



Significant Changes to the International Building Code (IBC) (2015 to 2018)

This Summary is provided by Building Inspection Services, Charleston County, South Carolina. If you require further assistance, please contact Building Inspection Services at (843) 202-6940; building services@charlestoncounty.org.

302.1 Classification of Outdoor Areas

Change Summary: It has been clarified that occupied roofs are to be assigned one or more occupancy classifications in a manner consistent with the classification of uses inside the building, based upon the fire and life safety hazards posed by the rooftop activities.

303.4 Assembly Use of Greenhouses Clarification

Change Summary: Where the use of a greenhouse is assembly in nature due to public access for the viewing of plants, classification as a Group A-3 occupancy is appropriate.

309.1 Mercantile Use of Greenhouses Classification

Change Summary: Where a greenhouse is provided with public access for the purpose of the display and sale of plants, a Group M occupancy shall be assigned.

310.3, 310.4 Classification of Congregate Living Facilities

Change Summary: Dormitories and similar nontransient uses now are to be considered as Group R-3 occupancies where the occupant load is 16 or less. In addition, transient lodging houses, such as bed-and- breakfast establishments, can only be considered as Group R-3 occupancies where their total occupant load is 10 or less.

310.4.2 Owner-Occupied Lodging Houses

Change Summary: The criteria permitting compliance with the IRC for the design and construction of owner-occupied lodging houses has been expanded by now also requiring that the total number of lodging house occupants be limited to 10.

311.1.1 Classification of Accessory Storage Spaces

Change Summary: Regardless of size, storage rooms and storage spaces that are accessory to other uses are to be classified as part of the occupancy to which they are accessory.

311.2 Classification of Self-Service Storage Facilities

Change Summary: Due to the reasonable expectation that self- storage facilities will contain a considerable amount of combustible materials, such facilities are now specifically identified as Group S-1 occupancies.

312.1 Classification of Communication Equipment Structures

Change Summary: Classification as a Group U occupancy is now appropriate for those communication equipment structures that are less than 1,500 square feet in floor area.

***State Change: An example for Group U is a “Primitive Camp Structure.”**

312.1.1 Classification of Agricultural Greenhouses

Change Summary: Because a Group U occupancy includes those low-hazard structures that do not conform to any other specific occupancy classification, it has been clarified that greenhouses are only to be considered as Group U where they are not more appropriately classified as one of the other occupancies established in the IBC.

403.2.1.1 Type of Construction in High-Rise Buildings

Change Summary: The reduction in the minimum required fire- resistance ratings for certain building elements of high-rise buildings is no longer applicable to Group H-2, H-3, and H-5 occupancies due to the high physical hazard level such uses pose.

404.6 Enclosure of Atriums

Change Summary: The requirement that those spaces not separated from an atrium be accounted for in the design of the smoke control system now applies only in those cases where the atrium is required to be provided with a smoke control system.

406.1 Motor Vehicle-Related Occupancies

Change Summary: Provisions specific to motor-vehicle-related uses have been reformatted in a manner such that those requirements that apply to all such uses have been relocated in a single Section 406.1.

406.3 Regulation of Private Garages

Change Summary: Parking structures that meet the definition of private garages are now permitted to comply with the provisions for public parking garages as an alternative approach.

406.6.2 Ventilation of Enclosed Parking Garages

Change Summary: Chapters 4 and 5 of the IMC are now specifically referenced to ensure that all IMC ventilation and exhaust requirements for enclosed parking garages are applied.

407.5 Maximum Smoke Compartment Size

Change Summary: The allowance for larger smoke compartments in hospitals and other Group I-2, Condition 2 occupancies has now been modified to only include compartments containing single-patient sleeping rooms and suites, as well as those compartments without patient sleeping rooms.

407.5.4 Required Egress from Smoke Compartments

Change Summary: In Group I-2 occupancies, any smoke compartment that does not have an exit from the compartment must now provide direct access to a minimum of two adjacent smoke compartments.

420.7 Corridor Protection in Assisted Living Units

Change Summary: Shared living spaces, group meeting spaces, and multipurpose therapeutic spaces are now permitted to be open to fire-rated corridors in Group I-1 assisted living housing facilities provided specific conditions are met.

420.8 Group I-1 Cooking Facilities

Change Summary: A room or space containing a cooking facility with domestic cooking appliances is now permitted to be open to a corridor in Group I-1 occupancies provided nine specific conditions are met.

420.10 Dormitory Cooking Facilities

Change Summary: The installation and use of domestic cooking appliances are now regulated in both common areas and sleeping rooms of Group R-2 college dormitories.

422.6 Electrical Systems in Ambulatory Care Facilities

Change Summary: Reference is now made to IBC Chapter 27 addressing emergency and standby power systems, as well as NFPA 99, Health Care Facilities Code, regarding the design and construction requirements for essential electrical systems for electrical components, equipment, and systems in ambulatory care facilities.

424.1 Children's Play Structures

Change Summary: The dimensional criteria under which children's play structures are scoped by the IBC have been revised, resulting in the potential for many more structures to be regulated for fire concerns.

427 Medical Gas Systems

Change Summary: In order to provide a more comprehensive and efficient compilation of construction regulations, those IFC medical gas system requirements related directly to building construction have now been replicated in the IBC.

428 Higher Education Laboratories

Change Summary: Higher education laboratories using hazardous materials can now be considered Group B occupancies provided such laboratories comply with new Section 428 which provides an alternative approach to the existing control area provisions.

503.1, 706.1 Scope of Fire Wall Use

Change Summary: The use of fire walls is now strictly limited to only the determination of permissible types of construction, based upon allowable building area and height.

503.1.4 Allowable Height and Area of Occupied Roofs

Change Summary: New criteria are now provided establishing the appropriate methodology in the regulation of building height in stories above grade plane where one or more occupancies is located on the roof.

505.2.1.1 Mezzanine and Equipment Platform Area Limitations

Change Summary: Where both a mezzanine and an equipment platform are located in the same room, the general limitation for mezzanines cannot be exceeded when applying the two-thirds allowance.

Table 506.2, Note i Allowable Area of Type VB Greenhouses

Change Summary: The tabular allowable area for nonsprinklered single-story greenhouses classified as Group U occupancies has been substantially increased for Type VB buildings to be consistent with those greenhouses classified as Group B, M, F-2, and E.

507.4 Sprinklers in Unlimited Area Group A-4 Buildings

Change Summary: The sprinkler omission permitted for indoor participant sport areas of unlimited area Group A-4 buildings is now clearly not applicable to storage rooms, press boxes, concession areas, and other ancillary spaces.

508.3.1.2 Group I-2, Condition 2 Nonseparated Occupancies

Change Summary: Additional limitations have now been established in mixed-occupancy buildings regulated under the nonseparated occupancy provisions where one of the occupancies involved is a Group I-2, Condition 2 hospital use.

508.4.1, Table 508.4 Separated Occupancies vs. Fire Area Separations

Change Summary: New provisions in Section 508.4.1 and Table 508.4 clarify that the fire separations used for mixed-occupancy purposes and those used for fire area purposes address different concerns, and as such the most restrictive fire-resistance-rated conditions shall apply.

Table 509 Incidental Uses

Change Summary: The current description in Table 509 regulating incidental uses in regard to rooms containing stationary storage battery systems has been revised to allow for ongoing consistency with the International Fire Code (IFC). In addition, a new entry dealing with rooms housing electrical installations and transformers references applicable provisions in National Electrical Code (NEC).

510.2 Horizontal Building Separation

Change Summary: Vertical offsets are permitted in the horizontal fire-resistance-rated separation mandated for “podium buildings” provided the minimum required fire-resistance rating is maintained for the offsets and their supporting elements.

Table 601, Note b Fire Protection of Structural Roof Members

Change Summary: All portions of the roof construction, including primary structural frame members such as girders and beams, are now selectively exempted from fire-resistance requirements based on Table 601 where every portion of the roof construction is at least 20 feet above any floor below.

Table 602, Note i Group R-3 Fire Separation Distance

Change Summary: Where the building under consideration is of Type IIB or Type VB construction and houses a Group R-3 occupancy, it has been clarified that no fire-resistance rating is required for exterior walls due to location on the lot where the fire separation distance is a minimum of 5 feet.

602.3, 602.4.1 FRT Wood Sheathing in Exterior Wall Assemblies

Change Summary: It has now been clarified that fire-retardant treated wood sheathing, as well as wood framing, is permitted within exterior walls of Type III and IV buildings where the wall assembly does not exceed a 2-hour rating.

704.2, 704.4.1 Column Protection in Light-Frame Construction

Change Summary: In walls of light-frame construction where primary structural frame members require fire-resistive protection, columns extending only between the bottom and top plates do not need to be provided with individual encasement protection.

Table 705.2 Extent of Projections

Change Summary: The minimum required clearance between the edge of a projection and the line used to determine the fire separation distance has been significantly decreased.

705.2.3, 705.2.3.1 Combustible Balconies, Projections, and Bay Windows

Change Summary: Construction requirements for balconies, porches, decks, bay windows, and oriel windows have been relocated from Section 1406 (Combustible Materials on the Exterior Side of Exterior Walls) to Section 705.2.3 (Combustible Projections).

705.8.1 Measurement of Fire Separation Distance for Opening Protection

Change Summary: The allowable area of openings in fire-resistance-rated exterior walls is to be based on the fire separation distance for each story, determined individually, in the same manner as applied in the determination of the required wall rating.

706.1.1 Party Walls Not Constructed as Fire Walls

Change Summary: Construction as a fire wall is no longer required for a party wall provided the aggregate height and area of the buildings on each side of the party wall are compliant with Chapter 5 and applicable easements and agreements are established addressing the maintenance of all fire and life safety systems of both buildings.

706.2 Structural Continuity of Double Fire Walls

Change Summary: In Seismic Design Categories D through F, floor and roof sheathing is permitted to continue through light-frame double fire wall assemblies where the sheathing does not exceed a thickness of $\frac{3}{4}$ inch.

708.4 Continuity of Fire Partitions

Change Summary: The continuity requirements for fire partitions have been reformatted to provide for increased clarity of their construction requirements.

708.4.2 Fireblocking and Draftstopping at Fire Partitions

Change Summary: Fireblocking and draftstopping requirements for fire partitions of combustible construction have been consolidated and modified.

713.8.1 Membrane Penetrations of Shaft Enclosures

Change Summary: Membrane penetrations not related to the purpose of a shaft enclosure are no longer prohibited from penetrating the outside of the enclosure.

716.2.6.5 Delayed-Action Self-Closing Doors

Change Summary: Self-closing doors that are not also required to be automatic closing are now permitted to be equipped with delayed-action closers.

803.1.1, 803.1.2 Interior Wall and Ceiling Finish Testing

Change Summary: Interior wall and ceiling finish testing criteria have been reorganized to enhance their application and enforcement.

803.3 Interior Finish Requirements for Heavy Timber Construction

Change Summary: Materials considered heavy timber construction must now comply with interior finish requirements where exposed in interior exit stairways and exit passageways.

803.11, 803.12 Flame Spread Testing of Laminates and Veneers

Change Summary: Specific flame spread testing provisions have been added to the IBC to address the use of factory-produced laminated products with a wood substrate as well as facings and wood veneers applied over a wood substrate on site.

901.6.2 Integrated Fire Protection System Testing

Change Summary: Test criteria have been added to the code with a reference to new NFPA 4, Standard for Integrated Fire Protection and Life Safety System Testing, to ensure that where multiple fire protection systems or life safety systems are integrated, the acceptance process and subsequent testing must evaluate all of the integrated systems as a whole.

902 Fire Pump and Fire Sprinkler Riser Rooms

Change Summary: A number of prescriptive requirements have been added regulating the design and construction of automatic sprinkler system riser rooms and fire pump rooms.

903.2.1 Sprinklers Required in Group A Occupancies

Change Summary: The extent to which automatic sprinkler systems are required in multistory Group A occupancies has been clarified.

903.2.3 Sprinklers in Group E Occupancies

Change Summary: Criteria for occupant load threshold and location within the building have been added as conditions that could require sprinkler protection in a Group E educational occupancy.

903.3.1.1.2 Omission of Sprinklers in Group R-4

Bathrooms

Change Summary: The fire sprinkler requirements that previously extended to small bathrooms in Group R-4 occupancies have been deleted.

903.3.1.2.1 Sprinkler Protection at Balconies and Decks

Change Summary: Where nonrated balconies and similar combustible projections of dwelling and sleeping units are permitted in Type IIIA and VA buildings, it has been clarified that the sprinkler protection is to be extended to the area of the projections.

903.3.1.2.3 Protection of Attics in Group R Occupancies

Change Summary: Sprinkler protection or acceptable alternative methods for the protection of attics are now addressed for mid-rise buildings housing multi-family occupancies and equipped with an NFPA 13R sprinkler system.

904.12 Commercial Cooking and Operations

Change Summary: The installation of fire-extinguishing systems as protection for commercial cooking operations must now also comply with NFPA 96. In addition, commercial cooking systems are now permitted to be protected with a water mist fire-extinguishing system complying with NFPA 750.

904.13 Domestic Cooking Protection in Institutional and Residential Occupancies

Change Summary: Where domestic-type cooking operations are present in Group I-1 occupancies and college dormitories classified as Group R-2, an automatic fire-extinguishing system is now mandated in conjunction with the required hood over any cooktop or range.

904.14 Aerosol Fire Extinguishing Systems

Change Summary: The installation, inspection, testing, and maintenance of aerosol fire-extinguishing systems are now addressed through applicable references to Sections 901 and 904.4 of the IBC and NFPA 2010, as well as the system's listing and manufacturer's instructions.

905.3.1 Class III Standpipes

Change Summary: Standpipe system protection is now required in those buildings having four or more stories above or below grade plane regardless of the vertical distance between the floor level of the highest story and the level of the fire department vehicle access.

905.4 Class I Standpipe Connection Locations

Change Summary: Modifications have been made regarding the location of hose connections within interior exit stairway enclosures as well as the minimum number of connections required where open breezeways and open stairs are provided.

907.2.1 Fire Alarms in Group A Occupancies

Change Summary: An additional criterion now mandates the installation of a manual fire alarm system where there is a Group A occupant load of more than 100 located above or below the level of exit discharge.

907.2.10 Group R-4 Fire Alarm Systems

Change Summary: The installation of a manual fire alarm system and an automatic smoke detection system is no longer required in Group R-4 occupancies.

Table 1004.5, 1004.8 Occupant Load Calculation in Business Use Areas

Change Summary: The method of calculating occupant load in business areas has been revised, which will typically result in reduced design occupant loads. However, higher design occupant loads can now be assigned to concentrated business areas such as telephone call centers and similar uses.

1006.2.1, Table 1006.2.1 Group R Spaces with One Exit or Exit Access Doorway

Change Summary: Allowances for single-exit Group R spaces have been reformatted and the approach to accumulating occupant loads from adjacent rooms discharging through foyers and lobbies has been clarified.

1006.3, 1006.3.1 Egress through Adjacent Stories

Change Summary: The determination of means of egress requirements has been clarified where the occupants must travel to an adjacent story to reach a complying exit or exits.

1008.2.3 Illumination of the Exit Discharge

Change Summary: The introduction of illumination provisions specific to the exit discharge portion of the means of egress clarifies the extent of the illumination requirement. In addition, new language recognizes a long-held allowance for the use of safe dispersal areas and the necessary illumination where such areas are provided.

