Adoption of International Residential Code® 2024 (IRC® 2024)

Effective: September 14, 2026

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Chapter 1 Scope and Administration

Adoption of Chapter 1

The OUBCC has adopted Chapter 1 in a limited manner, recognizing the authority of and discretion possessed by jurisdictions to administer and enforce building codes. Exercising such authority and jurisdiction in a manner inconsistent with Chapter 1 must be supported by Oklahoma law.

R101.2 Scope.

R101.2 Scope. The provisions of this code shall apply to the construction, alteration, movement, enlargement, replacement, repair, equipment, use and occupancy, location, removal and demolition of detached one- and two-family dwellings and townhouses not more than three stories above grade plane in height with a separate means of egress and their accessory structures not more than three stories above grade plane in height. Exception: The following shall be permitted to be constructed in accordance with this code where provided with an automatic sprinkler system complying with Section P2904:

1. Live/work units in buildings constructed in accordance with this code ~~located in townhouses~~ and complying with the requirements of Section 508.5 of the International Building Code.
2. Owner-occupied lodging houses with four or fewer guestrooms and not more than two persons per room, provided that the facilities are protected with an automatic fire sprinkler system in accordance with Section P2904.
3. A care facility with five or fewer persons receiving custodial care within a dwelling unit.
4. A care facility with five or fewer persons receiving medical care within a dwelling unit.

5. A day care facility for Occupancy Groups other than E or I with five or fewer persons of any age receiving care within a dwelling unit.
6. A day care facility for Occupancy Groups E or I with eight to twelve children receiving such day care within a dwelling unit. This number shall include children two and one-half years or less of age.

Change Summary

This section has been modified to amend the exceptions related to live/work units to remove the language "located in townhouses;" align the requirements for lodging houses to comply with statutes in Title 74O.S.§317.1; and to align the number of children in a home day care facility with those allowed by the Oklahoma Department of Health regulations as modified in the Oklahoma Uniform Building Code Commission adoption of the International Building Code® and International Fire Code®.

Chapter 2 Definitions

BUILDING DRAIN.

BUILDING DRAIN. That part of the lowest piping of a drainage system that receives ~~collects~~ the discharge from ~~all~~ soil, waste, and other drainage ~~piping~~ pipes inside ~~the house~~ and that extends ~~30 inches (762)~~ 5 feet (1524 mm) in developed length of pipe beyond the exterior walls of the building and conveys the drainage to the building sewer.

Change Summary

This definition has been modified to align with the industry standard where the site sewer (civil) picks up 5 feet (1524 mm) outside of the building.

LIVE/WORK UNIT.

LIVE/WORK UNIT. A dwelling unit or sleeping unit in which a ~~significant~~ portion of the space includes a nonresidential use that ~~is operated by the tenant~~ complies with Section 508.5 of the International Building Code®.

Change Summary

This definition has been modified to remove a requirement for the nonresidential portion of the live/work unit to be operated by the tenant and to clarify the unit complies with Section 508.5 of the International Building Code®.

STORM SHELTER.

STORM SHELTER. A building, structure, or portions thereof, constructed in accordance with ICC 500® and designated for use during a severe wind storm event such as a hurricane or tornado.

A. Community storm shelter. A storm shelter not defined as a "Residential storm shelter."
B. Residential storm shelter. A storm shelter serving occupants of dwelling units and having an occupant load not exceeding 16 persons.

Change Summary

The definition of a "STORM SHELTER" has been added to define a building, structure or portion thereof, built to provide protection from severe wind storm events such as tornados or hurricanes.

Chapter 3 Building Planning

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

TABLE R301.2 CLIMATIC AND GEOGRAPHIC DESIGN CRITERIA

GROUND SNOW LOAD[o]	WIND DESIGN	WIND DESIGN	WIND DESIGN	WIND DESIGN	SEISMIC DESIGN CATEGORY[f]	SUBJECT TO DAMAGE FROM:	SUBJECT TO DAMAGE FROM:	SUBJECT TO DAMAGE FROM:	ICE BARRIER UNDERLAYMENT REQUIRED[h]	FLOOD HAZARDS[g]	AIR FREEZING INDEX[i]	MEAN ANNUAL TEMP[j]
	Speed[d] (mph)	Topographic effects[k]	Special wind region[l]	Windborne debris zone[m]		Weathering[a]	Frost line depth[b]	Termite[c]				
-	-	-	-	-	-	-	-	-	No	-	-	-

MANUAL J DESIGN CRITERIA[n]

