.** The two to six disconnects as permitted in 230.71 shall be grouped. Each disconnect shall be marked to indicate the load to be served.

~~Exception: One of the two to six service disconnecting means permitted in 230.71, where used only for a water pump also intended to provide fire protection, shall be permitted to be located remote from the other disconnecting means.~~

- (1) Meters and disconnects shall be marked and installed by numerical or alphabetical order, top to bottom or left to right, unless exempted by the enforcing authority.
- (2) Meter enclosures and service equipment shall be permanently marked with phenolic labels, engraved plaques, or other approved means.

- (B) **Additional Service Disconnecting Means.** The one or ore additional service disconnecting means for fire pumps, emergency systems, legally required standby, or optional standby services permitted by 230.2 shall be installed remote from the one to six service disconnecting means for normal service to minimize the possibility of simultaneous interruption of supply.

- (C) **Access to Occupants.** In a multiple-occupancy building, each occupant shall have access to the occupant's service disconnecting means.

Exception: In a multiple-occupancy building where electric service and electrical maintenance are provided by the building management and where these are under continuous building management supervision, the service disconnecting means supplying more than one occupancy shall be permitted to be accessible to authorized management personnel only.

5-403.15

Section 250.68 of the National Electrical Code is hereby amended to read as follows:

250.68 Grounding Electrode Conductors and Bonding Jumper Connection to Grounding Electrodes.

The connection of a grounding electrode conductor at the service, at each building or structure where supplied by a feeder(s) or branch circuit(s), or at a separately derived system and associated bonding jumper(s) shall be made as specified 250.68(A) and (B).

- (A) **Accessibility.** All mechanical elements used to terminate a

-grounding electrode conductor or bonding jumper to a grounding electrode shall be accessible.

- (1) The location of the grounding electrode conductor connection to the grounding electrode(s) shall be permanently stated on a plaque or directory on the service disconnecting means.

Exception No. 1: An encased or buried connection to a concrete-encased, driven, or buried grounding electrode shall not be required to be accessible.

Exception No. 2: Exothermic or irreversible compression connections used at terminations, together with the mechanical means used to attach such terminations to fireproofed structural metal whether or not the mechanical means is reversible, shall not be required to be accessible

- (B) Effective Grounding Path.** 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. Where necessary to ensure the grounding path for a metal piping system used as a grounding electrode, effective bonding shall be provided around insulated joints and around any equipment likely to be disconnected for repairs or replacement. Bonding jumpers shall be of sufficient length to permit removal of such equipment while retaining the integrity of the grounding path.

5-403.16

Section 250.94 of the National Electrical Code is hereby amended to read as follows:

250.94 Bonding for Other Systems. An intersystem bonding termination for connecting intersystem bonding and grounding conductors required for other systems shall be provided external to enclosures at the service equipment and at the disconnecting means for any additional buildings or structures. The intersystem bonding termination shall be accessible for connection and inspection. The intersystem bonding termination shall have the capacity for connection of not less than three intersystem bonding conductors. The intersystem bonding termination device shall not interfere with opening a service or metering equipment enclosure. The intersystem bonding termination shall be one of the following:

- ~~(1) A set of terminals securely mounted to the meter enclosure and electrically connected to the meter enclosure. The terminals shall be listed as grounding and bonding equipment.~~
- (2) (1) A bonding bar near the service equipment enclosure, meter enclosure, or raceway for service conductors. The bonding bar shall be connected with a minimum 6 AWG copper conductor to an equipment grounding conductor(s) in the service equipment enclosure, meter enclosure, or exposed nonflexible metallic raceway.