1008.3.5, 1008.2.2 Emergency Illumination in Group I-2

Change Summary: In Group I-2 occupancies, the required minimum illumination level of 0.2 footcandle must now be available upon failure of a single lamp in a multi-lamp lighting unit.

1009.7.2 Protection of Exterior Areas of Assisted Rescue

Change Summary: The fire-resistance-rated exterior wall with protected openings separation between a required exterior area of assisted rescue and the interior of the building is no longer mandated, provided the building is protected with an automatic sprinkler system.

1010.1.1 Size of Doors

Change Summary: Provisions addressing limits to the width and height of door openings have been selectively reformatted and revised as necessary to correlate with the technical accessibility requirements of ICC A117.1.

1010.1.4.4 Locking Arrangements in Educational Occupancies

Change Summary: Guidance has been provided to allow for enhanced security measures on educational classroom egress doors and yet still continue to comply with applicable means of egress requirements.

1010.1.9.8 Use of Delayed Egress Locking Systems in Group E Classrooms

Change Summary: The allowance for the use of delayed egress locking systems has been expanded to also include egress doors serving Group E classrooms with an occupant load of less than 50, as well as secondary exits or exit access doors serving courtrooms.

1010.1.9.12 Locks on Stairway Doors

Change Summary: Previously limited to only those stairways serving four or fewer stories, the allowance for stairway doors to be locked on the stairway side until simultaneously unlocked from a signal by emergency personnel is now applicable to all multi story conditions which are not considered as high-rise buildings.

1010.3.2 Security Access Turnstiles

Change Summary: New conditions of use are now provided to the building official with criteria to evaluate security access turnstiles that are located in a manner to obstruct a means of egress.

1013.2 Floor Level Exit Sign Location

Change Summary: The permitted location for low-level exit signs selectively required in Group R-1 occupancies has been expanded to now allow the bottom of such sign to be mounted up to 18 inches above the floor.

1015.6, 1015.7 Fall Arrest for Rooftop Equipment

Change Summary: The prescriptive provisions addressing the installation of personal fall arrest/restraint anchorage where mechanical equipment or roof hatches are located close to a roof edge have now been deleted with simply a reference to the ANSI/ASSE Z 359.1 standard.

1017.3, 202 Measurement of Egress Travel

Change Summary: Additional language clarifies that the common path of egress travel limitations must be applied to each room or space on every story.

1023.3.1 Stairway Extensions

Change Summary: Fire-resistance-rated separation is not required between an interior exit stairway and its exit passageway extension where both the stair enclosure and exit passageway are pressurized.

1023.5, 1024.6 Exit Stairway and Exit Passageway Penetrations

Change Summary: Security system and two-way communication system components are now specifically permitted to penetrate the fire-resistant-rated enclosure of exit passageways, interior exit stairways, and interior exit ramps.

1025.1 Luminous Egress Path Marking in Group I Occupancies

Change Summary: Luminous egress path marking is no longer required in high-rise buildings classified as Group I-2, I-3, or I-4 occupancies.

1026.4, 1026.4.1 Refuge Areas for Horizontal Exits

Change Summary: The method for determining the minimum required refuge area size where a horizontal exit has been provided has been modified to allow for a more appropriate determination of the occupant load assigned to the refuge area.

1029.6, 1029.6.3, 202 Open-Air Assembly Seating

Change Summary: The various assembly seating methods have been clarified through the introduction of a new definition for open-air assembly seating and an expanded definition for smoke-protected assembly seating.

1030.1 Required Emergency Escape and Rescue Openings

Change Summary: The occupancies where emergency openings are required have been clarified and the minimum number of required openings in a residential basement has been revised.

1103.2.14 Access to Walk-In Coolers and Freezers

Change Summary: Revised conditions have now been placed on the use of walk-in coolers and freezers exempted from accessibility provisions by requiring them to be accessed from only employee work areas and limiting the scope to only pieces of equipment.

1109.2.1.2 Fixtures in Family or Assisted-Use Toilet Rooms

Change Summary: Family or assisted-use toilet rooms may now also contain a child-height water closet and lavatory in order to provide a higher level of accommodation.

1109.15 Access To Gaming Machines and Gaming Tables

Change Summary: A more practical approach to the appropriate distribution of accessible gaming machines and gaming tables in casinos and other gaming facilities has been established and new definitions provide guidance in the application of the revised provisions.

1110.4.13 Access to Play Areas for Children

Change Summary: Access to children's play areas is now specifically required where those areas contain play components.

1206.2, 1206.3 Engineering Analysis of Sound Transmission

Change Summary: A performance-based alternative approach for meeting the required sound transmission class ratings for unit separation walls and floor-ceiling assemblies in residential buildings has been introduced which allows for the use of an engineering analysis based upon a comparison to previously tested assemblies.

Table 1404.2 Weather Covering Minimum Thickness

Change Summary: The minimum required thickness of masonry and stone veneer weather coverings has been updated to align with current industry standards.

1404.18 Polypropylene Siding

Change Summary: Polypropylene siding is now specifically permitted for use on exterior walls of any type of construction when other provisions of the International Building Code allow its use.

1504.3.3 Metal Roof Shingles

Change Summary: Metal roof shingles are now addressed separately from other metal panel roof systems with reference made to applicable standards for the labeling and testing of wind resistance for the shingles.

1507.1 Underlayment

Change Summary: Underlayment and ice barrier requirements have been relocated from sections describing each type of roofing material and placed into one new section describing the type, attachment, and application of underlayment.

1507.18 Building-Integrated Photovoltaic Panels

Change Summary: Building-integrated photovoltaic panel systems have specific requirements as a roof-covering material in the International Building Code.

1603.1 Construction Documents

Change Summary: The construction document requirements for environmental and special loads have been updated for rain, snow and wind forces and their components.

1604.3.7 Deflection of Glass Framing

Change Summary: Limits to the deflection of framing which supports glazing have been added to Section 1604.3.

1604.5.1 Multiple Occupancies

Change Summary: The provisions addressing multiple occupancies within a structure now include an exception exempting buildings in their entirety from needing to qualify as Risk Category IV buildings when a storm shelter is part of the structure.

1604.10 Storm Shelters

Change Summary: The development of loads for storm shelters is to be based on ICC 500 which provides wind speeds for tornado and hurricane shelter design using ASCE 7 load combinations.

Table 1607.1 Deck Live Load

Change Summary: Table 1607.1 is now consistent with provisions in the 2010 and 2016 editions of ASCE 7 for minimum uniformly distributed live loads on decks and balconies by increasing the deck live load to one and one-half times the live load of the area served.

Table 1607.1 Live Load Reduction

Change Summary: Table 1607.1 now clarifies where heavy live loads of 100 psf or greater may be reduced.

1607.15.2 Minimum Live Load for Fire Walls

Change Summary: The minimum lateral load that fire walls are required to resist has been established at five pounds per square foot.

1613 Earthquake Loads

Change Summary: The site coefficients contained in the IBC have now been brought into alignment with the newest generation of ground motion attenuation equations.

1613.2.1 Seismic Maps

Change Summary: The IBC seismic maps have been updated to match new maps in the 2015 NEHRP Provisions and 2016 ASCE 7 standard.

1615, 1604.5 Tsunami Loads

Change Summary: There are many coastal communities in the western United States which need tsunami-resistant design of critical infrastructure and essential facilities. New IBC Section 1615, Tsunami Loads, has been added to address design of these facilities.

1704.6 Structural Observations

Change Summary: Section 1704.6.1 has been added requiring structural observation of buildings that are considered a high-rise or assigned to Risk Category IV.

1705.5.2 Metal-Plate-Connected Wood Trusses

Change Summary: Five-foot-tall wood trusses requiring permanent bracing now require a periodic special inspection to verify that the required bracing has been installed.

1705.12.1, 1705.13.1 Seismic Force-Resisting Systems

Change Summary: The exceptions for special inspection of seismic force-resisting systems have been clarified for structures in moderate and high seismic regions.

1705.12.6 Fire Sprinkler Clearance

Change Summary: Section 1705.12.6 adds a provision for special inspection of minimum clearance of fire sprinkler components to mechanical, electrical and plumbing systems.

1804.4 Site Grading

Change Summary: As an exception, impervious surfaces are allowed to slope less than 2% near doors to meet the egress requirements in Chapter 10.

1807.2 Retaining Walls

Change Summary: The requirement for consideration of a keyway in the sliding analysis of retaining walls has been deleted from Section 1807.2.

1810.3.8.3 Precast Prestressed Piles

Change Summary: Equations in Section 1810.3.8.3 addressing precast prestressed piles have been updated.

1901.2 Seismic Loads for Precast Concrete Diaphragms

Change Summary: A new requirement requiring the use of ASCE 7 Section 14.2.4 has been established for the design of precast concrete diaphragms in high seismic regions.

2207.1 SJI Standard

Change Summary: The 2015 edition of the combined SJI-100, Standard Specification for K-Series, LH-Series, and DLH-Series Open Web Steel Joists and Joist Girders, is the new referenced standard for steel joists.

2209.2 Cantilevered Steel Storage Racks

Change Summary: Reference to the cantilevered storage rack standard, RMI ANSI/MH 16.3, has been added to clarify the characteristics, essential differences, and requirements for cantilevered storage racks.

2211 Cold-Formed Steel Light-Frame Construction

Change Summary: The 2015 editions of the AISI standards for cold-formed steel, including AISI S240, AISI S400, and AISI S202, have been referenced in the 2018 IBC.

2303.2.2 Fire-Retardant-Treated Wood

Change Summary: The types of chemical treatment allowed for fire-retardant-treated lumber have been clarified.

2303.6 Nails and Staples

Change Summary: Nails and staples are required to conform to the standard ASTM F 1667 including Supplement 1. In addition, minimum average bending moment values have been added for staples.

Table 2304.9.3.2 Mechanically Laminated Decking

Change Summary: A new alternative fastener schedule for construction of mechanically laminated decking has been added to the 2018 IBC giving equivalent power-driven fasteners for the 20 penny nail.

Table 2304.10.1 Ring Shank Nails

Change Summary: The 2018 IBC and IRC are now aligned by requiring 8-penny common or ring shank nails when nailing 6 inches and 12 inches on center for roof sheathing.

2304.10.5 Fasteners in Treated Wood

Change Summary: Staples in preservative-treated wood and fire-retardant-treated wood are now required to be made of stainless steel.

2304.11 Heavy Timber Construction

Change Summary: The heavy timber provisions of Chapter 23 have been reorganized and the 2015 IBC table on engineered lumber dimensional equivalencies previously located in Section 602.4 has been moved into Section 2304.11.

2304.12.2.5, 2304.12.2.6 Supporting Members for Permeable Floors and Roofs

Change Summary: The provisions for permeable floors and roofs have been modified to require positive drainage of water and ventilation below the floor or roof to protect supporting wood construction.

Table 2308.4.1.1(1) Header and Girder Spans – Exterior Walls

Change Summary: The header and girder spans for the exterior bearing wall table have been updated to allow No. 2 Southern Pine rather than a minimum No. 1 Southern Pine lumber.

2308.4.1.1(2) Header and Girder Spans – Interior Walls

Change Summary: The header and girder spans for the interior bearing walls table have been updated to allow No. 2 Southern Pine for spans rather than No. 1 Southern Pine lumber. Building width is updated in the table as well, supplying span lengths for narrower building areas.

2308.5.5.1 Openings in Exterior Bearing Walls

Change Summary: Single-member lumber headers are now permitted in prescriptive wood framing.

2407.1 Structural Glass Baluster Panels

Change Summary: Requirements for glass panels that are used as a structural component in a guard have been clarified.

2510.6 Water-Resistive Barrier

Change Summary: An exception has been added for Climate Zones 1A, 2A, and 3A in which a ventilated space is required between a water-resistive barrier and stucco finish.

2603.13 Cladding Attachment over Foam Sheathing to Wood Framing

Change Summary: Requirements for cladding over foam sheathing and wood framing have been added to the International Building Code consistent with the International Residential Code and cold-formed steel stud requirements.

3001.2 Emergency Elevator Communication Systems

Change Summary: Additional communication capabilities are now required in accessible elevators to enhance the usability of the two-way communication system by individuals with varying degrees of hearing or speech impairments.

3006.2.1 Corridors Adjacent to Elevator Hoistway Openings

Change Summary: Where an elevator hoistway door opens into a fire-resistance-rated corridor, the door opening must be protected in accordance with one of the three general methods established in Section 3006.3 which recognizes the use of elevator lobbies, additional doors, and pressurization of the hoistway.

3007.1 Extent of Fire Service Access Elevator Travel

Change Summary: Fire service access elevators, where required, now only need to provide access to those floor levels at and above the lowest level of fire department access. In addition, elevators that only connect a parking garage to a building's lobby need not serve as fire service access elevators.

3008.1.1 Required Number of Occupant Evacuation Elevators

Change Summary: A reduction in the minimum number of elevators that must be considered as occupant evacuation elevators now reflects a more reasonable performance-based approach while still retaining the capacity to evacuate a high-rise building more quickly than stairs alone.

3113 Relocatable Buildings

Change Summary: A process of acceptance for relocatable modular buildings has been established in order to provide clear and consistent direction in the relocation, reuse, and/or repurposing of such buildings.

3310.1 Stairways in Buildings under Construction

Change Summary: At least one temporary or permanent stairway must now be provided in a building under construction once the building has reached a height of 40 feet as measured from the lowest level of fire department vehicle access.

3314 Fire Watch During Construction

Change Summary: In order to protect adjacent properties from fire in a building of considerable height when under construction, new provisions have been established to give authority to the fire code official to require a fire watch during those hours where no construction work is being done.



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IEBC 303.1 Live Loads

Change Summary: Requirements for live loads from Chapters 4 and 8 have been combined and placed in Chapter 3 as they apply for all compliance methods.

IEBC 303.3.2, IEBC Appendix A5 Earthquake Hazard Reduction in Existing Concrete Buildings

Change Summary: In order to clarify and simplify concrete evaluation and retrofit, ASCE 41 continues to be directly referenced while Appendix Chapter A5, Earthquake Hazard Reduction in Existing Concrete Buildings, is deleted from the 2018 IEBC.

IEBC 305; Chapters 4, 5, 6, 13, 14 Reorganization

Change Summary: Section 410, Accessibility, has been relocated to a new Section 305. Chapters 4, 5, 6, 13, and 14 have been relocated, resulting in a reorganization of the provisions and new chapter numbering.

IEBC 405.2.1.1 Snow Damage

Change Summary: Structural components damaged by snow events must be repaired assuming snow loads for new buildings using the IBC.

IEBC 502.4 Loading of Existing Structural Elements

Change Summary: The provisions covering loading of existing structural elements where an addition is built have been modified and a new exception for buildings designed using the International Residential Code has been added.

IEBC 502.7, 503.15, 804, 1105 Carbon Monoxide Detectors in Group I-1, I-2, I-4, and R Occupancies

Change Summary: Carbon monoxide provisions have been added in the Prescriptive Method Additions, Alterations Level 2 Additions, and Additions for Group I-1, I-2, I-4, and R occupancies.

IEBC 502.8, 1106, 1301.2.3.1 Storm Shelters in Group E Additions

Change Summary: Where storm shelters are required based on IBC and ICC 500 for Group E occupancies, any addition to such existing occupancies where the occupant load of the addition is 50 or more will trigger the construction of a storm shelter.

IEBC 503.7 Anchorage for Concrete and Reinforced Masonry Walls

Change Summary: For alterations of buildings located in higher seismic areas, when a work area includes more than one-half of the building's floor area, wall anchors must be installed at the roof line along concrete and reinforced masonry walls.