Elevation	Altitude correction factor[e]	Coincident wet bulb	Indoor winter design relative humidity	Indoor winter design dry-bulb temperature	Outdoor winter design dry-bulb temperature	Heating temperature difference
-	-	-	-	-	-	-
Latitude	Daily range	Summer design gains	Indoor summer design relative humidity	Indoor summer design dry-bulb temperature	Outdoor summer design dry-bulb temperature	Cooling temperature differences
-	-	-	-	-	-	-

For SI: 1 pound per square foot = 0.0479 kPa, 1 mile per hour = 0.447 m/s.

a) Where weathering requires a higher strength concrete or grade of masonry than necessary to satisfy the structural requirements of this code, the frost line depth strength required for weathering shall govern. The weathering column shall be filled in with the weathering index, “negligible,” “moderate” or “severe” for concrete as determined from Figure R301.2(1). The grade of masonry units shall be determined from ASTM C34, ASTM C55, ASTM C62, ASTM C73, ASTM C90, ASTM C129, ASTM C145, ASTM C216 or ASTM C652.

b) Where the frost line depth requires deeper footings than indicated in Figure R403.1(1), the frost line depth strength required for weathering shall govern. The jurisdiction shall fill in the frost line depth column with the minimum depth of footing below finish grade.

c) The jurisdiction shall fill in this part of the table to indicate the need for protection depending on whether there has been a history of local subterranean termite damage.

d) The jurisdiction shall fill in this part of the table with the wind speed from the ultimate design wind speeds map [Figure R301.2(2)]. Wind exposure category shall be determined on a site-specific basis in accordance with Section R301.2.1.4.

e) The jurisdiction shall fill in this section of the table to establish the design criteria using Table 10A from ACCA Manual J or established criteria determined by the jurisdiction.

f) The jurisdiction shall fill in this part of the table with the seismic design category determined from Section R301.2.2.1.

g) The jurisdiction shall fill in this part of the table with: the date of the jurisdiction’s entry into the National Flood Insurance Program (date of adoption of the first code or ordinance for management of flood hazard areas); and the title and date of the currently effective Flood Insurance Study or other flood hazard study and maps adopted by the authority having jurisdiction, as amended.

h) In accordance with Sections R905.1.2, R905.4.3.1, R905.5.3.1, R905.6.3.1, R905.7.3.1 and R905.8.3.1, where there has been a history of local damage from the effects of ice damming, the jurisdiction shall fill in this part of the table with “YES.” Otherwise, the jurisdiction shall fill in this part of the table with “NO.”

i) The jurisdiction shall fill in this part of the table with the 100-year return period air freezing index (BF-days) from Figure R403.3(2) or from the 100-year (99 percent) value on the National Climatic Data Center data table “Air Freezing Index-USA Method (Base 32°F).”

j) The jurisdiction shall fill in this part of the table with the mean annual temperature from the National Climatic Data Center data table “Air Freezing Index-USA Method (Base 32°F).”

k) In accordance with Section R301.2.1.5, where there is local historical data documenting structural damage to buildings due to topographic wind speed-up effects, the jurisdiction shall fill in this part of the table with “YES.” Otherwise, the jurisdiction shall indicate “NO” in this part of the table.

l) In accordance with Figure R301.2(2), where there is local historical data documenting unusual wind conditions, the jurisdiction shall fill in this part of the table with “YES” and identify any specific requirements. Otherwise, the jurisdiction shall indicate “NO” in this part of the table.

m) In accordance with Section R301.2.1.2 the jurisdiction shall indicate the wind-borne debris wind zone(s). Otherwise, the jurisdiction shall indicate “NO” in this part of the table.

n) The jurisdiction shall fill in these sections of the table to establish the design criteria using Table 1a or 1b from ACCA Manual J or established criteria determined by the jurisdiction.

o) The jurisdiction shall fill in this section of the allowable stress design table using the Ground Snow Loads in Figure R301.2(3).

Change Summary

This table has been modified to fill in the blank cell in row 2 under the Ice Barrier Underlayment Required column in the first section of the table with a “no” to clarify ice and water shield is not required in Oklahoma, except as otherwise provided for in Section 905.2.1 Ice barriers.

R302.1 Exterior Walls.

R302.1 Exterior Walls. Construction, projections, openings and penetrations of the exterior walls of dwellings, townhouses and accessory buildings shall comply with Table R302.1 (1) based on fire separation distance; or dwellings and townhouses equipped throughout with an automatic fire sprinkler system installed in accordance with Section P2904 shall comply with Table R302.1 (2) based on fire separation distance.

For the purposes of determining fire separation distance, dwellings and townhouses on the same lot shall be assumed to have an imaginary line between them. Where a new dwelling or townhouses is to be erected on the same lot as an existing dwelling or townhouse, the location of the assumed imaginary line with relation to the existing dwelling or townhouses shall be such that the existing dwelling or townhouse meets requirements of the section.