~~(3) (2) A bonding bar near the grounding electrode conductor. The bonding bar shall be connected to the grounding electrode conductor with a minimum 6 AWG copper conductor.~~

Exception: In existing buildings or structures where any of the intersystem bonding and grounding conductors required by 770.93, 800.100(B), 810.21(F), 820.100(B), 830.100(B) exist, installation of the intersystem bonding termination is not required. An accessible means external to enclosures for connecting intersystem bonding and grounding electrode conductors shall be permitted at the service equipment and at the disconnecting means for any additional buildings or structures by at least one of the following means:

- (1) Exposed nonflexible metallic raceways
- (2) An exposed grounding electrode conductor
- (3) Approved means for the external connection of a copper or other corrosion-resistant bonding or grounding conductor to the grounded raceway or equipment

FPN No. 1: A 6 AWG copper conductor with one end bonded to the grounded nonflexible metallic raceway or equipment and with 150 mm (6 in.) or more of the other end made accessible on the outside wall is an example of the approved means covered in 250.94, Exception item (3).

FPN No. 2: See 800.100, 810.21, and 820.100 for bonding and grounding requirements for communications circuits, radio and television equipment, and CATV circuits.

5-403.17

Section 334.12 of the National Electrical Code is hereby amended to read as follows:

334.12 Uses Not Permitted.

(A) Types NM, NMC, and NMS. Types NM, NMC, and NMS cables shall not be used as follows:

- ~~(4) In any dwelling or structure not specifically permitted in 334.10(1), (2), and (3)~~
- (1) In any occupancy other than Group R

Exception: Type NM, NMC, and NMS cable shall be permitted in Type I and II construction when installed within raceways permitted to be installed in Type I and II construction.

- (2) Exposed in dropped or suspended ceilings in other than one- and two-family and multifamily dwellings
- (3) As service-entrance cable
- (4) In commercial garages having hazardous (classified) locations as defined in [511.3](#)
- (5) In theaters and similar locations, except where permitted in 518.4(B)
- (6) In motion picture studios
- (7) In storage battery rooms
- (8) In hoistways or on elevators or escalators
- (9) Embedded in poured cement, concrete or aggregate
- (10) In hazardous (classified) locations, except where permitted by the following:
 - a. 501.10(B)(3)
 - b. 502.10(B)(3)
 - c. 504.20
- (11) In any dwelling or structure exceeding three (3) stories.

FPN: No. 1 The intent of this subsection is not to restrict the use of nonmetallic-sheathed cable in garages or carports directly associated with an apartment.

FPN: No. 2 The intent of this subsection is not to restrict the use of nonmetallic-sheathed cable in residential garages, carports, or other occupancies directly associated with one and two family dwellings.

(B) **Types NM and NMS.** Types NM and NMS cables shall not be used under the following conditions or in the following locations:

- (1) Where exposed to corrosive fumes or vapors
- (2) Where embedded in masonry, concrete, adobe, fill, or plaster
- (3) In a shallow chase in masonry, concrete, adobe and covered with plaster, adobe, or similar finish
- (4) [In wet or damp locations.](#)

5-403.18

Section 362.10 of the National Electrical Code is hereby amended to read as follows:

362.10 Uses Permitted. For the purpose of this article, the first floor of a building shall be that floor that has 50 percent or more of the exterior wall surface area level with or above finished grade. One additional level that is the first level and not designed for human habitation and used only for vehicle parking, storage, or similar use shall be permitted. The use of ENT and fittings shall be permitted in the following:

- (1) In any building not exceeding three floors above grade as follows:
 - a. For exposed work, where not prohibited by 362.12
 - b. Concealed within walls, floors, and ceilings
- (2) ~~In any building exceeding three floors above grade, ENT shall be concealed within walls, floors, and ceilings where the walls, floors, and ceilings provide a thermal barrier of material that has at least a 15-minute finish rating as identified in listings of fire-rated assemblies. The 15-minute finish-rated thermal barrier shall be permitted to be used for combustible or noncombustible walls, floors, and ceilings.~~

~~Exception to (2): Where a fire sprinkler system(s) is installed in accordance with NFPA 13-2007, Standard for the Installation of Sprinkler Systems, on all floors, ENT shall be permitted to be used within walls, floors, and ceilings, exposed or concealed, in buildings exceeding three floors above grade.~~

FPN: A finish rating is established for assemblies containing combustible (wood) supports. The finish rating is defined as the time at which the wood stud or wood joist reaches an average temperature rise of 121 °C (250 °F) or an individual temperature of 163 °C (325 °F) as measured on the plane of the wood nearest the fire. A finish rating is not intended to represent a rating for a membrane ceiling.