IEBC 503.10 Anchorage for Unreinforced Masonry Partitions

Change Summary: A mitigation trigger has been added to the 2018 IEBC to address a common nonstructural falling hazard: unreinforced masonry partitions.

IEBC 505.4, 701.4 Emergency Escape Opening Operation

Change Summary: Emergency escape and rescue openings are required to be operational. Related provisions for being operational have been added to the Prescriptive Compliance Method and Alterations Level 1.

IEBC 506.4 Structural Loads

Change Summary: Buildings undergoing a change of occupancy shall have live, snow, wind, and seismic loads checked against design loads based on IBC level forces.

IEBC 507.4 Structural Loads in Historical Buildings

Change Summary: In Chapter 5, the prescriptive compliance method, structural requirements for historic buildings are added.

IEBC 805.3.1.1 Single-Exit Buildings

Change Summary: Single-exit buildings and spaces under Alteration Levels 2 and 3 have been modified to be more consistent with the IBC.

IEBC 904.1.4 Automatic Sprinkler System at Floor of Alteration

Change Summary: The Alterations Level 2 provision requiring that water for automatic fire sprinkler systems be available at the floor of the alteration without the need for a fire pump has been moved to Chapter 9 for Alterations Level 3 and the fire pump criterion has been deleted.

IEBC 906.7 Anchorage of Unreinforced Masonry Partitions

Change Summary: The 2018 IEBC adds a mitigation trigger to address a common nonstructural falling hazard: unreinforced masonry partitions.

IEBC 1006 Seismic Loads and Access to Risk Category IV Structures

Change Summary: When a change of occupancy occurs placing a building in a higher risk category, the seismic loads on the building must be evaluated using full seismic forces. Access to the building must be maintained when passing through or near other buildings and structures.

IEBC 1103 Changes to Loads with an Addition

Change Summary: Section 1103, Structural is revised to align with the prescriptive compliance method and to have better flow within the section.



Significant Changes to the International Residential Code (IRC) (2015 to 2018)

This Summary is provided by Building Inspection Services, Charleston County, South Carolina. If you require further assistance, please contact Building Inspection Services at (843) 202-6940; building services@charlestoncounty.org.

Table R301.2 (1) Climatic and Geographic Design Criteria

Change Summary: Jurisdictions will now include variables for Manual J assessments with other climatic and geographic design criteria available in the building department's Table R301.2(1) Design Criteria.

R301.2.2.1 Seismic Design Category

Change Summary: A new alternative seismic map allows potentially a lower seismic design category based on determination of soil type.

R301.2.2.6 Irregular Buildings

Change Summary: The irregular building section of the seismic provisions of the IRC has been rearranged for greater ease of use.

R302.1 Exterior Walls

Change Summary: References to the International Building Code (IBC) offer additional options and provide flexibility in determining the fire-resistance rating of exterior wall assemblies. Table footnotes have been revised to clarify the correlation between gable end vents and the fire-resistance requirements for projections.

R302.2 Townhouse Separation

Change Summary: Two paths for achieving the fire-resistant separation between townhouse dwelling units—two 1-hour walls or a common wall—are spelled out in the townhouse provisions.

R302.3 Two-Family Dwelling Separation

Change Summary: A new reference to Section 703.3 of the International Building Code (IBC) provides alternatives for determining the fire-resistance rating of wall and floor/ceiling assemblies for separation of dwelling units.

R302.4.2 Membrane Penetrations

Change Summary: Listed luminaires that have been tested for the application are specifically permitted for fire-resistant-rated ceiling membrane penetrations.

R302.5 Dwelling-Garage Opening Protection

Change Summary: An automatic-closing device is now permitted as an alternative to a self-closing device for the door between the garage and dwelling.

R302.10 Insulation Flame Spread

Change Summary: The testing of insulating materials for flame spread and smoke-developed ratings applies to facings including vapor retarders and other coverings.

R302.13 Fire Protection of Floors above Crawl Spaces

Change Summary: Fire-resistant membrane protection is now required for the applicable floor framing materials above crawl spaces containing fuel-fired or electric-powered heating appliances.

R308.4.2 Glazing Adjacent to Doors

Change Summary: Glazing within 24 inches of the hinge side of an in-swinging door now requires safety glazing where the glazing is at an angle less than 180 degrees from the plane of the door.

R308.4.4 Glazing in Guards and Railings

Change Summary: Unless laminated glass is used, structural glass baluster panels in guards now require an attached top rail or handrail.

R308.4.7 Glazing Adjacent to the Bottom Stair Landing

Change Summary: Figure R308.4.7 has been replaced with a new figure and the caption modified to more accurately reflect the related code provision.

R310.1 Emergency Escape and Rescue Openings

Change Summary: Emergency escape and rescue openings are no longer required for bedrooms in basements when the dwelling unit is protected with an automatic fire sprinkler system and other conditions are met.

R310.3 Area Wells for Emergency Escape and Rescue Doors

Change Summary: For emergency escape and rescue doors in basements, a change in terminology replaces “bulkhead enclosures” with “area wells” and provisions for ladders and steps for area wells have been added.

R311.7.1, R311.7.8 Handrail Projection

Change Summary: A new exception to the handrail projection limitation provides for adequate clearance behind the handrail when it passes a projection of a floor, landing or tread return.

R311.7.3 Maximum Stair Rise between Landings

Change Summary: The maximum rise of a flight of stairs has increased by 4 inches, from 147 to 151 inches.

R311.7.5.3 Stair Nosings

Change Summary: The revised text clarifies that nosings must be consistent throughout the stairway.

R311.7.11, R311.7.12 Alternating Tread Devices and Ships Ladders

Change Summary: Alternating tread devices and ships ladders are now permitted as a means of egress for serving lofts that do not exceed 200 square feet in area.

R312.1 Guards

Change Summary: The guard requirements only apply to the specific portion of a walking surface that exceeds 30 inches above grade.

R314 Smoke Alarms

Change Summary: The exemption for interconnection of alarms during alterations based on feasibility has been removed from the code.

R315 Carbon Monoxide Alarms

Change Summary: Interconnection is now required where multiple carbon monoxide alarms are required in a dwelling unit.

R317.3 Fasteners in Treated Wood

Change Summary: Staples in preservative-treated wood and fire- retardant-treated wood are now required to be made of stainless steel.

R322.3 Coastal High-Hazard Flood Zones

Change Summary: In coastal high-hazard areas (V Zones) and Coastal A Zones, the IRC now provides specific guidance for the design and construction of concrete slabs, stairs, guards, decks and porches to reduce damage to the dwelling in a flood event.

R324.4 Rooftop-Mounted Photovoltaic Systems

Change Summary: Structural requirements for rooftop-mounted photovoltaic panel systems have been revised and consolidated in Section R324.4.

R324.6 Roof Access for Photovoltaic Solar Energy Systems

Change Summary: Requirements for roof access and pathways for firefighters have been introduced into the IRC provisions for rooftop-mounted photovoltaic solar energy systems.

R324.6.2.2 Solar Panels near Emergency Escape and Rescue Openings

Change Summary: Rooftop-mounted photovoltaic solar energy panels and modules are not permitted to be installed directly below emergency escape and rescue openings.

R325.3 Mezzanine Area Limitation

Change Summary: The area limitation for mezzanines has been increased from one-third to one-half of the area of the room containing the mezzanine under certain conditions.

R325.6, R202 Habitable Attics

Change Summary: The definition of habitable attic has been revised and the technical requirements have been placed in a new section.

Table R403.3 (1) Insulation Requirements for Frost-Protected Footings

Change Summary: Insulation thickness requirements for Type II and IX expanded polystyrene (EPS) have changed. The minimum R-value for specific types of EPS has been clarified while requirements for horizontal insulation were added.

Table R403.4 Crushed Stone Footings

Change Summary: Table R403.4 is updated to include both the minimum depth and width of a crushed stone footing for a precast concrete wall.

R408.3 Unvented Crawl Spaces

Change Summary: Ventilation of the under-floor space is not required when an adequately-sized dehumidifier is provided.

Table R505.3.2 Cold-Formed Steel Joist Spans

Change Summary: Maximum spans for cold-formed steel joists are updated for wind speeds up to 140 miles per hour in single or continuous spans. Footnote f is added to clarify that 33 and 43 mil thickness joists need to be single span joists when using this prescriptive table.

R507 Decks

Change Summary: Section R507 is reorganized for ease of use and additional provisions are added to simplify prescriptive construction of a deck.

R507.2 Deck Materials

Change Summary: Section R507.2 adds requirements for fasteners and fastener connections, flashing and alternative materials.

R507.3 Deck Footings

Change Summary: A new section on footing minimum size is added to help describe minimum prescriptive (non-engineered) requirements for an exterior deck footing based on snow load, soil quality and footing shape and size.

R507.4 Deck Posts

Change Summary: Information on deck posts moves to the middle of Section R507 as topics flow in the order of construction sequence. The section has been clarified adding additional prescriptive or non-engineered options.

R507.5 Deck Beams

Change Summary: The table on maximum beam span now includes single-ply beams. Beam bearing and connection to posts are clarified.

R507.6 Deck Joists

Change Summary: Maximum joist spacing and total span length have been clarified. In Table R507.6, maximum span length is listed followed by maximum cantilever length.

R507.7, R507.8, R507.9 Decking, Vertical and Lateral Support

Change Summary: Decking material options and fastener systems are clarified. Vertical and horizontal support of an exterior deck is updated while additional details on support and attachment of ledgers are added.

Table R602.3 (6) Alternate Stud Height

Change Summary: A prescriptive requirement is added for studs greater than 10 feet in height, in an exception to Section R602.3.1 as well as a reference to new Table R602.3(6) that applies to 11- and 12-foot-tall walls in one- and two-story buildings.

Table R602.7 (1), R602.7 (2) Girder and Header Spans

Change Summary: Girder and header spans are updated assuming No. 2 Southern pine rather than No. 1 Southern pine as used in the 2015 IRC. A footnote is added to clarify that headers and girders are assumed to be braced. For headers with pony walls above, a further reduction in span is taken for 2 3 8 and larger headers.

Table R602.7.5 Lateral Support for Headers

Change Summary: The 2015 IRC full-height stud table is significantly altered. The table increases the number of king studs in higher wind regions and requires only one or two king studs at each end of a header in regions with 115 mph wind speeds.

Table R602.10.3 (4) Seismic Adjustment Factors

Change Summary: Attempts to clarify roof and ceiling dead loads in the top story of a multi-story dwelling and an alternative to use of the BV-WSP bracing method have been added. Table R602.10.3 (4) now allows use of Methods WSP and CS-WSP with brick veneer in the second story of a dwelling.

Table R602.10.4.1 Mixing Bracing Methods

Change Summary: Mixing of continuous sheathing methods with an intermittent alternate bracing method is clarified. Braced wall line(s) containing an intermittent

alternate method must have sufficient bracing length for the alternate method, not just for the continuous sheathing method.

R602.10.6.4 Method CS-PF -- Continuously Sheathed Portal Frame

Change Summary: Method Continuous Sheathing—Portal Frame (CS-PF) has been tweaked slightly in this code edition. A note is added emphasizing that when a single CS-PF is built, the side of the portal frame that has a post must have continuous sheathing beyond that end of the portal frame.

R602.10.6.5 Method BV-WSP

Change Summary: An attempt to clarify use of the BV-WSP method is made. New limits are added to Section R602.10.6.5.

Tables R603.3.1 and R603.3.1.1 (2) Cold-Formed Steel Wall Construction

Change Summary: Cold-formed steel connection tables are updated for wind speeds less than 140 miles per hour. Values in the IRC tables now match AISI S230, the Standard for cold-formed steel framing—prescriptive method for one- and two-family dwellings.

R610 Structural Insulated Panels

Change Summary: The section on structural insulated panels is reorganized. Information on facers, core and adhesive requirements are now located in APA PRS 610.1 and deleted from the IRC.

R703.2 Water-Resistive Barrier

Change Summary: Water-resistive barrier materials other than No. 15 asphalt felt must be installed following the manufacturer’s installation instructions. The exemption for detached accessory buildings is deleted.

R703.3.1 Soffit Installation

Change Summary: Requirements for wood structural panel soffits are added to Section R703.3.1 and vinyl soffit requirements are clarified.

R703.8.4 Veneer Anchorage through Insulation

Change Summary: Masonry veneer is explicitly allowed to attach through insulation into the underlying wood structural panels. Attachment must follow Table R703.8.4(2).

Table R703.8.4 (1) Airspace Requirements

Change Summary: The new footnote “c” in Table R703.8.4(1) allows drainage airspace to contain some mortar spills.

R703.11.2 Vinyl Siding Installation Over Foam Plastic Sheathing

Change Summary: Testing has been done on vinyl siding over insulation in an attempt to determine fastener requirements for vinyl siding attachment in high wind regions. New Table R703.11.2 gives design wind pressures for vinyl siding resisting all wind loads without reliance on wood structural panel sheathing below.

R802 Roof Framing

Change Summary: Section R802, design and construction of roofs, has been clarified by dividing the content into three separate sections on roof ridges, rafters and ceiling joists.

R802.1.5.4 Labeling

Change Summary: Each stick of fire-retardant-treated (FRT) lumber and each FRT wood structural panel require a label with eight specific items of information.

R806.2 Minimum Vent Area

Change Summary: The minimum vent area exception is clarified, stating that net free ventilation may be less than 1/150 only if both required conditions are met. Lower vents must be located in the bottom third of the attic space.

R806.5 Unvented Attics

Change Summary: Item 5.2 is added as an alternative path for unvented attics and rafter assemblies to the requirements of Item 5.1. The new option is limited to warm climates and has 10 requirements to address in the installation of air-permeable insulation.

Tables R905.1.1 (1) and R905.1.1 (2) Underlayment Requirements for Photovoltaic Shingles

Change Summary: Underlayment requirements for photovoltaic (PV) shingles are revised for consistency with other roofing materials and moved to the Tables R905.1.1(1) and R905.1.1(2) for underlayment.

R905.17 Building Integrated Photovoltaic Panels

Change Summary: New Section R905.17 addresses installation and attachment of building-integrated photovoltaic (BIPV) roof panels.

R1005.8 Chimney Insulation Shield

Change Summary: Factory-built chimneys, which have been required to maintain a minimum clearance to insulation, are now required to have an insulation shield to provide the clearance.

N1101.6, Tables 1101.10.3 (1) and N1101.10.3 (2)

Fenestration Definitions and U-Factors

Change Summary: The definitions for skylights and vertical fenestration have been moved under the definition for fenestration, and a definition for opaque door has been added.

N1102.1 Building Thermal Envelope for Log Homes

Change Summary: Log homes are now exempt from the prescriptive building thermal envelope requirements when designed in accordance with ICC-400, Standard on the Design and Construction of Log Structures.

Tables 1102.1.2 and N1102.1.4 Insulation and

Fenestration Requirements

Change Summary: The prescriptive U-factors for fenestration have been lowered to improve the energy efficiency of dwellings and townhouses.

N1102.2.2 Reduction of Ceiling Insulation

Change Summary: When applying the exception for insulation in ceilings without attics, the insulation must extend to the outside of the top plate.

N1102.2.5 Mass Walls

Change Summary: The mass wall provisions have been itemized in a numbered list to bring accuracy and clarity to the technical requirements.

Table N1102.2.6 Cold-Formed Steel Framing R-Values

Change Summary: Conflicting entries have been removed from the table establishing cold-formed steel R-values equivalent to those for wood framing.