Where a lot line exists between adjacent townhouse units, fire separation distance of exterior walls shall be measured to the lot line. Where a lot line does not exist between adjacent townhouse units, an imaginary line shall be assumed between the adjacent townhouse units and fire separation distance of exterior walls shall be measured to the imaginary line. Fire separation distance and requirements of Section R302.1 shall not apply to walls separating townhouse units that are required by Section R302.2. Exceptions:

1. Walls, projections, openings or penetrations in walls perpendicular to the line used to determine the fire separation distance.
2. Walls of individual dwelling units and their accessory buildings located on the same lot.
3. Detached tool sheds and storage sheds, playhouses and similar structures exempted from permits are not required to provide wall protection based on location on the lot. Projections beyond the exterior wall shall not extend over the lot line.
4. Detached garages accessory to a dwelling unit located within 2 feet (610 mm) of a lot line are permitted to have roof eave projections not exceeding 4 inches (102 mm).
5. Foundation vents installed in compliance with this code are permitted.
6. Open metal carport structures may be constructed within zero feet of the property line without fire-resistive or opening protection when the location of such is approved.

Change Summary

This section has been modified to add a sixth exception for open metal carport structures constructed within zero feet of the property line without fire-resistive or opening protection when the location of such is approved.

Table R302.1(1) Exterior Walls.

TABLE R302.1(1) EXTERIOR WALLS

EXTERIOR	WALL ELEMENT	MINIMUM FIRE-RESISTANCE RATING	MINIMUM FIRE SEPARATION DISTANCE
Walls	Fire-resistance rated	1 hour-tested in accordance with ASTM E119, UL 263, or Section ~~703.3~~ 703.2.2 of the International Building Code with exposure from both sides	0 feet
Walls	Not fire-resistance rated	0 hours	≥ ~~5~~ 3 feet

Projections	~~Not allowed~~	~~NA~~	~~< 2 feet~~
Projections	Fire-resistance rated	1 hour on the underside, or heavy timber, or fire-retardant-treated wood[a,b]	~~≥ 2 feet to < 5 feet~~ <3 feet
Projections	Not fire-resistance rated	0 hours	~~≥ 5 feet~~ > 3 feet
Openings in walls	Not allowed	NA	< 3 feet
Openings in walls	~~25% maximum of wall area~~	~~0 hours~~	~~3 feet~~
Openings in walls	Unlimited	0 hours	~~5~~ > 3 feet
Penetrations	All	Comply with Section R302.4	< 3 feet
Penetrations	All	None required	3 feet

For SI: 1 foot = 304.8 mm. NA = Not Applicable.

a) ~~Roff eave~~ The fire-resistance rating shall be permitted to be reduced to 0 hours on the underside of the eave overhang if fireblocking is provided from the wall top plate to the underside of the roof sheathing.

b) ~~Roof eave~~ The fire-resistance rating shall be permitted to be reduced to 0 hours on the underside of the rake overhang where vent openings that communicate with the attic are not installed in the overhang or gable wall.

Change Summary

This table has been modified to change the requirements for minimum fire separation distance and delete sub-rows.

Table R302.1(2) Exterior Walls - Dwellings And Townhouses With An Automatic Sprinkler System.

TABLE R302.1(2) EXTERIOR WALLS—DWELLINGS AND TOWNHOUSES WITH AN AUTOMATIC SPRINKLER SYSTEM

EXTERIOR	WALL ELEMENT	MINIMUM FIRE-RESISTANCE RATING	MINIMUM FIRE SEPARATION DISTANCE
Walls	Fire-resistance rated	1 hour—tested in accordance with ASTM E119, UL 263, or Section ~~703.3~~ 703.2.2 of the International Building Code with exposure from the outside	0 feet
Walls	Not fire-resistance rated	0 hours	3 feet[a]
Projections	~~Not allowed~~	~~NA~~	~~< 2 feet~~
Projections	Fire-resistance rated	1 hour on the underside, or heavy timber, or fire-retardant-treated wood[b,c]	2 feet[a]
Projections	Not fire- resistance rated	0 hours	3 feet
Openings in walls	Not allowed	NA	< 3 feet
Openings in walls	Unlimited	0 hours	3 feet[a]
Penetrations	All	Comply with Section R302.4	< 3 feet
Penetrations	All	None required	3 feet[a]

For SI: 1 foot = 304.8 mm.
NA = Not Applicable.

a) For residential subdivisions where all dwellings and townhouses are equipped throughout with an automatic sprinkler system installed in accordance with Section P2904, the fire separation distance for exterior walls not fire-resistance rated and for fire-resistance-rated projections shall be permitted to be reduced to 0 feet, and unlimited unprotected openings and penetrations shall be permitted, where the adjoining lot provides an open setback yard that is 6 feet or more in width on the opposite side of the property line.

b) The fire-resistance rating shall be permitted to be reduced to 0 hours on the underside of the eave overhang if fireblocking is provided from the wall top plate to the underside of the roof sheathing.

c) The fire-resistance rating shall be permitted to be reduced to 0 hours on the underside of the rake overhang where ~~gable~~ vent openings that communicate with the attic are not installed in the overhang or gable wall.