- ~~(3)(2)~~ In locations subject to severe corrosive influences as covered in 300.6 and where subject to chemicals for which the materials are specifically approved.
- ~~(4)(3)~~ In concealed, dry, and damp locations not prohibited by 362.12.
- (5) ~~Above suspended ceilings where the suspended ceilings provide a thermal barrier of material that has at least a 15-minute finish rating as identified in listings of fire-rated assemblies, except as permitted in 362.10(1)(a).~~

~~Exception to (5): ENT shall be permitted to be used above suspended ceilings in buildings exceeding three floors above grade where the building is protected throughout by a fire sprinkler system installed in accordance with NFPA 13-2007, Standard for the Installation of Sprinkler Systems.~~

- ~~(6)(4)~~ Encased in poured concrete, or embedded in a concrete slab on grade where ENT is placed on sand or approved screenings, provided fittings identified for this purpose are used for connections.

- (7)(5) For wet locations indoors as permitted in this section or in a concrete slab on or below grade, with fittings listed for the purpose.
- (8)(6) Metric designator 16 through 27 (trade size ½ through 1) as listed manufactured prewired assembly.

FPN: Extreme cold may cause some types of nonmetallic conduits to become brittle and therefore more susceptible to damage from physical contact.

5-403.19

Section 695.3 of the National Electrical Code is hereby amended to read as follows:

695.3 Power Source(s) for Electric Motor-Driven Fire Pumps. Electric motor-driven fire pumps shall have a reliable source of power.

(A) **Individual Sources.** Where reliable, and where capable of carrying indefinitely the sum of the locked-rotor current of the fire pump motor(s) and the pressure maintenance pump motor(s) and the full-load current of the associated fire pump accessory equipment when connected to this power supply, the power source for an electric motor-driven fire pump shall be one or more of the following.

(1) **Electric Utility Service Connection.** A fire pump shall be permitted to be supplied ~~by a separate service, or~~ from a connection located ahead of and not within the same cabinet, enclosure, or vertical switchboard section as the service disconnecting means. The connection shall be located and arranged so as to minimize the possibility of damage by fire from within the premises and from exposing hazards. A tap ahead of the service disconnecting means shall comply with 230.82(5). The service equipment shall comply with the labeling requirements in 230.2 and the location requirements in 230.72(b). [NFPA 20:9.2.2]

(2) **On-Site Power Production Facility.** A fire pump shall be permitted to be supplied by an on-site power production facility. The source facility shall be located and protected to minimize the possibility of damage by fire. [NFPA 20:9.2.3]

(B) **Multiple Sources.** Where reliable power cannot be obtained from a source described in 695.3(A), power shall be supplied from an approved combination of two or more of either of such sources, or from an approved combination of feeders constituting two or more power sources as covered in 695.3(B)(2), or from an approved combination of one or more of such power sources in combination with an on-site standby generator complying with 695.3(B)(1) and (B)(3).

(1) **Generator Capacity.** An on-site generator(s) used to comply with this section shall be of sufficient capacity to allow normal starting and running of the motor(s) driving the fire pump(s) while supplying all other simultaneously operated load. Automatic shedding of one or more optional standby loads in order to comply with this capacity requirement shall be permitted. A tap ahead of the on-site generator disconnecting means shall not be required. The requirements of 430.113 shall not apply. [NFPA 20:9.6.1]

(2) **Feeder Sources.** This section applies to multi-building campus-style complexes with fire pumps at one or more buildings. Where sources in 695.3(A)

are not practicable, and with the approval of the authority having jurisdiction, two or more feeder sources shall be permitted as one power source or as more than one power source where such feeders are connected to or derived from separate utility services. The connection(s), overcurrent protective device(s), and disconnecting means for such feeds shall meet the requirements of 695.4(B) [NFPA 20:9.2.5.3]