N1102.4 Testing for Air Leakage

Change Summary: A new standard for air-leakage testing, RESNET/ ICC 380, is now referenced in the IRC to provide flexibility for the testing industry.

N1103.3.2, N1103.3.3 Duct Sealing and Testing

Change Summary: If not part of the heating or cooling system ductwork, ducts serving heat or energy recovery ventilators do not require an air leakage test.

N1103.3.6, N1103.3.7 Duct Buried within Ceiling Insulation

Change Summary: New provisions address the methods, minimum coverage requirements and thermal benefits for ducts buried within ceiling insulation, and when those ducts are considered inside the building thermal envelope.

N1104.1 Lighting

Change Summary: The required percentage of permanent lighting fixtures having high-efficacy lamps has increased from 75% to 90%.

N1106.3, N1106.4 Maximum Energy Rating Index

Change Summary: The maximum rating index values based on Climate Zone have increased slightly to make the Energy Rating Index (ERI) provisions less restrictive and improve the flexibility of the energy provisions.

M1305.1.1 Access to Furnaces within Compartments

Change Summary: The appliance access and clearance requirements for furnaces in compartments have been removed from the code in favor of other code provisions and the manufacturer's instructions.

M1305.1.3.2 Appliances Installed in Pits

Change Summary: The requirements for appliance installation in pits has been expanded to provide more detail and to be similar to language found in other ICC codes. The minimum bottom clearance has been reduced from 6 inches to 3 inches.

M1502.3.1 Dryer Exhaust Duct Termination

Change Summary: A minimum area of 12.5 square inches has been established for the terminal outlet of dryer duct exhaust.

M1502.4.2 Duct Installation

***State Change** Exhaust ducts shall be supported at intervals not to exceed 8 feet and within 16 inches of each side of a joint that is not installed in a vertical orientation, secured in place, making rigid contact with the duct at not less than 4 equally spaced points or 2/3rds contact if strap is used. All brackets or strapping must be noncombustible. The insert end of the duct shall extend into the adjoining duct or fitting in the direction of airflow. The overlap shall comply with Section M1601.4.2. Ducts shall not be joined with screws or similar devices that protrude into the inside of the duct. Exhaust ducts shall be sealed in accordance with Section M1601.4.1. Where dryer ducts are enclosed in wall or ceiling cavities, such cavities shall allow the installation without deformation. The duct work may be ovalized as long as it terminates in an approved duct box. Minor imperfections located on the duct, in areas other than along the same, do not constitute a violation.

M1503 Domestic Cooking Exhaust Equipment

Change Summary: "Domestic cooking exhaust equipment" is the preferred terminology for "kitchen exhaust" because it is more descriptive and includes all of the components of the exhaust system.

M1503.6 Makeup Air for Kitchen Exhaust Systems

Change Summary: Makeup air for domestic cooking exhaust systems is no longer required if all fuel-burning appliances in the dwelling unit have a direct vent or mechanical draft vent system.

M1601.1.2 Underground Duct Systems

Change Summary: Underground ducts, including both direct-burial ducts and those encased in concrete, require sealing and testing.

M1901 Ranges and Ovens

Change Summary: The provisions for reduced clearances above cooking surfaces have been clarified. The listing requirement for microwave ovens has been added to Section M1901.

Table M2101.9 Hanger Spacing for PEX Tubing

Change Summary: Support spacing requirements for PEX tubing 1/4 inches and greater in diameter have been added to Table M2101.9.

M2101.10 Pressure Tests for Hydronic Piping

Change Summary: Compressed air testing of PEX hydronic piping is now allowed when testing is in accordance with the manufacturer's instructions.

M2103.2 Thermal Barrier for Radiant Floor Heating Systems

Change Summary: For hydronic floor heating systems, the minimum insulation R-values have been removed from Section M2103.2 and a reference to the energy provisions of Chapter 11 has been added.

M2301 Solar Thermal Energy Systems

Change Summary: The requirements for access and freeze protection related to solar thermal energy systems have been expanded to provide detailed guidance to the code user.

G2406.2 Prohibited Locations for Appliances

Change Summary: A gas-fired clothes dryer is now allowed to be installed in a bathroom or toilet room where a permanent opening communicates with other permitted spaces.

G2411.2, G2411.3 Electrical Bonding of CSST

Change Summary: The existing provisions for electrical bonding apply to CSST without an arc-resistant jacket or coating and a new section addresses electrical continuity and bonding of arc-resistant CSST.

G2414.4.2, G2414.10.1 Schedule 10 Steel Gas Piping

Change Summary: The code now allows Schedule 10 steel pipe to be used for fuel-gas piping.

G2415.11 Protection against Corrosion

Change Summary: Reorganization of this section includes new provisions to address corrosion protection of underground steel gas piping and protection for steel risers other than anodeless risers.

G2420.5.1 Shutoff Valve Location

Change Summary: Shutoff valves located behind movable appliances are considered as meeting the requirement for access.

G2420.6 Support for Shutoff Valves in Tubing Systems

Change Summary: Shutoff valves in gas tubing systems require rigid support separate from the tubing to prevent damage at the valve connection.

G2442.2 Forced Air Furnace Duct Size

Change Summary: The prescriptive duct size requirements for forced-air furnaces have been deleted in favor of other sizing methods specific to the appliance.

G2447.2 Commercial Cooking Appliances

Change Summary: Commercial cooking appliances are now permitted in dwelling units when installed in accordance with an engineered design and the manufacturer's instructions.

P2503.7 Air Testing of PEX Piping

Change Summary: Compressed-air testing of PEX water-supply piping is now allowed when testing is in accordance with the manufacturer's instructions.

P2602.1 Connections to Public Sewer or Private Sewage Disposal System

Change Summary: The International Private Sewage Disposal Code (IPSDC) is referenced for installation of private sewage disposal systems where there are no state or local requirements for such systems.

P2605 Sway Bracing for Drainage Piping

Change Summary: The expanded text clarifies that the sway bracing provisions only apply to horizontal drainage piping.

P2704 Slip Joint Connections

Change Summary: Slip joint connections are permitted anywhere between the fixture outlet and the drainage piping and are no longer limited to the trap inlet, outlet and trap seal locations.

P2713.1 Bathtub Overflow

Change Summary: Overflow outlets are no longer required for bathtubs.

P2801.6 Plastic Pan for Gas-Fired Water Heaters

Change Summary: Plastic safety pans are now allowed under gas water heaters provided the material falls within the prescribed flame spread and smoke-developed indices.

P2902.5.4, P2904.1 Backflow Protection for Fire Sprinkler Systems

Change Summary: Sections P2902.5.4 and P2904.1 are revised and coordinated to clarify that stand-alone and multipurpose fire sprinkler systems complying with Section P2904 or NFPA 13D do not require backflow protection under most circumstances.

P2903.5 Water Hammer Arrestors

Change Summary: A water hammer arrestor is now required where quick-closing valves are used in the water distribution system.

P2906.6.1 Saddle Tap Fittings on Water Distribution Piping

Change Summary: Saddle tap fittings are no longer permitted on water distribution system piping.

P2906.18.2 Joints between PVC and CPVC Piping

Change Summary: A single solvent-cemented transition joint is now an acceptable method for connecting a CPVC water distribution system to a PVC water service pipe.

P3003.2 Prohibited Joints for Sanitary Drainage

Change Summary: A solvent cement joint is now permitted for joining ABS and PVC piping at the connection of the building drain to the building sewer.

P3005.1.6 Reduction in Pipe Size

Change Summary: Water closet flanges, offset bend fittings and offset flanges are now specifically listed as exceptions to the provision that drainage piping must not be reduced in size in the direction of flow.

P3103.1 Vent Pipe Terminations

Change Summary: The provisions for vent terminals have been reorganized and a new option has been added to allow a 2-inch vent extension through a sloped roof when the vent is covered.

P3111 Combination Waste and Vent System

Change Summary: Food waste disposers are now permitted to connect to a combination waste and vent system.

P3114.8 Prohibited Installations for Air Admittance Valves

Change Summary: An air admittance valve cannot be used to resolve the problem of an open vent terminal that is too close to a building air intake.

E3703.5 Garage Branch Circuits

Change Summary: A separate 20-ampere branch circuit is now required to serve receptacle outlets of attached garages and detached garages with electric power.

E3901.2 Wall Space for Receptacle Distribution

Change Summary: Cabinets with countertops are now considered wall space in determining required locations for general purpose receptacle outlets.

E3901.2 Wall Space for Receptacle Distribution

Change Summary: Cabinets with countertops are now considered wall space in determining required locations for general purpose receptacle outlets.

E3901.3 Appliances on 15 Amp Circuits

Change Summary: An individual 15-ampere branch circuit is permitted to serve any specific kitchen appliance.

E3901.9 Garage Receptacle Outlet Location

Change Summary: A receptacle outlet must be located in each vehicle bay in a garage.

E3902.4 GFCI Protection for Crawl Space Lighting Outlets

Change Summary: Ground-fault circuit-interrupter (GFCI) protection is now required for lighting outlets of crawl spaces.

E3906.3 Nonmetallic-Sheathed Cable and Metal Boxes

Change Summary: Where entering a metal box, nonmetallic-sheathed cable must extend into the box at least ¼ inch and extend past the cable clamp.

E4101.3 Cord-and-Plug-Connected Appliances

Change Summary: The maximum cord lengths for range hoods and built-in dishwashers have increased, and the code clarifies that the receptacle outlet for the dishwasher has to be in the space adjacent to the appliance.



Significant Changes to the International Plumbing Code (2015 to 2018)

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303.5 Third-party Certification for Cast-iron Pipe

Change Summary: This new section invokes additional inspection and certification requirements for third party certification agencies that inspect the products at the manufacturing location.

305.1 Corrosion Protection for Metallic Piping

Change Summary: This change clarifies where and what type of metallic piping is required to be protected from corrosion.

305.6 Protection against Physical Damage

Change Summary: For concealed piping installed through holes or notches, the minimum distance to the face of the framing member without protection has been reduced.

308.6 Sway Bracing for Drainage Piping

Change Summary: Additional information clarifies where sway bracing is needed for drainage piping.

308.10 Thermal Expansion Tank Support

Change Summary: A thermal expansion tank cannot be supported by the piping connected to the tank.

Table 403.1 Gaming Area Plumbing Fixtures

Change Summary: Assembly areas used for gaming (gambling) now have specific ratios for plumbing fixture requirements.

Table 403.1 Row Selection Based on Description of Use Column

Change Summary: The Occupancy (Group) column has been deleted from Table 403.1 for greater flexibility and accuracy.

Table 403.1 Plumbing Fixtures for Outdoor Public Swimming Pools

Change Summary: Outdoor public swimming pools now have specific requirements for plumbing fixtures.

403.1.2 Single User Toilet Facility Identification

Change Summary: Single-user toilet facilities having required plumbing fixtures must now be labeled for use by either sex.

403.1.3 Distribution of Lavatories

Change Summary: Multiple toilet facilities in a building for the same sex must have the required lavatories distributed proportionally.

403.2 Facilities for Small Business Occupancies

Change Summary: Business occupancies having 25 or fewer persons are allowed to have the required single-user toilet rooms not labeled for use by a specific sex.

403.3 Location of Required Toilet Facilities

Change Summary: The required toilet facilities for a building or tenant space do not need to be “in” the building that requires the toilet facilities.

405.3.1 Clearance of Plumbing Fixtures to Obstructions

Change Summary: The minimum distances from a fixture’s centerline to other fixtures or obstructions is clarified.

405.3.5 Minimum Dimension between Urinal Partitions

Change Summary: The minimum distance between urinal partitions is clarified.

405.5 Pumped Waste Plumbing Fixtures

Change Summary: Plumbing fixtures having a pumped waste arrangement must comply with a standard that covers the integral waste pumping system.

409.1 Residential Dishwasher Standard

Change Summary: Residential dishwashers must now comply with Standard NSF 184.

409.4 Residential Dishwasher Waste Connection

Change Summary: The requirement for residential dishwasher waste connections was moved from Section 802.1.6 to new Section 409.4. The language was modified for clarity.

411.3 Emergency Shower Temperature Control

Change Summary: Emergency shower or eye wash station water requires temperature control by an ASSE 1071 mixing valve.

412.7 Flow Limiting Device for Hot Water Discharge

Change Summary: Where other requirements outside of the code require limiting the discharge water temperature at a faucet or fixture fitting, installation of an ASSE 1062 device is an approved method of control.

422 Heat Care Requirements

Change Summary: Section 422 concerning Health Care Fixtures and Equipment is deleted.

502.1 Solar Water Heating System Standard

Change Summary: Solar thermal water heating systems must conform to the International Mechanical Code and ICC 900/SRCC 300.

504.6 Insert Fittings on T&P Valve Piping

Change Summary: Where insert fittings are used in T&P valve discharge piping, the piping must be of a larger size.

504.7 Water Heater Drain Pan Materials

Change Summary: Aluminum and plastic are approved drain pan materials. Plastic drain pans must not be used under gas-fired water heaters.

602.3.1 Standard for Water Well Construction

Change Summary: Where local regulations for the construction of water wells do not exist or are lacking in details, the code requires well construction to comply with Standard NGWA-01.

605.13.7, 605.14.4, 605.16.3 Push-fit Joints for Copper, CPVC, PEX and PE-RT Tubing

Change Summary: The push-fit method of joining was not explicitly described in the “types of joints” sections for various piping materials. This change makes the acceptability of this type of mechanical joint more clear.

607.3 Thermal Expansion Control Devices

Change Summary: Thermal expansion control devices, other than thermal expansion tanks, can be used for control of hot water system pressures.

608.3, 608.4 Backflow Protection for Water Handling Equipment

Change Summary: Some of the requirements in Section 608.3 were extracted, reworded and put into a new section to provide clarity about backflow protection requirements.

608.12 NSF 61-compliant Tanks for Drinking Water

Change Summary: Drinking water must be protected from contamination from contact with water tanks, coatings on the inside of water tanks and liners on the inside of water tanks. Standard NSF 61 is the testing protocol for determining nonacceptable levels of contamination by components in contact with drinking water.

608.17.1.1, 608.17.1.2 Independent Backflow Protection for Drink Dispensers

Change Summary: Only carbonated beverage dispensers require a backflow preventer that is designed for exposure to carbon dioxide gas. Also, because of the potential for cross-contamination between noncarbonated drink dispensers and or coffee machines, each

dispenser or machine supplied with potable water must have a backflow preventer (or air gap) at the connection to the potable water supply.

608.17.10 Humidifier Backflow Preventer

Change Summary: The potable water connection to a humidifier that does not have internal backflow protection must have an ASSE 1012 backflow preventer or an air gap.

609.1 Medical Facility Terminology

Change Summary: Outdated terminology for different types of medical facilities has been replaced with terminology that is aligned with industry standards and how the International Building Code refers to such facilities.

611.1 Point of Use Reverse Osmosis Systems

Change Summary: Point-of-use reverse osmosis drinking water treatment units must now comply entirely with NSF 58 or CSA B483.1.

701.2 Connection to Sewer Systems

Change Summary: Gray water systems are not required to be connected to a public sewer or a private sewage disposal system provided that they discharge to systems in accordance with Chapter 13 or 14.

701.8 Drainage Piping above Food Areas

Change Summary: The installation of drainage piping above “food areas” is no longer prohibited.

702.3 Polypropylene Piping for Building Sewer

Change Summary: Standards for polypropylene (PP) plastic pipe are added to Table 702.3 for code approved building sewer piping.