Change Summary:
This table has been modified to change the requirements for minimum fire separation distance and delete sub-rows.

R302.2.2 Common Walls.

R302.2.2 Common Walls. Common walls separating townhouse units shall be assigned a fire-resistance rating in accordance with Item 1 or 2 and shall be rated for fire exposure from both sides. Common walls shall extend to and be tight against the exterior sheathing of the exterior walls or face of exterior walls without stud cavities, and the underside of the roof sheathing. The common wall shared by two townhouse units shall be constructed without openings, plumbing or mechanical equipment, ducts or vents, other than water-filled fire sprinkler piping in the cavity of the common wall. Electrical installations shall be in accordance with Chapters 34 through 43. Penetrations of the membrane of common walls for electrical outlet boxes shall be in accordance with Section R302.4.

1. Where an automatic fire sprinkler system in accordance with Section P2904 is provided, the common wall shall be not less than a 1-hour fire-resistant-rated wall assembly tested in accordance with ASTM E119, UL 263 or Section 703.2.2 of the International Building Code.
2. For existing structures where an automatic fire sprinkler system in accordance with Section P2904 is not provided, the common wall shall be not less than a 2-hour fire resistance-rated wall assembly tested in accordance with ASTM E119, UL 263 or Section 703.2.2 of the International Building Code.

Change Summary
This section has been modified to provide clarity to the section by adding the word fire in Item 1 and adding wording to clarify item 2 is referring to existing structures.

R307.3 Required.

R307.3 Required. In addition to other applicable requirements in this code, storm shelters shall be constructed in accordance with ICC 500® except as required by Sections R307.3.1 through R307.3.4.1.

Change Summary
This section has been added to stipulate in addition to other applicable requirements in this code, storm shelters shall be constructed in accordance with ICC 500® except as required by Sections R307.3.1 through R307.3.4.1

R307.3.1 Design wind speed.

R307.3.1 Design wind speed. For storm shelters, the minimum design wind speed for the entire State of Oklahoma shall be 250 miles per hour.

Change Summary
This section has been added to modify the requirements of ICC 500® Section 304.2 to clarify the minimum design wind speed for all storm shelters in the State of Oklahoma shall be set at 250 miles per hour.

R307.3.2 In-ground storm shelters.

R307.3.2 In-ground storm shelters. When installed in the floor of a garage, the rim of the storm shelter shall be raised a minimum of 1 inch (25 mm) above the highest point of the adjacent

garage floor to resist surface drainage into the shelter. The floor around the shelter shall have an apron with a positive slope away from the shelter.

Change Summary

This section has been added to clarify for all in-ground storm shelters installed in garages, the rim of the shelter shall be raised a minimum of 1 inch (25 mm) above the highest point of the adjacent garage floor to resist surface drainage and to require the floor around the shelter to slope at a maximum slope of 1:8.

R307.3.3 Height of storm shelter.

R307.3.3 Height of storm shelter. When determining the location of natural ventilation in accordance with ICC 500® Section 702.5.1, the height of the storm shelter shall be defined as an average of the vertical dimensions from the floor elevation to the bottom of the storm shelter deck or to the underside of a hard ceiling within the storm shelter.

Change Summary

This section has been added to clarify how to determine the location of the natural ventilation openings in storm shelters in accordance with ICC 500® Section 702.5.1, by providing a definition for the height of a storm shelter to be calculated by taking the average of the vertical dimensions from the floor elevation to the bottom of the storm shelter deck or to the underside of a hard ceiling within the storm shelter.

R307.3.4 Occupant density.

R307.3.4 Occupant density. Residential storm shelters located in or adjacent to one- and two-family dwellings may exceed the occupant density in ICC 500® Table 502.4 and shall not be required to conform to the requirements of a community shelter.

Change Summary

This section has been added to modify the requirements of ICC 500® Section 501.1.1 to clarify residential storm shelters may exceed the occupant density requirements in ICC 500® Table 502.4 and not be required to conform to the requirements of a community shelter.

R307.3.4.1 Shelter quantity requirement.

R307.3.4.1 Shelter quantity requirement. If a lot contains more than one townhouse or more than one single one- or two-family residence, and a residential storm shelter is provided, there must be a minimum of one residential storm shelter provided for each dwelling unit not including accessory dwelling units (ADUs), as long as all applicable provisions of this section are met.