(3) **Arrangement.** The power sources shall be arranged so that a fire at one source will not cause an interruption at the other source. [NFPA 20:9.2.5.1]

5-403.20

Section 700.12 of the National Electrical Code is hereby amended to read as follows:

700.12 General Requirements. Current supply shall be such that, in the event of failure of the normal supply to, or within, the building or group of buildings concerned, emergency lighting, emergency power, or both shall be available within the time required for the application but not to exceed 10 seconds. The supply system for emergency purposes, in addition to the normal services to the building and meeting the general requirements of this section, shall be one or more of the types of systems described in 700.12(A) through 700.12(E). Unit equipment in accordance with 700.12(F) shall satisfy the applicable requirements of this article.

In selecting an emergency source of power, consideration shall be given to the occupancy and the type of service to be rendered, whether of minimum duration, as for evacuation of a theater, or longer duration, as for supplying emergency power and lighting due to an indefinite period of current failure from trouble either inside or outside the building.

Equipment shall be designed and located so as to minimize the hazards that might cause complete failure due to flooding, fires, icing, and vandalism.

Equipment for sources of power as described in 700.12(A) through 700.12(E) where located within assembly occupancies for greater than 1000 persons in buildings above 23 m (75 ft) in height with any of the following occupancy classes – assembly, educational, residential, detention and correctional, business, and mercantile – shall be installed either in spaces fully protected by approved automatic fire suppression systems (sprinklers, carbon dioxide systems, and so forth) or in spaces with a 1-hour fire rating.

FPN No. 1: For the definition of occupancy classification, see Section 6.1 of NFPA 101-2003, Life Safety Code.

FPN No. 2: Assignment of degree of reliability of the recognized emergency supply system depends on the careful evaluation of the variables at each particular installation.

(A) **Storage Battery.** Storage batteries used as a source of power for emergency systems shall be of suitable rating and capacity to supply and maintain the total load for a minimum period of 1 ½ hours, without the voltage applied to the load falling below 87 ½ percent of normal.

Batteries, whether of the acid or alkali type, shall be designed and constructed to meet the requirements of emergency service and shall be compatible with the charger for that particular installation.

For a sealed battery, the container shall not be required to be transparent. However, for the lead acid battery that requires water additions, transparent or translucent jars shall be furnished. Automotive-type batteries shall not be used.

An automotive battery charging means shall be provided.

(B) **Generator Set.**

(1) **Prime Mover-Driven.** For a generator set driven by a prime mover acceptable to the authority having jurisdiction and sized in accordance with 70.5, means shall be provided for automatically starting the prime mover on failure of the normal service and for automatic transfer and operation of all required electrical circuits. A time-delay feature permitting a 15-minute setting shall be provided to avoid retransfer in case of short-time reestablishment of the normal source.

(2) **Internal Combustion as Prime Movers.** Where internal combustion engines are used as the prime mover, an on-site fuel supply shall be provided with an on-premise fuel supply sufficient for not less than 2 hours' full-demand operation of the system. Where power is needed for the operation of the fuel transfer pumps to deliver fuel to a generator set day tank, this pump shall be connected to the emergency power system.

(3) **Dual Supplies.** Prime movers shall not be solely dependent on a public utility gas system for their fuel supply or municipal water supply for their cooling systems. Means shall be provided for automatically transferring from one fuel supply to another where dual fuel supplies are used.

Exception: Where acceptable to the authority having jurisdiction, the use of other than on-site fuels shall be permitted where there is a low probability of a simultaneous failure of both the off-site fuel delivery system and power from the outside electrical utility company.

(4) **Battery Power and Dampers.** Where a storage battery is used for control or signal power or as the means of starting the prime mover, it shall be suitable for the purpose and shall be equipped with an automatic charging means independent of the generator set. Where the battery charger is required for the operation of the generator set, it shall be connected to the emergency system. Where power is required for the operation of dampers used to ventilate the generator set, the dampers shall be connected to the emergency system.