703.4 Reuse of Buried Drain and Sewer Piping

Change Summary: The use of existing building sewers and existing building drains for new building plumbing system is clarified.

704.1 Grease-laden Waste Piping Slope

Change Summary: Piping conveying grease-laden waste must have a slope of not less than 1/4 inch per foot (2-percent).

704.2 Reduction of Pipe Size

Change Summary: Allowable reductions of pipe size are clarified and expanded.

705.16.4 PVC to ABS Solvent Cement Joint

Change Summary: One joint between ABS plastic building drain piping and PVC plastic building sewer drain piping can be solvent cemented with special cement.

709.3 GPM Drainage Flow to dFU Conversion

Change Summary: Conversion of gallon per minute drainage flows to dfu values has been clarified.

712.3.2 Ejector Sump Cover Elevation

Change Summary: Gas-tight removable covers for sumps having ejectors and sewage pumps cannot be located more than 2 inches below grade or floor level.

712.4.2 Waste Ejector Solids Size Reduced

Change Summary: The maximum solids diameter capacity for waste pumps and waste ejectors has been reduced from 1-inch diameter to 1/2inch diameter.

713 Health Care Plumbing

Change Summary: Section 713 covering sanitary drainage systems in health care facilities has been deleted in its entirety.

716 Pipe Bursting Replacement of Building Drains

Change Summary: The section on replacement of building sewers by pipe-bursting methods has been expanded to include replacement of underground building drains.

801.2, 802.1 Connection of Humidifier Drains

Change Summary: Air humidification equipment that has a waste- water discharge must have the discharge piping connect in an indirect method to the sanitary drainage system.

802.4.3.1 Laundry Tub Connection to Clothes Washer Standpipe

Change Summary: An alternative method for connecting a laundry tub drain, without a fixture trap, to a clothes washer standpipe is added to the code.

918.8 Prohibited Installations for Air Admittance Valves

Change Summary: An air admittance valve cannot be used to resolve the problem of an open vent terminal that is too close to a building air intake.

1003.3.2 Discharge of Disposers to Grease Interceptors Prohibited

Change Summary: Food waste disposer discharge to any type of grease interceptor is prohibited.

1003.3.3 Additives to Grease Interceptors

Change Summary: Additives to grease interceptors are limited to microbes dispensed by systems that comply with ASME A112.14.6 and allowed by the interceptor manufacturer.

Table 1102.4 Types of Piping for Storm Sewers

Change Summary: Additional types of piping materials and standards were added to the table for approved building storm sewer pipe.

1106.5 Roof Drainage Scuppers

Change Summary: Scuppers for primary and secondary roof drainage must be located and sized to prevent the water depth on the roof from exceeding the maximum allowable water depth for the structural capacity of the roof structure.

1302.7.2 Gray Water Storage Tanks

Change Summary: The consensus standards covering storage tanks for on-site nonpotable water reuse systems including gray water are removed from the code.

1303.1.1 Nonpotable Water for Fire Protection Systems

Change Summary: The IPC now references the International Fire Code® (IFC®) regulations covering the use of nonpotable water in waterbased fire protection systems.

1303.15.8, 1303.15.9 Rainwater Quality

Change Summary: Site conditions can affect the quality of collected, untreated (raw) rainwater. Standard ASTM E2727 must be used to determine the impact of those site conditions.



Significant Changes to the International Mechanical Code (2015 to 2018)

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403.3.2.4 Outdoor Air Ventilation for Dwelling Units

Change Summary: There is a new requirement for labeling of controls for whole-house (dwelling) ventilation systems.

403.3.2.5 Dwelling Unit Ventilating Equipment

Change Summary: A new requirement was added for the testing of exhaust fans for dwelling units.

404.1 Mechanical Ventilation of Enclosed Parking Garages

Change Summary: The code text was rewritten to clarify the intent with regard to “intermittent” operation.

504.4 Sealing of Clothes Dryer Exhaust Ducts

Change Summary: The code now speaks to the sealing of clothes dryer exhaust ducts.

504.4.1 Clothes Dryer Exhaust Termination

Change Summary: The code now addresses the required size of dryer exhaust duct terminals.

504.8.2 Duct Installation

***State Change:** Exhaust ducts shall be supported at intervals not to exceed 8 feet and within 16 inches of each side of a joint that is not installed in a vertical orientation, secured in place, making rigid contact with the duct at not less than 4 equally spaced points or 2/3rds contact if strap is used. All brackets and strapping must be noncombustible. The insert end of the duct shall extend into the adjoining duct or fitting in the direction of airflow. The overlap shall comply with Section 603.4.2. Ducts shall not be joined with screws or similar devices that protrude into the inside of the duct. Exhaust ducts shall be sealed in accordance with Section 603.9. Where dryer ducts are enclosed in wall or ceiling cavities, such cavities shall allow the installation without deformation. The duct work may be ovalized as long as it terminates in an approved duct box. Minor imperfections located on the duct, in areas other than along the seam, do not constitute a violation of this section.

506.3.13 Type I Hood Exhaust Termination

Change Summary: The intent was clarified regarding clearance to openings to prevent other requirements from being overlooked.

506.5.2, 202 Pollution Control Units

Change Summary: The code added coverage and a definition for pollution control units which are installed in the grease exhaust system to extract smoke, grease particles and odors from the exhaust flow.

507.2.6 Clearances for Type I Hood

Change Summary: A new exception was added to recognize Type I hoods that are listed for clearances to combustibles of less than 18 inches.

602.2.1.8 Pipe and Duct Insulation within Plenums

Change Summary: A new section specifically addresses duct and pipe insulation in plenums.

603.5.2 Phenolic Ducts

Change Summary: The code added coverage for a newer type of nonmetallic phenolic duct.

603.8.2 Testing of Underground Ducts

Change Summary: The code now addresses the testing of underground ducts.

603.9 Snap-lock and Button-lock Duct Joints

Change Summary: The code is less restrictive for snap- and button-lock duct joints that are located within the thermal envelope.

607.3.1 Ceiling Radiation Dampers

Change Summary: The code mandates dynamic-type ceiling radiation dampers where subject to continuous air flow from HVAC fans.

929, 202 High-volume Large-diameter Fans

Change Summary: The code added coverage for HVLVD fans.

1105.6.3 Ammonia System Ventilation Rate

Change Summary: An important clarification was added regarding the ventilation rate required for ammonia systems, thereby resolving an interpretation issue.

1107.2 Refrigerant Piping Location

Change Summary: This code section was rewritten to clearly state the intent regarding the prohibited locations for refrigerant piping.

Chapter 14 Solar Thermal Systems

Change Summary: This chapter was substantially rewritten for consistency with current technology.



Significant Changes to the International Fuel Gas Code (2015 to 2018)

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303.3 Gas-fired Clothes Dryer in Bathrooms

Change Summary: A new option was added to allow a gas-fired clothes dryer to be installed in a toilet room or bathroom.

310.2, 310.3 Bonding of CSST and Arc-resistant CSST

Change Summary: Section 310.2 previously applied to all CSST products but is now restricted to only the traditional yellow jacketed CSST product. A new Section 310.3 was added to address the arc-resistant CSST products.

310.2.3 Grounding Electrodes for CSST Bonding

Change Summary: The code was clarified with regard to the purpose of any “additional grounding electrodes.”

403.4.2, 403.10.1 Schedule 10 Steel Gas Pipe

Change Summary: The code now allows Schedule 10 steel pipe to be used for fuel gas service.

404.11 Corrosion Protection for Steel Gas Pipe

Change Summary: This section was rewritten for clarity and to include three distinct prescriptive methods for protection from corrosion for steel pipe.

404.14 Piping Underground beneath Buildings

Change Summary: A listed encasement system instead of a conduit encasement is recognized where plastic piping is installed underground beneath buildings.

409.5.1 Access to Shutoff Valves for Movable Appliances

Change Summary: For shutoff valves installed behind movable appliances, the required access is provided by moving the appliance.

409.7 Shutoff Valve Support for Tubing Systems

Change Summary: New text addresses shutoff valve support for tubing systems.

410.2 MP Regulator and Appliance Pressure Test Port

Change Summary: The code provided a new alternative to the required pressure tap fitting downstream of a medium pressure regulator.

503.8 Direct-vent Termination Clearances

Change Summary: Section 503.8 Item 3 relative to direct-vent appliances was reformatted into table form and a new category was added for direct-vent appliances having higher Btu/hr inputs that are more consistent with nonresidential appliances.



Significant Changes to the International Fire Code (2015 to 2018)

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314.4 Indoor Display of Vehicles

Change Summary: This section is revised to clarify it applies to both liquid-fueled vehicles and gaseous-fueled vehicles. Additionally, it has been modified to allow the Fire Code Official the ability to determine the best method of safeguarding the vehicle regarding the battery and electrical system.

315.3.1 Ceiling Clearance for Indoor Storage

Change Summary: Exceptions have been added which allow an increase in the height of storage along walls in sprinklered and nonsprinklered buildings.

315.1, 315.7, 105.6.29 Outdoor Pallet Storage

Change Summary: Requirements are added to the code for height limitation and separation to buildings and property lines for the outdoor storage of idle pallets constructed of wood or plastic. See also Significant Change to Section 2810 for pallet storage at pallet recycling and manufacturing facilities.

603.1, 603.3 Fuel-fired Appliances

Change Summary: Fuel oil storage allowances in Section 603 have been revised to clarify applicability to internal combustion engines, such as generators and fire pumps. Fuel oil storage is increased to 1,320 gallons if the building is sprinklered and the tank is listed to UL 142.

605.13, 605.16, 605.17 Refrigerants with Lower Flammability Hazards

Change Summary: Adds requirements regarding safety concerns for lower flammability refrigerant gases.

901.4.6.1, 901.4.6.2, 901.4.6.3, 901.4.6.4 Fire Pump and Fire Sprinkler Riser Rooms

Change Summary: Additional requirements have been added for automatic sprinkler system riser rooms and fire pump rooms.

901.6.2 Integrated Fire Protection System Testing

Change Summary: Test criteria has been added to the code with a reference to NFPA 4 to ensure that where multiple fire protection systems or life safety systems are integrated, that the acceptance process and subsequent testing must evaluate all of the integrated systems as a whole.

901.8.2 Removal of Occupant-use Hose Lines

Change Summary: Authorizes code official to allow the removal of occupant-use hose lines.

903.2.1 Sprinklers in Group A Occupancies

Change Summary: Clarifies the requirements for fire sprinkler protection in Group A occupancies.

903.2.3 Sprinklers in Group E Occupancies

Change Summary: Provides occupant load threshold for automatic sprinkler system requirements in Group E occupancies.

903.3.1.1.2 Sprinklers in Bathrooms in Group R Occupancies

Change Summary: Removes fire sprinkler requirements from small bathrooms in Group R-4 occupancies.

903.3.1.2.1 Sprinklers Beneath Balconies

Change Summary: Correlates automatic sprinkler system requirements in Chapter 9 with IBC Chapter 7 for exterior balconies of Group R occupancies.

903.3.1.2.3 Protection of Attics in Group R Occupancies

Change Summary: Sprinkler protection of acceptable alternative methods for the protection of attics are now addressed for mid-rise buildings housing multifamily occupancies and equipped with an NFPA 13R sprinkler system.

903.3.3 Sprinkler Obstructions

Change Summary: The code now directs the user to the sprinkler design standard to address sprinkler obstructions.

904.12 Commercial Cooking Operations

Change Summary: The installation of fire-extinguishing systems as protection for commercial cooking operations must now comply with NFPA 96. In addition, commercial cooking systems are now permitted to be protected with a water mist fire-extinguishing system.

904.13 Domestic Cooking in Institutional Occupancies

Change Summary: Requires an automatic fire-extinguishing system to protect domestic cooking appliances in care facilities.

904.14, Table 901.6.1 Aerosol Fire-extinguishing Systems

Change Summary: Requires automatic fire suppression in domestic cooking systems in care facilities.

905.3.1 Class III Standpipes

Change Summary: Standpipe systems are now required in buildings four or more stories in height. In addition, a Class I standpipe is allowed in Group B and Group E occupancies rather than a Class III.

905.4 Class I Standpipe Hose Connections

Change Summary: Allows a modification of hose connection locations for Class I standpipes serving open stairways.

905.11 Locking Caps on Standpipe Outlets

Change Summary: This revision authorizes the code official to require locking caps on dry standpipe hose connection outlets.

907.2.1 Fire Alarm in Group A Occupancies

Change Summary: A new fire alarm threshold has been added for Group A occupancies where an occupant load of 100 or more is located on a level other than the level of exit discharge.

907.5.2.2.4 Emergency Voice/Alarm Communication System Captions

Change Summary: Large public venues are required to provide realtime captions that are integrated with the emergency voice/alarm communication system.

916 Gas Detection Systems

Change Summary: Requirements for gas detection systems are clarified and consolidated in a new Section 916.

Table 1004.5, 1004.8 Occupant Load Calculation in Business Use Areas

Change Summary: The method of calculating occupant load in business areas is revised, which allows for larger occupant loads.

1006.2.1 Spaces with One Exit or Exit Access Doorway

Change Summary: Determination of cumulative occupant loads is clarified and correlated with other code requirements.

1006.2.2.6, 1006.2.1, 1017.2 Groups R-3 and R-4 Protected with NFPA 13D Sprinkler System

Change Summary: Exit access travel distances are provided for Groups R-3 and R-4 when sprinklered with NFPA 13D sprinkler systems.

1006.3, 1006.3.1 Exits on Adjacent Stories

Change Summary: Determining egress requirements has been clarified when the occupants travel to an adjacent story to reach the exit.

1008.2.3 Illumination of the Exit Discharge

Change Summary: Illumination of exit discharge can now terminate at a safe dispersal area.

1008.3.5, 1008.2.2 Emergency Illumination in Group I-2

Change Summary: Emergency egress lighting in Group I-2 must meet minimum illumination levels even when one lamp fails in a single luminaire.

1009.7.2 Protection of Exterior Areas of Assisted Rescue

Change Summary: The 1-hour fire-resistance-rated separation between an exterior of assisted rescue and the building is not required if the building is protected with an automatic sprinkler system designed to NFPA 13 or 13R.

1010.1.4.4 Locking Arrangements in Educational Occupancies

Change Summary: Guidance is provided to allow enhanced security measures yet still meet egress requirements for classroom doors.

1010.1.9.8, 1010.1.9.8.1 Delayed Egress

Change Summary: Additional occupancies are allowed to install delayed egress, including small Group E occupancies and Group A courtrooms.

1010.1.9.9, 1010.1.9.10 Electrically Locked Egress Doors

Change Summary: Criteria for electrically locked egress doors have been clarified and correlated.

1010.1.9.12 Locks on Stairway Doors

Change Summary: The limitation is removed which prohibited locking doors on the stairway side when the stairway was more than four stories, but less than a high-rise.

1010.1.10 Panic Hardware and Fire Exit Hardware

Change Summary: Sensor release of electrically locked doors is now allowed on egress doors in Groups A and E. Also, the section is clarified to state that panic hardware or fire exit hardware is only required on swinging doors.

1010.3 Turnstiles

Change Summary: This new section allows security turnstiles, or similar barriers, in the means of egress path.

1011.6 Stairway Landings

Change Summary: The method of determining the required width and depth of a stairway landing is clarified.

1013.2 Floor-level Exit signs in Group R-1

Change Summary: The location of low-level exit signs can now be 18 inches above the floor.