Each shelter must comply with the following:

1. Designated for the exclusive use of one specific dwelling unit.
2. Clearly identified and available to the designated occupants at all times.
3. Located inside a dwelling unit or within a maximum travel distance of 500 feet from the entrance of the dwelling unit it serves.

Providing a residential storm shelter to serve more than one dwelling unit shall be prohibited. Developments intending to provide shared storm shelter protection for multiple units shall be required to install a community storm shelter in accordance with ICC 500® requirements for community shelters.

Exception: Tenants of dwelling units are not prohibited from installing their own personal storm shelter. However, any such shelter must be located either inside the tenant's dwelling unit or in a private yard designated for that unit. The shelter must not be accessible to other residents of the community without the tenant's explicit consent.

Change Summary

This section has been added to clarify if a lot contains more than one townhouse or more than one single one- or two-family residence and a residential storm shelter is provided, there must be a minimum of one residential storm shelter provided for each dwelling unit, not including accessory dwelling units (ADUs) so long as applicable criteria is met.

R309.1 Townhouse automatic sprinkler systems.

R309.1 Townhouse automatic sprinkler systems. An automatic sprinkler system shall be installed in townhouses. Exceptions:

1. An automatic sprinkler system shall not be required where additions or alterations are made to existing townhouses that do not have an automatic sprinkler system installed.
2. An automatic sprinkler system shall not be required when a two-hour fire-resistance rated wall is installed between dwelling units.

Change Summary

This section has been modified to add a second exception for new townhouses to clarify a sprinkler system is not required when a two-hour fire-resistance rated wall is installed between dwelling units.

R309.2 One- and two-family dwellings automatic fire sprinkler systems.

Section R309.2 One- and two-family dwellings automatic sprinkler systems was moved to Appendix BP, Automatic Fire Systems

Change Summary

This section, including the exception, has been moved to the newly created Appendix BP, entitled "Appendix BP, Automatic Fire Systems" and is not adopted as a part of the statewide minimum code for residential construction within the State of Oklahoma. This section has been renumbered in Appendix BP to become BP101.1. Section R309.2 will stay as part of this code for numbering alignment but will not have any requirements attached to it.

R309.2.1 Design and installation.

R309.2.1 Design and installation was moved to Appendix BP, Automatic Fire Systems

Change Summary

This section has been moved to the newly created Appendix BP, entitled "Appendix BP, Automatic Fire Systems" and is not adopted as a part of the statewide minimum code for residential construction within the State of Oklahoma. This section has been renumbered in Appendix BP to become BP101.2. Section R309.2.1 will stay as part of this code for numbering alignment but will not have any requirements attached to it.

R318.1 Means of egress.

R318.1 Means of egress. Dwellings ~~units~~ or garages (attached or detached from the dwelling) shall be provided with a means of egress in accordance with this section. The means of egress shall provide a continuous and unobstructed path of vertical and horizontal egress travel from all portions

of the dwelling ~~unit~~ to the required egress door without traveling through a garage. The means of egress from the garage may travel through the adjacent dwelling. The required egress door shall open directly into a public way or to a yard or court that opens to a public way.

Change Summary

This section has been modified to specify the section requirements apply to garages as well as dwellings, while allowing the means of egress from the garage to go through an adjacent dwelling.

R318.2 Egress door.

R318.2 Egress door. Not less than one egress door shall be provided for each dwelling unit or garage. The egress door shall be side-hinged and shall provide a clear width of not less than 32 inches (813 mm) where measured between the face of the door and the stop, with the door open 90 degrees (1.57 rad). The clear height of the door opening shall not be less than 78 inches (1981 mm) in height measured from the top of the threshold to the bottom of the stop. Other doors shall not be required to comply with these minimum dimensions. Egress doors shall be readily openable from the inside of the dwelling ~~unit~~ or garage without the use of a key or special knowledge or effort.

Change Summary

This section has been modified to specify the section these requirements apply to garages, as well as dwellings.

R318.7.5.1 Risers.

R318.7.5.1 Risers. The riser height shall be not more than 7 3/4 inches (196 mm). The riser shall be measured vertically between leading edges of the adjacent treads. The greatest riser height within any flight of stairs shall not exceed the smallest by more than 3/8 inch (9.5 mm). Risers shall be vertical or sloped from the underside of the nosing of the tread above at an angle not more than 30 degrees (0.51 rad) from the vertical. At open risers, openings located more than 30 inches (762 mm), as measured vertically, to the floor or grade below shall not permit the passage of a 4-inch-diameter (102 mm) sphere. Exceptions:

1. The openings between adjacent treads is not limited on spiral stairways.
2. The riser height of spiral stairways shall be in accordance with Section R311.7.10.1.
3. The top and bottom riser in each flight of stairs may vary by 3/4 inch (19 mm).