(5) **Auxiliary Power Supply.** Generator sets that require more than 10 seconds to develop power shall be permitted if an auxiliary power supply energizes the emergency system until the generator can pick up the load.

(6) **Outdoor Generator Sets.** Where an outdoor housed generator set is equipped with a readily accessible disconnecting means located within sight of the building or structure supplied, an additional disconnecting means shall not be required where ungrounded conductors serve or pass through the building or structure.

(C) **Uninterruptible Power Supplies.** Uninterruptible power supplied used to provide power for emergency systems shall comply with the applicable provisions of 700.12(A) and 700.12(B). The disconnecting means shall meet the requirements of 225.36.

~~(D) **Separate Service.** Where approved by the authority having jurisdiction as suitable for use as an emergency source of power, an additional service shall be permitted. This service shall be in accordance with the applicable provisions of Article 230 and the following additional requirements:~~

~~(1) Separate service drop or service lateral~~

~~(2) Service conductors sufficiently remote electrically and physically from any other service conductors to minimize the possibility of simultaneous interruption of supply~~

(E) **Fuel Cell System.** Fuel cell systems used as a source of power for emergency systems shall be of suitable rating and capacity to supply and maintain the total load for not less than 2 hours of full-demand operation.

Installation of a fuel cell system shall meet the requirements of Parts II through VIII of Article 692.

Where a single fuel cell system serves as the normal supply for the building or group of buildings concerned, it shall not serve as the sole source of power for the emergency standby system.

(F) **Unit Equipment.** Individual unit equipment for emergency illumination shall consist of the following:

(1) A rechargeable battery

(2) A battery charging means

(3) Provision for one or more lamps mounted on the equipment, or shall be permitted to have terminals for remote lamps, or both

(4) A relaying device arranged to energize the lamps automatically upon failure of the supply to the unit equipment

The batteries shall be of suitable rating and capacity to supply and maintain at not less than 87 ½ percent of the nominal battery voltage for the total lamp load associated with the unit for a period of at least 1 ½ hours, or the unit equipment shall supply and maintain not less than 60 percent of the initial emergency illumination for a period of at least 1 ½ hours. Storage batteries, whether of the acid or alkali type shall be designed and constructed to meet the requirements of emergency service.

Unit equipment shall be permanently fixed in place (i.e., not portable) and shall have all wiring to each unit installed in accordance with the requirements of any of the wiring methods in Chapter 3. Flexible cord-and-plug connection shall be permitted, provided that the cord does not exceed 900 mm (3 ft) in length. The branch circuit feeding the unit equipment shall be the same branch circuit as that serving the normal lighting in the area and connected ahead of any local switches. The branch circuit that feeds unit equipment shall be clearly identified at the distribution panel. Emergency luminaries (illumination fixtures) that obtain power from unit equipment and are not part of the unit equipment shall be wired

to the unit equipment as required by 700.9 and by one of the wiring methods of Chapter 3.

Exception: In a separate and uninterrupted area supplied by a minimum of three normal lighting circuits, a separate branch circuit for unit equipment shall be permitted if it originates from the same panelboard as that of the normal lighting circuits and is provided with a lock-on feature.

5-403.21

Section 701.11 of the National Electrical Code is hereby amended to read as follows:

701.11 Legally Required Standby Systems. Current supply shall be such that, in the event of failure of the normal supply to, or within, the building or group of buildings concerned, legally required standby power will be available within the time required for the application but not to exceed 60 seconds. The supply system for legally required standby purposes, in addition to the normal services to the building, shall be permitted to comprise one or more of the types of systems described in 701.11(A) through 701.11(F), excluding 701.11(E). Unit equipment in accordance with 701.11(G) shall satisfy the applicable requirements of this article.

In selecting a legally required standby source of power, consideration shall be given to the type of service to be rendered, whether of short-time duration or long duration.