1015.6, 1015.7 Fall Arrest for Rooftop Equipment

Change Summary: The specific criteria in the code on fall arrest systems is removed and the ANSI/ASSE Z395.1 standard now governs the installation.

1023.3.1 Stairway Extension

Change Summary: Fire-resistance-rated separation is not required between an interior exit stairway and exit passageways if stairway pressurization is provided.

1023.5, 1024.6 Exit Stairway and Exit Passageway

Penetrations

Change Summary: Security system and two-way communication system components are allowed to penetrate the fire-resistant-rated enclosure of exit passageways and interior exit stairways and ramps.

1025.1 Luminous Egress Path Marking in Group I

Occupancies

Change Summary: Luminous egress path marking is no longer required in high-rise buildings classified as Groups I-2, I-3, and I-4.

1026.4, 1026.4.1 Refuge Areas for Horizontal Exits

Change Summary: Guidance is provided to allow enhanced security measures yet still meet egress requirements on classroom doors.

1029.9.1 Minimum Aisle Width

Change Summary: Minimum aisle widths in assembly occupancies are clarified with a reference added for minimum widths for accessible routes.

1030.1 Emergency Escape and Rescue Openings

Change Summary: Emergency escape and rescue openings are required in Groups R-3 and R-4, and Group R-2 provided with only one means of egress from a story. Also, it is possible to eliminate some, or all, emergency escape and rescue openings from a sprinklered basement.

1030.1.1 Operation of Emergency Escape and Rescue Openings

Change Summary: Fall prevention devices are allowed on emergency escape and rescue openings provided that they comply with ASTM F2090.

1031.2.2 Locking Arrangements in Existing Educational Occupancies

Change Summary: Guidance is provided to allow enhanced security measures yet still meet egress requirements on classroom doors.

1031.10 Inspection and Testing of Emergency Egress Lighting

Change Summary: Inspection and testing requirements for emergency egress lighting are relocated into Chapter 10 Means of Egress and revised to allow self-diagnostics.

1103.5.1 Fire Sprinklers in Existing Group A-2 Occupancies

Change Summary: A section has been added to Chapter 11 which requires the retrofit installation of a fire sprinkler system in existing Group A-2 occupancies where alcoholic beverages are consumed if the occupant load is 300 or more.

1104.16.2 Wall Openings Adjacent to Fire Escapes

Change Summary: Door and window openings within 10 feet of a fire escape must be protected with ¾-hour opening protectives unless the building is sprinklered.

1105.6.2 Fire-protection-rated Doors in Existing Group I-2

Change Summary: Fire-protection-rated doors in existing Group I-2 occupancies have three options for automatic closing operations.

Chapter 12 Energy Systems

Change Summary: This new chapter has been added to the IFC to address all configurations of energy systems. This chapter contains the emergency power, standby power, and stationary battery storage system requirements from Chapter 6 of the 2015 IFC along with new requirements for other methods of energy generation and storage.

1204.5 Rapid Shutdown for Solar Photovoltaic Power Systems

Change Summary: Rapid shutdown is required on solar photovoltaic systems to reduce the shock hazard to emergency responders.

1206.2 Stationary Storage Battery Systems

Change Summary: This revision moves the stationary battery storage system requirements from Section 608 to Section 1206.2 and includes new battery technologies and required safety features.

Chapter 22 Combustible Dust

Change Summary: Reference to the new NFPA 652, “Standard on the Fundamentals of Combustible Dust,” is added to provide guidance and criteria when evaluating combustible dust hazards.

2303.2.1 Height of Emergency Disconnect Switch

Change Summary: This new section provides specific height limitations for emergency disconnect switches for fuel dispensing operations.

2306.7.3.1 Protection from Vehicle Impact

Change Summary: The fire code official has the authority to require additional vehicle impact protection at fuel dispensing facilities.

2309.6, 2309.6.1 Defueling of Hydrogen Fueled Vehicles

Change Summary: The requirements for repairing vehicles fueled by compressed or liquefied hydrogen gas have been updated to address current technologies and processes.

2311.6 Repair of Vehicles Fueled by CNG and LNG

Change Summary: The requirements for repairing vehicles fueled by compressed or liquefied natural gas have been updated to address current technologies and processes.

2311.8 Repair of Vehicles Fueled by Lighter-than-air Fuels

Change Summary: The requirements for repairing vehicles fueled by compressed or liquefied compressed gas have been updated to address current technologies and processes.

2403.2.1.3 Classified Electrical Areas Around Spray Booths

Change Summary: The size of the classified area around spray booth openings is reduced to 3 feet.

2404.2, 2404.3.1, 914.9 Spray Rooms and Spray Booths

Change Summary: Requirements for spray booths and spray operations are correlated between the IFC and the IBC.

2810 Outdoor Storage of Pallets at Pallet Manufacturing and Recycling Facilities

Change Summary: This new section adds criteria for outdoor pallet storage at pallet manufacturing facilities and pallet recycling facilities. It provides specific height limits and separation to property lines and buildings, but also allows for the distances to be modified based on providing additional fire protection features.

Chapter 31 Umbrella Structures

Change Summary: A new definition is added for umbrella structures which results in regulation of umbrella structures when they exceed 400 square feet.

3103.3.1 Tents and Membrane Structures Used as Special Amusement Buildings

Change Summary: Special amusement buildings located in temporary tents are required to be equipped with an automatic sprinkler system.

3103.6, 3103.9 Structural Stability of Tents

Change Summary: Temporary tents and membrane structures are required to provide construction documents which address their structural stability and load carrying capacity. Larger tents and membrane structures have been added to the list of temporary facilities which must comply.

3104.2 Fabrics for Tents and Membrane Structures

Change Summary: The application of testing criteria for flame spread of tent and membrane structures has been clarified.

3105, 105.6.47, 105.7.22 Temporary Special Event Structures

Change Summary: The requirements for temporary stage structures are expanded to include all temporary structures greater than 400 square feet when used at special events.

3106 Outdoor Assembly Events

Change Summary: This section adds requirements specific to outdoor public gatherings and improves the correlation of requirements in the IBC and IFC.

3107.13 LP-gas Containers and Tanks Adjacent to Tents and Membrane Structures

Change Summary: Requirements for the use and separation of LP-gas containers in and around tents and membrane structures have been revised.

Chapter 32 High-piled Combustible Storage

Change Summary: The requirements in the chapter have been updated to correlate with current NFPA 13 requirements and recent FM Global fire tests.

3304.5, 3308, 3309.1 Fire Watch During Construction and Demolition

Change Summary: Criteria for requiring fire watch has been added to the code along with clarification to the functions and duties of the fire watch personnel.

Chapter 38 Higher Education Laboratories

Change Summary: A new chapter has been added to the IFC to specifically regulate college and university laboratories. Correlating sections have been added to a new Section 427 in the IBC.

Chapter 39 Processing and Extraction Facilities

Change Summary: A new chapter has been added to the IFC to specifically regulate the process of extracting oils from plant material.

Table 5003.1.1 (1) Consumer Fireworks

Change Summary: Addresses the explosive nature of Division 1.4G explosives and removes the 100 percent increase in quantity for sprinklers where these items are stored.

5003.1.1 (1), 5003.11.1, 6303.1.1.2 Maximum Allowable Quantity for Class 3 Oxidizers

Change Summary: The maximum allowable quantity for Class 3 oxidizers is increased by about 10 percent in control areas and Groups M and S occupancies.

5003.8.3.4 Construction of Control Areas

Change Summary: The fire-resistance rating of the floor of a control area in a Type IV building is allowed to be reduced to 1-hour if the building is sprinklered and does not exceed three stories in height.

5005.1.12 Protection of Hazardous Materials Piping Systems

Change Summary: Requirements for leak detection and emergency shutoff for high hazard gases and liquids only apply when the maximum allowable quantity per control area is exceeded.

5005.1.12 Protection of Hazardous Materials Piping Systems

Change Summary: Requirements for leak detection and emergency shutoff for high hazard gases and liquids only apply when the maximum allowable quantity per control area is exceeded.

5103.2, 5104.1.2 Aerosol Products in Plastic Containers

Change Summary: Limitations on aerosol products in plastic containers is revised and the use of Plastic Aerosol X products is prohibited in higher life hazard occupancies.

5103.2.2, 5104.2.2, 5104.3.3, 5104.8, 5106.2.2 Aerosol Cooking Spray Products

Change Summary: Specific fire protection requirements are added to address aerosol cooking spray products.

5306.1, 5306.2 Medical Gas Storage

Change Summary: Requirements for construction and ventilation of interior medical gas rooms and gas cabinets are revised.

5307.1, 5307.3 Liquid Carbon Dioxide Systems for Beverage Dispensing

Change Summary: Requirements for liquefied CO₂ in beverage dispensing applications have been correlated with requirements for gas detection systems.

5307.4 Carbon Dioxide Enrichment Systems

Change Summary: Carbon dioxide enrichment systems are now regulated by the International Fire Code when the system contains more than 100 pounds of CO₂, or when the refill connection is remote from the tank or vessel.

5707 Mobile Fueling Operations

Change Summary: On-demand mobile fueling is allowed to occur at approved locations and under the control of a permit issued by the fire code official.

6104.3 Location of LP-gas Containers

Change Summary: New Footnote g specifies separations between above-ground LP-gas containers and public ways.



Significant Changes to the National Electrical Code (2014 to 2017)

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210.5 (C)(1) Identification for Ungrounded Conductors

Change Summary: A new exception was added for identifying each ungrounded conductor for existing installations where a voltage system(s) already exists and a different voltage system is being added.

210.8 Measurements for GFCI Protection

Change Summary: New language added to clarify how measurements are to be determined for GFCI receptacle.

210.8 (A)(7) GFCI Protection at Sinks

Change Summary: Measurement criteria at dwelling unit sinks were revised for clarity in determination of which receptacles around these sinks would and would not require GFCI protection.

210.8 (B) Three-Phase GFCI Protection

Change Summary: The GFCI requirements for receptacles at commercial/industrial applications have been expanded to recognize ground faults other than 15 and 20A 125-volt applications only.

210.8 (B)(9) Non-Dwelling Unit Crawl Space

Change Summary: GFCI protection for receptacles in non-dwelling unit crawl spaces has been added.

210.8 (B)(10) GFCI Protection for Receptacles in Non-Dwelling Unit Unfinished Basements

Change Summary: GFCI protection has been added for receptacles installed in non-dwelling unit unfinished basements.

210.8 (E) GFCI Protection for Lighting Outlets in Crawl Spaces

Change Summary: GFCI Protection for lighting outlets in crawl spaces has been added.

210.11 (C)(4) Garage Branch Circuit(s)

Change Summary: New requirement added for minimum rated 120-volt, 20-ampere branch circuit for dwelling unit garage receptacles.

210.12 (C) AFCI Protection in Guest Rooms and Guest Suites

Change Summary: New provisions added requiring AFCI protection for guest rooms/guest suites of hotels/motels.

210.17 Electric Vehicle Branch Circuit

Change Summary: The requirement for an individual branch circuit for electric vehicle outlets has been relocated from 210.17 to 625.40.

210.52 (A)(2)(1) Receptacle Wall Space

Change Summary: Fixed cabinets “that do not have countertops or similar work surfaces” was added as an item that will constitute a break in a wall space for receptacle spacing requirements at dwelling units.

210.52 (B)(1), Ex. No. 2 Appliance Branch Circuit

Change Summary: An individual branch circuit supplying a receptacle outlet for any specific appliance (not just the refrigerator) at a dwelling unit is allowed to be rated 15-ampere or greater.

210.52 (C)(3) Peninsular Countertop Spaces

Change Summary: The measurement point for peninsular countertops has been changed from the “connecting edge” to the “connected perpendicular wall.”

210.52 (G) Receptacle for Basements, Garages, and Accessory Buildings

Change Summary: Receptacle requirements for dwelling unit garages, basements, and accessory buildings expanded to two-family dwellings (not just one-family dwellings).

210.52 (G)(1) Dwelling Unit Garages

Change Summary: At least one receptacle outlet is required to be installed “in each vehicle bay” and not more than 1.7m (5 ½ feet) above the floor in dwelling unit garages.

210.64 Receptacle at Electrical Service Areas

Change Summary: The required outlets at electrical service equipment must be installed in an accessible location within 7.5m (25ft) of indoor electrical service equipment.

210.70 (C) Lighting Outlet(s) All Occupancies

Change Summary: Lighting outlet requirements for storage or equipment spaces added for non-dwelling unit utility rooms and basements.

210.71 Receptacle Outlets in Meeting Rooms

Change Summary: Receptacle outlet requirements were added for non-dwelling unit meeting rooms.

215.2 (A)(1)(a), Ex. No. 2 Feeder Rating and Size

Change Summary: A new exception allows a portion of a feeder that is not connected directly to load terminations to have an allowable ampacity not less than the sum of the

continuous load plus the noncontinuous load (rather than the noncontinuous load plus 125 percent of the continuous load). It also clarifies when correction factors are to be applied.

Article 220 and 220.1 Branch-Circuit, Feeder, and Service Load Calculations

Change Summary: The Title and Scope of Article 220 were revised to enhance clarity of what is covered by the article.

225.30 (F) Multiple Feeders in One- or Two-Family Dwellings

Change Summary: Multiple feeders are now allowed to enter a one- or two-family dwelling under certain restrictions, which include that the feeder disconnects at the building served must be grouped.

230.24 (B)(5) Clearance for Overhead Service Conductors

Change Summary: New vertical clearance of 7.5m (24.5ft) added for overhead service conductors installed over railroad tracks.

230.29 Supports over Buildings

Change Summary: New requirement added for bonding of metal overhead service support structures over buildings.

Table 240.6 (A) Standard Ampere Ratings for Fuses and Inverse Time Circuit Breakers

Change Summary: New Table 240.6(A) added for “Standard Ampacity Ratings and Fuses and Inverse Time Circuit Breakers.”

240.67 Arc Energy Reduction

Change Summary: New arc energy reduction requirements have been added for fuses rated 1200 amperes or higher.

250.22(6) Circuits Not to Be Grounded

Change Summary: Class 2 load-site circuits for suspended ceiling low-voltage power grid distribution systems were added to the list of circuits not to be grounded.

250.30(A)(4) and (A)(5) Grounding Separately Derived Systems

Change Summary: The use of metal water piping or building steel as the first options as a grounding electrode system for a separately derived system has been removed.

250.30(A)(6)(a) Common GE Conductor

Change Summary: A metal water pipe was added to the methods of achieving a common grounding electrode conductor permitted for multiple separately derived systems.

250.52(A)(2) Metal In-Ground Support Structures

Change Summary: The title of a “Metal Frame of a Building” grounding electrode renamed “Metal In-Ground Support Structure.” Conditions for this grounding electrode revised.

250.52(B)(3) Not Permitted for Use as Grounding Electrodes

Change Summary: In-ground swimming pool structures are not permitted to be used as a grounding electrode.

250.66 (A), (B), and (C) Size of GECs

Change Summary: The “sole connection” language for sizing of grounding electrode conductors for connection to specific grounding electrodes has been removed and revised.

250.94 (A) and (B) Intersystem Bonding Terminations

Change Summary: The title of this section was renamed “Bonding for Communication Systems” and a new 250.94 (B) was added titled “Other Means” allowing an alternate connection option to be made on a common bus bar.

250.102 Grounded Conductors, Bonding Conductors, and Jumpers

Change Summary: Title changes to “Grounded Conductors, Bonding Conductors, and Jumpers” which more clearly reflects what this section covers.