Change Summary

This section has been modified to add a third exception that allows the top and bottom riser height to vary by 3/4 inch (19 mm).

R328.1 General.

R328.1 General. Residential swimming pools, spas, and hot tubs requiring a permit shall comply with Sections R328.2 through R328.5.

Change Summary

This section has been modified to remove the requirement for the construction of swimming pools, spas, and hot tubs to comply with the International Swimming Pool and Spa Code® to the newly created Appendix BQ, entitled "Appendix BQ, Swimming Pools, Spas and Hot Tubs," and has been renumbered in Appendix BQ to become BQ101. Section R328.1, has the same title

with new language added to require new swimming pools, spas and hot tubs requiring a permit to comply with Sections R328.2 through R328.5.

R328.2 Enclosure.

R328.2 Enclosure. Swimming pools shall be completely enclosed by a fence or barrier not less than 4 feet (1219 mm) in height or a screen enclosure. Openings in the fence or barrier shall not permit the passage of a 4-inch-diameter (102 mm) sphere. Exceptions:

1. Swimming pools, spas and hot tubs on lots in excess of 2 acres are exempt from the requirements.
2. A swimming pool with a power safety cover or a spa with a safety cover complying with ASTM F 1346 need not comply with this section.

Change Summary

This section has been added to provide enclosure requirements for residential swimming pools, spas, and hot tubs.

R328.3 Gates.

R328.3 Gates. Exterior pedestrian access doors or gates shall be self-closing and have a self-latching device. Doors or gates other than pedestrian access doors or gates shall have a self-latching device. Where the release mechanism of the self-latching device is located less than 54 inches (1372 mm) from the bottom of the door or gate, the release mechanism shall be located on the pool side of the door or gate, 3 inches (76 mm) or more below the top of the door or gate, and the door or gate and barrier shall be without openings greater than 1/2 inch (12.7 mm) within 18 inches (457 mm) of the release mechanism. Exception: Gates equipped with a locking device.

Change Summary

This section has been added to provide gate requirements for residential swimming pools, spas and hot tubs.

R328.4 Suction outlet fitting assemblies.

R328.4 Suction outlet fitting assemblies. Suction outlet fitting assemblies shall be listed and labeled in compliance with ANSI/APSP/ICC 16.

Change Summary

This section has been added to clarify all suction outlet fitting assemblies shall be listed and labeled in compliance with ANSI/APSP/ICC 16.

R328.5 Entrapment avoidance.

R328.5 Entrapment avoidance. Suction entrapment avoidance for pools and spas shall be provided in accordance with ANSI/APSP/ICC 7. Exception: Portable spas and portable exercise pools listed in accordance with UL 1563 or CSA C22.2 No 281.1.

Change Summary

This section has been modified to require suction entrapment avoidance for pools and spas to comply with ANSI/APSP/ICC 7 and provide an exception for portable spas and portable exercise pools listed in accordance with UL 1563 or CSA C22.2 No 218.1.

Chapter 4 Foundations

R402.2 Concrete.

R402.2 Concrete. Concrete shall have a minimum specified compressive strength of f 'c, as shown in Table R402.2. Concrete subject to moderate or severe weathering as indicated in Table R301.2(1) shall be air entrained as specified in Table R402.2. The maximum weight of fly ash, other pozzolans, silica fume, slag or blended cements that is included in concrete mixtures for garage floor slabs and for exterior porches, carport slabs, and steps that will be exposed to deicing chemicals shall not exceed the percentages of the total weight of the cementitious materials specified in Section 19.3.3.4 of ACI 318. Materials used to produce concrete testing thereof shall comply with the applicable standards listed in Chapters 19 and 20 of ACI 318 or ACI 332. Exception: Interior concrete slabs on grade and enclosed garage slabs are not required to be air-entrained.

Change Summary

This section has been modified to include an exception for interior concrete slabs on grade and enclosed garage slabs to the requirement the concrete be air entrained.

R403.1. General.

R403.1 General. All exterior walls shall be supported on continuous solid or fully grouted masonry or concrete footings, crushed stone footings, wood foundations, or other approved structural system that shall be of sufficient design to accommodate all loads according to Section R301 and to transmit the resulting loads to the soil within the limitations as determined by the character of the soil. Footings shall be supported on undisturbed natural soils or engineered fill. Concrete footings shall be designed and constructed in accordance with the provisions of Section R403 or in accordance with ACI 332. Concrete footings shall meet the following requirements:

1. Add 2 number four (4) rebar to all footings.
2. All cold joints between footings and foundation walls (stem walls) shall be tied together by a number four (4) rebar at every corner not to exceed 6 feet (1828 mm) o.c. with embedment of 12 inches (304 mm) into each footing and wall.