Consideration shall be given to the location or design, or both, of all equipment to minimize the hazards that might cause complete failure due to floods, fires, icing, and vandalism.

FPN: Assignment of degree of reliability of the recognized legally required standby supply system depends on the careful evaluation of the variables at each particular installation.

- (A) **Storage Battery.** A storage battery shall be of suitable rating and capacity to supply and maintain at not less than 87 ½ percent of system voltage the total load of the circuits supplying legally required standby power for a period of at least 1 ½ hours.

Batteries, whether of the acid or alkali type, shall be designed and constructed to meet the service requirements of emergency service and shall be compatible with the charger for that particular installation.

For a sealed battery, the container shall not be required to be transparent. However, for the lead acid battery that requires water additions, transparent or translucent jars shall be furnished. Automotive-type batteries shall not be used.

An automatic battery charging means shall be provided.

- (B) **Generator Set.**

- (1) **Prime Mover-Driven.** For a generator set driven by a prime mover acceptable to the authority having jurisdiction and sized in accordance with 701.6, means shall be provided for automatically starting the prime mover upon failure of the normal service and for automatic transfer and operation of all required

electrical circuits. A time-delay feature permitting a 15-minute setting shall be provided to avoid transfer in case of short-time re-establishment of the normal source.

- (2) **Internal Combustion Engines as Prime Mover.** Where internal combustion engines are used as the prime mover, an on-site fuel supply shall be provided with an on-premise fuel supply sufficient for not less than 2 hours' full-demand operation of the system.
- (3) **Dual Fuel Supplies.** Prime movers shall not be solely dependent on a public utility gas system for their fuel supply or municipal water supply for their cooling systems. Means shall be provided for automatically transferring one fuel supply to another where dual fuel supplies are used.

Exception: Where acceptable to the authority having jurisdiction, the use of other than on-site fuels shall be permitted where there is a low probability of a simultaneous failure of both the off-site fuel delivery system and power from the outside electrical utility company.

- (4) **Battery Power.** Where a storage battery is used for control or signal power or as the means of starting the prime mover, it shall be suitable for the purpose and shall be equipped with an automatic charging means independent of the generator set.
 - (5) **Outdoor Generator Sets.** Where an outdoor housed generator set is equipped with a readily accessible disconnecting means located within sight of the building or structure supplied, an additional disconnecting means shall not be required where ungrounded conductors serve or pass through the building or structure.
- (C) **Uninterruptible Power Supplies.** Uninterruptible power supplied used to provide power for legally required standby systems shall comply with the applicable provisions of 701.11(A) and 701.11 (B).
 - (D) **Separate Service.** Where approved, a separate service shall be permitted as a legally required source of standby power. This service shall be in accordance with the applicable provisions of Article 230, with separate service drop or lateral sufficiently remote electrically and physically from any other service to minimize the possibility of simultaneous interruption of supply from an occurrence in another service.

- ~~(E) **Connection Ahead of Service Disconnecting Means.** Where acceptable to the authority having jurisdiction, connections located ahead of and not within the same cabinet, enclosure, or vertical switchboard section as the service disconnecting means shall be permitted. The legally required standby service shall be sufficiently separated from the normal main service disconnecting means to prevent simultaneous interruption of supply through an occurrence within the building or groups of buildings served.~~

~~FPN: See 230.82 for equipment permitted on the supply side of a service disconnecting means~~

- (F) **Fuel Cell System.** Fuel cell systems used as a source of power for legally required standby systems shall be of suitable rating and capacity to supply and maintain the total load for not less than 2 hours of full-demand operation.

Installation of a fuel cell system shall meet the requirements of Parts II through VIII of Article 692.

Where a single fuel cell system serves as the normal supply for the building a group of buildings concerned, it shall not serve as the sole source of power for the legally required standby system.