250.122(F) EGCs Installed in Parallel

Change Summary: Revision and new text added to clarify how to size and install equipment grounding conductors when installed in parallel in a single or multiple raceways, multiconductor cable, auxiliary gutter, or cable tray.

250.148 Continuity and Attachment of EGC to Boxes

Change Summary: Revision to clarify that all equipment grounding conductors associated with any and all circuits in the box must be connected together and to the box and not just each equipment grounding conductors of each associated circuit.

250.187(B) Impedance Grounded Neutral Systems

Change Summary: Neutral conductor for an impedance grounded neutral system over 1000 volts must be insulated to the maximum neutral voltage rather than the same insulation as the phase conductors.

Table 300.5, Footnotes a and b Minimum Cover Requirements

Change Summary: Two new footnotes were added to Table 300.5 allowing lesser depths for listed low-voltage lighting system and pool, spa, and fountain lighting where they are part of a listed low-voltage lighting system.

300.5 (D)(4) Protection from Physical Damage

Change Summary: Electrical metallic tubing (EMT) was added as an acceptable wiring method to afford protection from physical damage for conductors installed underground and subject to physical damage.

Table 310.15 (B)(3)(c) Raceways and Cables on Rooftops

Change Summary: Raceways or cables installed on rooftops are now required to be installed 23 mm (7/8 in.) above the rooftop to avoid a temperature adder of 33°C (60°F). Previous Table 310.15(B)(3)(c) was deleted.

Table 310.15 (B)(7) 120/240 Volt or 208Y-120 Volt, Single-Phase Dwelling Services and Feeders

Change Summary: 120/208 volts were added to allowable voltages for dwelling unit service conductor ampacity rating requirements. A new informational note was added indicating service rating based on standard ampacity ratings of 240.6(A). Correction or adjustment factors required by 310.15(B)(2) or (3) are permitted to be applied to the ampacity associated with the temperature rating of the conductor.

312.5 (C), Exception, Item (g) Cable Raceway

Change Summary: Note 2 to the tables in Chapter 9 does not apply to the limited length of raceway required in 312.5(C), Exception, and the conductor fill limits of Chapter 9, Table 1 do apply.

Table 312.6 (A) Minimum Wire-Bending Space at Terminals and Minimum Width of Wiring Gutters

Change Summary: New minimum wire-bending spaces for AA-8000 series compact stranded aluminum conductors have been added to Table 310.6(A).

312.8 (B) Switch and Overcurrent Device Enclosures

Change Summary: Power monitoring equipment is now required to be listed for the application when installed in free spaces of cabinets and cutout boxes.

314.17 (B) Type NM Cable Entering Metal Boxes

Change Summary: The outside sheath of Type NMM or Type UF cable used with a metal box must now extend not less than 6 mm (1/4 in.) inside the box as currently required for nonmetallic boxes.

314.27 (E) Separable Attachment Fittings

Change Summary: Outlet boxes are permitted to support listed locking support and mounting receptacles used in combination with compatible attachment fittings.

320.6 Listing Requirements. (Armored Cable: Type AC)

Change Summary: Cable-type wiring methods and associated fittings are required to be listed.

324.12(5) Uses Not Permitted. (Flat Conductor Cable: Type FCC)

Change Summary: Type FCC cable will now be permitted in administrative office areas of hospitals and school buildings.

336.10(9) Uses Permitted for Type TC Cable

Change Summary: Type TC-ER cable with a designation of “JP” will now be allowed to be installed without a raceway at dwelling units.

344.14 Dissimilar Metals: Type RMC

Change Summary: Stainless steel RMC must be used only with stainless steel fittings, approved accessories, outlet boxes, and enclosures.

350.28 Trimming of LFMC

Change Summary: Cut ends of LFMC shall be trimmed inside and outside to remove tough edges. This requirement will provide consistency between Article 350 and Article 356 (LFNC).

358.10 Uses Permitted. (Electrical Metallic Tubing: Type EMT)

Change Summary: The “Uses Permitted” for EMT have been revised for consistency with other steel conduit articles (Type IMC and RMC).

366.20 Parallel Conductors in Auxiliary Gutters

Change Summary: Language was added to address how to install conductors in a parallel in an auxiliary gutter.

370.80 Ampacity of Conductors. (Cablebus)

Change Summary: Additional information was added to provide clarity for the allowable ampacities for cables installed in cablebus assemblies (Article 370) and align ampacities with cable tray installations (Article 392).

404.2 (C) Switch Connections

Change Summary: Revisions clarified that a grounded conductor of the lighting circuit at switch locations shall be connected to the electronic device.

404.22 Branch-Circuit Voltage Limitations

Change Summary: New provisions were added for “Electronic Lighting Controlled Switches” prohibiting current on the equipment grounding conductor with a future effective date.

406.2 Receptacles, Cord Connectors, and Attachment Plugs (Caps)

Change Summary: A new definition for “Outlet Box Hood” was added at 406.2.

406.3 (E) Controlled Receptacle Marking

Change Summary: Receptacles that are controlled by an automatic control device must be permanently marked with the symbol shown in Figure 406.3(E) and the word “Controlled.” Required marking must be on the receptacle face (not the cover plate) and be visible after installation.

406.3 (F) Receptacle Rating and Type

Change Summary: New requirements were added for receptacle outlets with USB charger(s).

406.4 (D)(4), Ex. No. 1 and Ex. No. 2 Replacement Receptacles (AFCI)

Change Summary: Two new exceptions were added for AFCI requirements for replacement of existing receptacles.

406.4 (D)(5) Receptacle Replacement Tamper-Resistant Receptacle

Change Summary: Tamper-resistant receptacles are required for replacement receptacles “except where a non-grounding receptacle is replaced with another non-grounding receptacle.”

406.6 (D) Receptacle Faceplates (Cover Plates) with Integral Night Light and/or USB Charger

Change Summary: New requirements were added for receptacle faceplates with integral night lights and/or USB chargers.

406.9 (B)(1) Extra-Duty Outlet Box Hoods

Change Summary: New provisions allowing “other listed products,” enclosures, or assemblies providing weatherproof protection that do not utilize an outlet box hood need not be marked “extra duty” as required for the outlet box hoods.

406.12 Tamper-Resistant Receptacles

Change Summary: Requirements for tamper-resistant receptacles were expanded to mobile homes, preschools and elementary education facilities, as well as other locations where small children are likely to congregate. TR receptacles were expanded to 250-volt receptacles as well as 125-volt receptacles.

408.3 (A)(2) Barriers at Service Panelboards

Change Summary: New requirements were added for barriers to be placed in all service panelboards so that no uninsulated, ungrounded service busbar or service terminal will be exposed to inadvertent contact by persons.

409.22 (B) Short-Circuit Current Rating

Change Summary: New requirements were added for documentation of available short-circuit current at industrial control panels and the date the short-circuit current calculation was performed.

410.62 (C)(1) Cord-Connected Lampholders and Luminaires

Change Summary: Reorganization occurred to the requirements for cord-connected lampholders and luminaires of the electric-discharge and LED types.

422.5 GFCI Protection for Appliances

Change Summary: GFCI requirements from 210.8 and throughout Article 422 are related to personnel hazards from specific equipment (contact with equipment with excessive leakage current) and provide those requirements in a single location in Article 422.

422.6 Listing Required. (Appliances)

Change Summary: New listing requirement enforced for all appliances operating at 50 volts or more shall be listed.

422.14 Infrared Lamp Industrial Heating Appliances

Change Summary: Rules for industrial infrared lamp heating appliances have been deleted and relocated in new Article 425.

422.16 (B)(2) Built-In Dishwashers

Change Summary: Maximum length of flexible cord for built-in dishwashers increased from 1.2 m (4 ft) to 2.0 m (6.5 ft) while the receptacle outlet for a built-in dishwasher can only be located in the space adjacent to the dishwasher.

422.16 (B)(4) Range Hoods

Change Summary: The maximum length of a flexible cord for a cord-and plug-connected range hood has been increased from 900 mm (36 in.) to 1.2 m (4 ft.).

Article 424 Part V Electric Space-Heating Cables

Change Summary: Part V (424.34 through 424.47) of Article 424 was revised for clarity.

424.45 Heating Cables Under Floor Coverings

Change Summary: New requirements were added for the installation of heating cables installed under floor coverings.

424.47 Labeled Provided by Manufacturer

Change Summary: New provisions were added for manufacturers of electric space-heating cables to provide marking labels to be affixed to panelboards to identify which branch circuits supply the circuits to those space-heating installations.

Article 424 Part X Fixed Electric Space-Heating Equipment

Change Summary: A new part X was added to Article 424 for low-voltage fixed electric space-heating equipment.

Article 425 Fixed Resistance and Electrode Industrial Process Heating Equipment

Change Summary: New Article: Fixed Resistance and Electrode Industrial Process Heating Equipment.

426.32 Impedance Heating Voltage Limitation Fixed Outdoor Electric Deicing and Snow Melting Equipment

Change Summary: The allowance for voltage output greater than 30 volts ac if an impedance heating system for fixed outdoor electric deicing and snow-melting equipment is provided with Class A GFCI protection has been deleted.

430.53 (D)(4) Single Motor Taps on One Branch Circuit

Change Summary: New tap rule for single motor allows 7.5 m (25 ft) taps with the same conditions as is allowed in other areas of the NEC.

430.99 Available Fault Current for Motor Control Centers

Change Summary: New requirements were added for available short-circuit current at the motor control center and the date the short-circuit current calculation was performed.

440.9 Grounding and Bonding – Rooftop Equipment

Change Summary: A new requirement was added requiring a wire-type equipment grounding conductor for non-threaded conduit systems on rooftops supplying such things as HVAC equipment.

440.65 Protection Devices for Room AC Units

Change Summary: Heat detecting circuit interrupter (HDCI) was added to a list of devices for protection of single-phase room air conditioners.

445.11 Marking. (Generators)

Change Summary: Nameplate marking requirements for generators have been revised and put into a list format.

445.13 (B) Generator OCPD Provided

Change Summary: A new requirement clarifies that feeder taps can be used if the generator is equipped with an overcurrent relay or other overcurrent protective device.

445.18 Disconnecting Means and Shutdown of Prime Mover

Change Summary: Generator disconnecting means have been reorganized. Provisions for disconnecting means, shut down of the prime mover, and provisions for generators installed in parallel have been added.

445.20 Ground-Fault Circuit-Interrupter Protection for Receptacles on 15-kW or Smaller Portable Generators

Change Summary: Listed cord sets incorporating GFCI protection for portable generators manufactured or rebuilt prior to January 1, 2015, are now permitted. GFCI requirements have been separated into unbonded (floating neutral) generators versus bonded neutral generators.

480.3 Equipment. (Storage Batteries)

Change Summary: Storage batteries and battery management equipment are now required to be listed (other than lead-acid batteries).

Table 500.8 (D)(2) Equipment

Change Summary: Previous Table 500.8 (D)(2) Class II Temperatures has been deleted.

501.10 (B)(1) Class I, Division 2

Change Summary: RMC and IMC with threadless fittings and cablebus were added acceptable wiring methods in Class I, Division 2 locations.

501.15 (D)(1) Cable Seals -- Class I Division 1

Change Summary: Text was added identifying the explosionproof fittings that can be installed between a cable seal and an enclosure in Class I, Division 1 locations.

Table 511.3 (C) and Table 511.3 (D) Area Classification, General. (Commercial Garages, Repair, and Storage)

Change Summary: Two new tables were added at 511.3 for clarification of area classification of major and minor commercial repair garages.

511.8 Underground Wiring

Change Summary: New section was added to address the acceptable wiring methods for an underground installation at a commercial repair garage.

514.3 (B)(3) Classification of Location. (Motor Fuel Dispensing Facilities)

Change Summary: Section 514.3 (B)(2) and Table 514.3(B)(2) contain information concerning area classification for compressed natural gas, liquefied natural gas, and liquefied petroleum gas for dispensing devices. No detailed information existed at this section for area classification of fuel storage of these gases.

514.8 Ex. No. 2 Underground Wiring. (Motor Fuel Dispensing Facilities)

Change Summary: Type HDPE conduit was added as an acceptable underground wiring methods for motor fuel dispensing facilities.

514.11 (A), (B), and (C) Emergency Controls for Fuel Dispensers

Change Summary: Emergency shutoff device requirements for motor fuel dispensing facilities were revised to reflect the requirements for NFPA 30A and for clarify.

Article 516 Spray Application, Dipping, Coating, and Printing Processes Using Flammable or Combustible Materials

Change Summary: Article 516 was extensively revised for clarity and to align with NFPA 33 and NFPA 34.

517.16 Use of Isolated Ground Receptacles

Change Summary: Revisions to 517.16 were divided into two subdivisions for prohibition of isolated ground receptacle inside a patient care vicinity and isolated ground receptacles installed outside a patient care vicinity.

517.30 Sources of Power. (Health Care Facilities)

Change Summary: Requirements for two independent sources of power and an alternate source of power for the essential electrical system for hospitals and other health care facilities were revised and relocated to 517.30. Fuel cell systems will now be permitted to serve as the alternate source for all or part of essential electrical system.

517.34 (B) Critical Branch. (Essential Electrical System-Health Care Facilities)

Change Summary: New language was added to specifically allow the control of task illumination on the critical branch.

525.23 (D) GFCI Protection for Carnivals, Circuses, Fairs, and Similar Events

Change Summary: New requirement for listed, labeled, and identification of portable GFCI protection for branch circuits fed by flexible cords.

547.5 (F) Separate EGC (Agricultural Buildings)

Change Summary: A separate equipment grounding conductor for an underground installation at an agricultural building must be insulated (covered conductor removed).

550.13 (B) GFCI Protection Required for Mobile and Manufactured Homes

Change Summary: GFCI protection for mobile homes was revised to reflect GFCI coverage for all sinks, dishwashers, and other locations similarly found at 210.8 (A).

550.25 (B) AFCI Protection at Mobile and Manufactured Homes

Change Summary: AFCI requirements for mobile homes were expanded to reference AFCI requirements of 210.12.

551.71 Type Receptacles Provided at RV Parks

Change Summary: Type of receptacle required to be provided at RV parks was increased to 40 percent of new sites for 50-ampere rated receptacle. Section 551.71 was reorganized into a list format for clarity.

551.73 (A) Calculated load for RV parks

Change Summary: The calculated load for electrical services and feeders at RV parks shall be calculated on the basis of not less than 12,000 volt-amperes per RV site equipped with 50-ampere, 208Y/120 or 120/240-volt supply facilities.

551.75 (B) Grounding Electrodes at RV Parks

Change Summary: Grounding at RV Park pedestals (equipment): Grounding electrode systems are not required to be established at RV pedestal (equipment) that is not considered a service.

Article 555 Marinas, Boatyards, and Commercial and Noncommercial Docking Facilities

Change Summary: Revisions to Article 555 will now make this article applicable to commercial as well as dwelling unit docking facilities.

555.3 Ground-Fault Protection

Change Summary: The ground-fault protection required for overcurrent protective devices for marinas, boatyards, and commercial and noncommercial docking facilities cannot exceed 30 mA (rather than 100 mA).

555.19 (B)(1) GFCI Protection for Personnel

Change Summary: GFCI protection for personnel is required for all 125-volt, single-phase, 15- and 20-ampere receptacles installed outdoors, in boathouses and in buildings or structures used for storage, maintenance, or repair, without consideration of whether “electrical diagnostic equipment, electrical hand tools, or portable lighting equipment” is being used.

555.24 Signage at Marinas, Boatyards, etc.

Change Summary: New signage requirement at 555.24 for precautionary signage related to electric shock hazard in water around marinas and boatyards.