Exception: Portable structures not used as a dwelling unit not exceeding one story in height and 600 square feet (55.74 square meters) in area shall be except from the requirements of this section. In all cases, structures shall be secured to the earth or foundation/slab element in a minimum of four locations by an approved method.

Change Summary

This section has been modified to provide language specifying rebar reinforcement requirements in concrete footings.

R403.1.6 Foundation anchorage.

R403.1.6 Foundation anchorage. Wood sill plates and wood walls supported directly on continuous foundations shall be anchored to the foundation in accordance with this section.

Cold-formed steel framing shall be anchored directly to the foundation or fastened to wood sill plates anchored to the foundation. Anchorage of cold-formed steel framing shall be in

accordance with Section R505.3.1 or R603.3.1, as applicable. Wood sill plates supporting cold-formed steel framing shall be anchored to the foundation in accordance with this section.

Wood sole plates at the exterior walls on monolithic slabs, wood sole plates of braced wall panels at building interiors on monolithic slabs and all wood sill plates shall be anchored to the foundation with minimum 1/2-inch-diameter (12.7 mm) anchor bolts spaced not greater than 6 feet (1829 mm) on center or approved anchors or anchor straps spaced as required to provide equivalent anchorage to 1/2-inch-diameter (12.7 mm) anchor bolts. Bolts shall extend not less than 7 inches (178 mm) into concrete or grouted cells of concrete masonry units. The bolts shall be located in the middle third of the width of the plate. A nut and washer shall be tightened on each anchor bolt. There shall not be fewer than two bolts per plate section with one bolt located not more than 12 inches (305 mm) or less than seven bolt diameters from each end of the plate section. Interior load bearing wall sole plates ~~on monolithic slab foundation~~ that are not part of a braced wall panel shall be positively anchored with approved fasteners. Hand driven cut or concrete nails are not approved fasteners. Sill plates and sole plates shall be protected against decay and termites where required by Section R317 and R318. Exceptions:

1. Walls 24 inches (610 mm) total length or shorter connecting offset braced wall panels shall be anchored to the foundation with not less than one anchor bolt located in the center third of the plate section and shall be attached to adjacent braced wall panels at corners as shown in Item 9 of Table R602.3(1).
2. Connection of walls 12 inches (305 mm) total length or shorter connecting offset braced wall panels to the foundation without anchor bolts shall be permitted. The wall shall be attached at corners as shown in Item 9 of Table R602.3(1).
3. Wood sole plates of braced wall panels at building interiors on monolithic slabs may be anchored using connector(s) with a shear capacity of 2300 pounds and a tensile capacity of 800 pounds over a maximum span of 6 feet.

Change Summary

This section has been modified to specify hand driven cut and concrete nails are not an approved fastener and include an exception for wood sole plates of braced wall panels anchorage under specific criteria.

R403.1.7.3 Foundation Elevation.

R403.1.7.3 Foundation Elevation. This section has been stricken from the code.

Change Summary

This section has been stricken from the code.

R404.1.3.3.1.a Steel reinforcement.

R404.1.3.3.1.a. Steel reinforcement. Steel reinforcement shall comply with the requirements of ASTM A615, A706 or A996M. ASTM A99M bars produced from rail steel shall be Type R. In buildings assigned to Seismic Design Category A, B, or C, the minimum yield strength of reinforcing steel shall be 40,000 psi (Grade 40) (276 MPa). In buildings assigned to Seismic Design Category D with a subscript "0", D with a subscript "1" or D with a subscript "2", the minimum yield strength shall be 60,000 psi (Grade 60) (414 MPa).

Change Summary
This section heading number has been modified to add the letter "a" behind it to indicate there are two sections with this header number. No further changes were made to this section.

Section R404.1.3.3.7.1.b Glass Reinforced Polymer (GFRP) reinforcement.

R404.1.3.3.7.1.b Glass Reinforced Polymer (GERP) reinforcement. GFRP reinforcement complying with ASTM D7959 and designed and constructed in accordance with ACI 440.11 shall be permitted for foundation walls and spread footings not more than 48 inches (1219 mm) in height. Preformed corners must be used with GFRP reinforcement.

Change Summary
This section has been added to address the use of glass reinforced polymer for foundations and has been given the letter "b" behind the section header to indicate there are two sections with this header number and it is the second of the two.

Chapter 5 Floors

506.2.1 Post-tension reinforcement.

R506.2.1 Post-tension reinforcement. When slabs on grade are post-tension reinforced there shall be a label placed on the electric panel door that the floor is post tensioned.