- (G) **Unit Equipment.** Individual unit equipment for legally required standby illumination shall consist of the following:

- (1) A rechargeable battery
- (2) A battery charging means
- (3) Provisions for one or more lamps mounted on the equipment and shall be permitted to have terminals for remote lamps
- (4) A relaying device arranged to energize the lamps automatically upon failure of the supply to the unit equipment

The batteries shall be of suitable rating and capacity to supply and maintain at not less than 87 ½ percent of the nominal battery voltage for the total lamp load associated with the unit for a period of at least 1 ½ hours, or the unit equipment shall supply and maintain not less than 600 percent of the initial legally required standby illumination for a period of at least 1 ½ hours. Storage batteries, whether of the acid or alkali type, shall be designed and constructed to meet the requirements of emergency service.

Unit equipment shall be permanently fixed in place (i.e., not portable) and shall have all wiring to each unit installed in accordance with the requirements of any of the wiring methods in Chapter 3. Flexible cord-and-plug connection shall be permitted, provided that the cord does not exceed 900 mm (3 ft) in length. The branch circuit feeding the unit equipment shall be the same branch circuit as that serving the normal lighting in the area and connected ahead of any local switches. Legally required standby luminaries (illumination fixtures) that obtain power from a unit equipment and are not part of the unit equipment shall be wired to the unit equipment by one of the wiring methods of Chapter 3.

Exception: In a separate and uninterrupted area supplied by a minimum of three normal lighting circuits, a separate branch circuit for unit equipment shall be permitted if it originates from the same panelboard as that of the normal lighting circuits and is provided with a lock-on feature.

5-404

DEFINITIONS

- (A) "Building story" shall have the meaning provided by the [International Building Code](#) as adopted by this City in Article 2 of Chapter V of the Code of the City of Lawrence, Kansas, and amendments thereto.

(B) "Basement" shall have the meaning provided by the [International Building Code](#) as adopted by this City in Article 2 of Chapter V of the Code of the City of Lawrence, Kansas, and amendments thereto.

5-405

STANDARD INSTALLATION, ELECTRICAL EQUIPMENT.

Except as otherwise provided in this Article, all installations of electrical wiring and equipment shall be in conformity with the provisions of this Article, with the Statutes of the State, and any other rules and regulations issued by authority thereof, and with electrical standards for safety to persons or property. Where no specific standards are prescribed by this Article, the Statutes of the State or by any orders, rules or regulations issued by authority thereof, conformity with the regulations set forth in the National Electrical Code, as approved by the American Safety Code as approved by the American Standards Association, and the other provisions of other safety codes approved by the American Standards Association, shall be prima facie evidence of conformity with the approved standards for safety to persons and property. (~~Ord. 6400~~)

5-406

LIABILITY.

(a) These regulations shall not be construed to relieve from or lessen the responsibility of any person owning, operating or controlling any building, structure, or system thereof for any damages to persons or property caused by defects, nor shall the enforcing authority or its parent jurisdiction be held as assuming any such liability by reason of the inspections authorized by these regulations or any permits or certificates issued under these regulations.

(b) These regulations shall not be construed to relieve or lessen the liability of any person constructing, altering, adding to or repairing buildings, structures, or systems for damages to anyone injured thereby, nor shall the City be held as assuming liability by reason of the inspection authorized herein or certificates, licenses, and permits issued pursuant to the provisions herein. (~~Ord. 6400~~)

5-407

SEVERABILITY.

If any section, clause, sentence or phrase of this ordinance is found to be unconstitutional or is otherwise held invalid by any court of competent jurisdiction, it shall not affect the validity of the remaining parts of the ordinance.

Section 3. This Ordinance shall take effect and be in full force and effect following its passage and publication as provided by law.

PASSED BY THE GOVERNING BODY OF THE CITY OF LAWRENCE, KANSAS
this ___ day of _____, 2009.

Approved:

Robert Chestnut, Mayor

ATTEST:

Jonathan M. Douglass, City Clerk

APPROVED AS TO FORM AND LEGALITY:

Toni Ramirez Wheeler
Director of Legal Services