590.4 Feeders (Temporary Installations)

Change Summary: Type SE cable has been added to the acceptable cable assembly wiring methods for a temporary installation along with Type NM and Type NMC cable.

590.6 (A)(1) GFCI Protection for Personnel in Temporary Installations

Change Summary: GFCI protection is permitted in the form of portable GFCI cord sets in addition to GFCI protection required for all 125-volt, single-phase, 15- and 20-, and 30-ampere receptacle outlets that are not a part of the permanent wiring of the building or structure.

600.4 (B) Signs with a Retrofitted Illumination System

Change Summary: New requirement calls for electric signs that have been retrofitted to be marked to indicate that is a retrofit kit.

600.6 (A)(1), Ex. No. 2 Disconnects (Electric Signs and Outline Lighting)

Change Summary: A new exception was added permitting energized conductors (with warning label) in Chapter 3 raceway or metal-jacketed cable identified for the location to be run through a sign body or enclosure to a feeder panelboard(s) located within the sign body or enclosure.

600.33 Class 2 Sign Illumination Systems, Secondary Wiring

Change Summary: The title of 600.33 was changed and the section was expanded to cover all types of Class 2 systems, not just LED lighting systems.

Table 600.33(A)(1) and Table 600.33 (A)(2) Signs and Outline Lighting

Change Summary: A new table was added detailing the applications of power limited cable in signs and outline lighting and a companion table was added detailing Class 2 cable substitutions.

600.34, 600.2 Photovoltaic (PV) Powered Signs

Change Summary: A new definition of Photovoltaic (PV Powered) Sign was added to 600.2 and new provisions for PV powered signs were added to Article 600 at 600.34.

605.9 (C) Freestanding-Type Office Furnishings, Cord- and Plug-Connected

Change Summary: Revision clarifies that thirteen duplex receptacles are the maximum number of receptacles permitted in office furnishings.

610.42 (B)(3) Branch-Circuit Short-Circuit and Ground-Fault Protection for Cranes and Hoists

Change Summary: Brake coils – branch circuit taps – have been deleted for cranes and hoists.

620.16 Short-Circuit Current Rating (Elevators, etc.)

Change Summary: Elevator control panels are required to be marked with a short-circuit current rating and shall not be installed where the available short-circuit current exceeds the marked short-circuit current rating.

Article 625 Electric Vehicle Charging System

Change Summary: Article 625, Electric Vehicle Charging Systems, was reorganized

625.2 Electric Vehicle Charging System

Change Summary: Two new definitions were added: Wireless Power Transfer (WPT) and Wireless Power Transfer Equipment (WPTE).

625.10 Electric Vehicle Coupler

Change Summary: Provisions for polarization and non-interchangeability of electric vehicle couplers were deleted.

Article 625, Part IV Wireless Power Transfer Equipment

Change Summary: New Part IV entitled, “Wireless Power Transfer Equipment,” was added to Article 625.

645.3 (B) Information Technology Equipment

Change Summary: References to other articles and sections applying to wiring and cabling in plenums above an IT equipment room were converted into a list format.

645.5 (E) Wiring Methods and Cables Under a Raised Floor

Change Summary: Requirements for installing wiring methods and cables under a raised floor in an IT equipment room have been revised for clarity.

645.18 Surge Protection for Critical Operations Data Systems

Change Summary: A new requirement was added for surge protection for critical operations data systems.

Article 650 Pipe Organs

Change Summary: Article 650 covering pipe organs was revised for clarity.

660.5 Disconnecting Means for X-ray Equipment

Change Summary: Disconnecting means for industrial-type x-ray equipment is required to be located “within sight” of the X-ray controls and readily accessible.

670.6 Surge Protection for Industrial Machinery

Change Summary: A new requirement was added for surge protection of industrial machinery with safety interlocking circuits.

680.2 and Part VIII of Article 680 Swimming Pools, Fountains, and Similar Installations

Change Summary: A new definition for Electrically Powered Pool Lift was added to 680.2 and a new Part VIII entitled, “Electrically Powered Pool Lifts,” was added to Article 680.

680.2 Swimming Pools, Fountains, and Similar Installations

Change Summary: Revised definition for Storable Swimming, Wading, or Immersion Pools; or Storage/Portable Spas and Hot Tubs. This revision clarifies this definition by adding “on or above the ground” for a pool, spa, or hot tub with nonmetallic, molded or polymeric walls or inflatable fabric walls regardless of dimension, which is the basis for the requirements within this article.

680.7 Grounding and Bonding Terminals in Wet Environments

Change Summary: New requirements for grounding and bonding terminals to be identified for use in wet and corrosive environments were added. Grounding and bonding terminals at pools, spas, hot tubs, etc. are subjected to severe environmental conditions, including wet and corrosive conditions. This new text specific requirements to address those conditions.

Table 680.10 Underground Wiring Location in Wet Locations

Change Summary: Previous 680.10 (Underground Wiring Location) was moved to 680.11, and previous Table 680.10 was deleted Table 300.5 burial depth requirements will now apply around pools.

680.12 and 680.14 Protection against Corrosive Environments in Wet Locations

Change Summary: A new requirement for protection against a corrosive environment for electrical equipment installed in equipment rooms and pits was added at 680.12 and 680.14.

680.21 (A) Motors in Swimming Pools, Fountains, and Similar Installations

Change Summary: Provisions for wiring methods for a permanently installed swimming pool pump motor have been revised.

680.22 (A)(2) Pool Pump Motors Receptacles

Change Summary: Requirements for the pool pump motor receptacle were revised with the single receptacle requirement removed and the minimum distance from the pool of 3.0 m (10 ft) being reduced to 1.83 m (6 ft).

680.22 (B)(7) Low-Voltage Gas-Fired Luminaires, Decorative Fireplaces, Fire Pits, and Similar Equipment

Change Summary: New requirements were added for low-voltage gas-fired luminaires, decorative fireplaces, fire pits, and similar equipment.

680.25 Swimming Pool Panelboard Feeders

Change Summary: Wiring methods and grounding provisions for swimming pool panelboard feeders were revised.

680.27 (B)(1), Ex. And 680.27 (B)(2), Ex. Specialized Pool Equipment

Change Summary: New exceptions were added for pool cover motors that allow motors not rated to exceed the low-voltage contact limit to be installed less than 1.5 m (5 ft) from the inside walls of the pool and omit GFCI protection.

680.25 Swimming Pool Gas-Fired Water Heater

Change Summary: New requirements were added for GFCI protection for swimming pool and spa gas-fired water heaters.

680.74 Bonding in Hydromassage Bathtubs

Change Summary: Bonding requirements for hydromassage bathtubs were reformatted into a list format. A new exception was added to exempt bonding of small conductive surfaces.

682.15 GFCI Protection in Bodies of Water

Change Summary: Section 628.12 now requires that all receptacles installed outdoors and in or on floating buildings or structures within the electrical datum plane area are to be provided with GFCI protection for personnel (not just in areas used for storage, maintenance, or repair where portable electric hand tools, electrical diagnostic equipment, or portable lighting equipment are to be used).

690.2 Functional Grounded PV System

Change Summary: A new definition for Functional Grounded PV System was added 690.2.

690.7 Maximum Voltage in Solar Photovoltaic (PV) Systems

Change Summary: Maximum voltage requirements for PV systems were revised for clarity; three first level subdivisions remain.

690.8 (A)(1) Circuit Sizing and Current of PV Systems

Change Summary: The revision allows for engineering supervision to be used in calculating source circuit maximum current.

690.11, Exception Photovoltaic DC Arc-Fault Circuit Protection

Change Summary: A new exception that allows AFCI protection to be omitted was added for PV systems not installed on or in buildings with wiring methods that are direct buried, installed in metallic raceways, or installed in enclosed metallic cable trays.

690.12 Rapid Shutdown of PV Systems on Buildings

Change Summary: The requirements for rapid shutdown for PV systems have been revised and divided into four subsections.

690.13 Photovoltaic System Disconnecting Means

Change Summary: New interrupting rating and type of disconnect requirements were added to the PV disconnecting means requirements along with extensive revision to the existing requirements, including PV disconnecting means connected to the supply side of a service disconnecting means having to be “listed as suitable for use as a service equipment.”

690.31 (C)(1) Single-Conductor Cable in PV Systems

Change Summary: The exception requiring raceways to be used when required by 690.31(A) was removed. The rule now limits exposed conductors to within the array footprint only. The section now permits Type USE-2 conductors to be installed in ungrounded as well as grounded systems.

690.35 Ungrounded Photovoltaic Power Systems

Change Summary: Section 690.35 for “Ungrounded Photovoltaic Power Systems” has been deleted in its entirety.

690.41 PV System Grounding Configurations

Change Summary: The requirements for “System Grounding” of PV systems was revised to properly address the methods by which PV systems are grounded. The previous text 690.5 was moved to 690.41(B) to expand existing grounding requirements.

690.47 Grounding Electrode System in PV Systems

Change Summary: The requirements for the installation of grounding electrodes and grounding electrode conductors for PV systems have been simplified. The text for auxiliary electrodes for PV array grounding has been revised to permit an auxiliary electrode rather than require one.

690.56 (C) Identification of Power Sources

Change Summary: Provisions for identifying a PV “Rapid Shutdown System” have been extensively revised. Two new figures with illustrated labels have been added to indicate to first responders that rapid shutdown is provided.

Article 690, Part VII Branch-Circuit Receptacle Requirements

Change Summary: Part VII of Article 690 was revised with a reference to Article 705 where interconnected electric power production source requirements are found.

690.71 Energy Storage Systems for PV Installations

Change Summary: Previous provisions for the installation of storage batteries for PV systems have been relocated to new Article 706.

Article 691 Large-Scale Photovoltaic (PV) Electric Power Production Facility

Change Summary: New Article 691 for “Large-Scale Photovoltaic (PV) Electric Power Production Facility was added to the NEC.

695.6 (G) Power Wiring. (Fire Pumps)

Change Summary: The revision clarified that ground-fault protection of equipment is not permitted for fire pump power circuit(s).

695.15 Surge Protection (Fire Pumps)

Change Summary: A listed surge protection device (SPD) is now required to be installed in or on fire pump controllers.

700.2 and 700.25 Branch Circuit Emergency Lighting Transfer Switch

Change Summary: A new definition for Branch Circuit Emergency Lighting Transfer Switch along with provisions for the same at 700.25 have been added to the 2017 NEC.

700.3 (F) Temporary Source of Power for Maintenance or Repair of the Alternate Source of Power

Change Summary: New provisions were added at 700.3(F) providing performance-based requirements for a portable or temporary alternate source to be available whenever a single alternate source of power for emergency system is out of service for maintenance or repair.

700.5 (E) Short-Circuit Current Rating Marked on Transfer Equipment of Emergency Systems

Change Summary: New requirements were added for available short-circuit current rating documentation and field-marking at emergency system transfer equipment.

700.10 (A) Marking of Boxes and Enclosures for Emergency Circuits or Systems

Change Summary: Identification for emergency circuits has been expanded to include cables and raceways not associated with boxes or enclosures. Emergency system receptacles now require identification with a distinctive color or marking.

700.10 (D) Fire Protection of Emergency System Feeders in Health Care Occupancies

Change Summary: Health care occupancies where persons are not capable of self-preservation and educational occupancies with more than 300 occupants have been added to the requirements for fire protection of emergency system feeders (in addition to high-rise buildings and those buildings with large occupancy loads).

701.6 (D) Ground-Fault Sensors at Alternate Locations in Standby Systems

Change Summary: New text was added to allow a ground-fault sensor to be located at an alternate location for legally required standby systems with multiple emergency sources connected to paralleling bus.

702.12 (C) Power Inlets used with Optional Standby Generators

Change Summary: New requirements were added for power inlets used with optional standby generators to ensure that disconnection of the power inlet does not occur under load.

Article 705, Part IV Microgrid Systems

Change Summary: New Part IV was added to Article 705 recognizing microgrid systems as an interconnected electric power production source.

Article 706 Energy Storage Systems

Change Summary: The new article, “Energy Storage Systems,” applies to all permanently installed energy storage systems (ESS) operating at over 50 volts ac or 60 volts dc that may be stand-alone or interactive with other electric power production sources.

708.10 (A)(2) Illuminated Faces or Indicator Lights on COPS Receptacles

Change Summary: In addition to a distinctive color or marking so as to be readily identifiable, nonlocking-type, 125-volt, 15- and 20-ampere receptacles supplied from the COPS shall also have an illuminated face or an indicator light to indicate that there is power to the receptacle.

Article 710 Stand-Alone Systems

Change Summary: A new article for “Stand-Alone Systems” was added to address the operating parameters for electric power production sources in a stand-alone mode.

Article 712 Direct Current Microgrids

Change Summary: Article 712 “Direct Current Microgrids” was added to the 2017 NEC for a power distribution system consisting of more than one interconnected dc power sources, supplying dc-dc converters(s), dc loads(s) and/or ac loads(s) powered by dc-ac inverters(s).

725.3 (M) and (N) Cable Routing Assemblies and Communications Raceways for Class 2, Class 3, and PLTC Cables

Change Summary: New requirements were added to 725.3 for cable routing assemblies and communications raceways for Class 2, Class 3 and PLTC cables.

725.135 (K)(6), (L)(6) and (M)(6) Type CMUC Undercarpet Communication Wiring and Cables under Modular Flooring and Planks

Change Summary: Type CMUC undercarpet communication wiring and cables are permitted to be installed under modular flooring and planks, as well as under carpet.

725.144, Table 725.144 Transmission of Power and Data. (Class 1, Class 2, and Class 3 Remote-Control, Signaling, and Power-Limited Circuits)

Change Summary: New 725.144 language and an accompanying Table 725.144 were added introducing a new cable Type “LP” (Limited Power) with a marked current limitation, along with a table limiting the bundling of other communication cables used for transmitting power and data.

727.4 (5) Ex. to (5) Type ITC-ER Between Cable Trays and Utilization Equipment

Change Summary: A new exception has been added for Type ITC-ER to allow transition between cable trays and between cable trays and utilization equipment or devices for a distance not to exceed 1.8 m (6 ft) without continuous support where not subject to physical damage.

760.176 (G) and 760.179 (I) Temperature Ratings and Conductor Size Markings on NPLFA and PLFA Cables

Change Summary: A new requirement was added for temperature ratings and conductor size to be marked on the jacket of NPLFA and PLFA cables when the temperature rating exceeds 60°C (140°F).

770.44 Overhead (Aerial) Optical Fiber Cables

Change Summary: New requirements were placed at 770.44 for overhead (aerial) optical fiber cables that enter a building.

770.48 (A) and (B) Optical Fiber Cables Entering Building

Change Summary: The point of entrance for optical fiber cables can now be extended when enclosed in rigid metal conduit (RMC) or intermediate metal conduit (IMC). Nonconductive outside plant optical fiber cables cannot be installed in PVC or EMT in risers, ducts and plenums for environmental air, and other places used for environmental air.

770.49 Metallic Entrance Conduit Grounding

Change Summary: All metallic conduit (not just RMC and IMC) enclosing optical fiber entrance cable must be connected by a bonding conductor or grounding electrode conductor to a grounding electrode.

770.100 (B)(3)(2) Lightning Protection Systems

Conductors

Change Summary: Revised language was added to clarify that lightning protection system conductors, (not just air terminal conductors), are not to be used as part of the grounding electrode conductor or as a grounding electrode for optical fiber systems or any communication systems.