Change Summary
This section has been added to require a label to be placed on the electrical panel advising the floor is post-tensioned to provide a notice to future contractors when remodeling may be needed as a life-safety measure.

R506.3.1 Fill.

R506.3.1 Fill. Fill material shall be free of vegetation and foreign material. The fill shall be compacted in 8-to-12-inch (203 mm to 305 mm) lifts to ensure uniform support of the slab, and except where approved, the fill depths shall not exceed ~~24~~ 48 inches (1220 mm) for clean sand or gravel and 8 inches (203 mm) for earth.

Change Summary
This section has been modified to provide fill lift measurements.

Chapter 6 Wall Construction

Table R602.3(1) Fastening schedule.

TABLE 602.3(1) FASTENING SCHEDULE

Item	DESCRIPTION OF BUILDING ELEMENTS	NUMBER AND TYPE OF FASTENER a, b, c	SPACING AND LOCATION
~~16~~ 17	Top or bottom plate to stud ~~k~~ i	4-8d box (2 1/2" × 0.113"); or 3-16d box (3 1/2" × 0.135"); or 4-8d common (2 1/2" × 0.131"); or 4-10d box (3" × 0.128");	Toe nail

		or 4-3" × 0.131" nails	
		3-16d box (3 1/2" × 0.135"); or 2-16d common (3 1/2" × 0.162"); or 3-10d box (3" × 0.128"); or 3-3" × 0.131" nails	End nail

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 mile per hour = 0.447 m/s; 1 ksi = 6.895 MPa

a) Nails are smooth-common, box or deformed shanks except where otherwise stated. Nails used for framing and sheathing connections are carbon steel and shall have minimum average bending yield strengths as shown: 80 ksi for shank diameter of 0.192 inch (20d common nail); 90 ksi for shank diameters larger than 0.142 inch but not larger than 0.177 inch; and 100 ksi for shank diameters of 0.142 inch or less. Connections using nails and staples of other materials such as stainless steel, shall be designed by accepted engineering practice or approved under Seciton R104.2.2.

b) RSRS-10 is a Roof Sheathing Rink Shank nail meeting the specifications of ASTM F1667.

c) Nails shall be spaced at not more than 6 inches on center at all supports where spans are 48 inches or greater.

d) Four-foot by 8-foot or 4-foot by 9-foot panels shall be applied vertically.

e) Spacing of fasteners not included in this table shall be based on Table R602.3(2).

f) For wood structural panel roof sheathing attached to gable end roof framing and to intermediate supports within 48 inches of roof edges and ridges, nails shall be spaced at 4 inches on center where the ultimate design wind speed is less than 130 mph in Exposure B or greater than 110 mph in Exposure C. Where roof framing specific gravity is greater than or equal to 0.35 but less than 0.42 in accordance with AWC NDS, fastening or roof sheathing shall be with RSRS-03 (2 1/2-inch by 0.131-inch by 0.281-inch head) nails.

g) Gypsum sheathing shall conform to ASTM C1396 and shall be installed in accordance with ASTM C1280 or GA 253. Fiberboard sheathing shall conform to ASTM C208.

h) Spacing of fasteners on floor sheathing panel edges applies to panel edges supported by framing members and required blocking and at floor perimeters only. Spacing of fasteners on roof sheathing panel edges applies to panel edges supported by framing members and required blocking. Blocking of roof or floor sheathing panel edges perpendicular to the framing members need not be provided except as required by other provisions of this code. Floor perimeter shall be supported by framing members or solid blocking.

i) Where a rafter is fastened to an adjacent parallel ceiling joist in accordance with this schedule, provide two toe nails on one side of the rafter and toe nails from the ceiling joist to top plate in accordance with this schedule. The toe nail on the opposite side of the rafter shall not be required.

j) When 7/16 inch structural sheathing is used with a minimum nailing spacing of 6 inches (152 mm) on the edge and 12 inches (305 mm) in the field, two- 3 inch x 0.131 inch nails are acceptable for end nail conditions for the top and bottom plate to stud connection.

Change Summary

This table has been amended to add a new footnote "j" to the table that is applicable to row 17 of the table.

Table R602.3(3) Requirements for Wood Structural Panel Wall Sheathing Used to Resist Wind Pressures[a, b, c, d]

TABLE 602.3(3) REQUIREMENTS FOR WOOD STRUCTURAL PANEL WALL SHEATHING USED TO RESIST WIND PRESSURES [a, b, c, d]

For SI: 1 inch = 25.4 mm, 1 mile per hour = 0.447 m/s

a) Panel strength axis parallel or perpendicular to supports. Three-ply plywood sheathing with studs spaced more than 16 inches on center shall be applied with panel strength axis perpendicular to supports.

b) Table is based on wind pressures acting toward and away from building surfaces in accordance with Section R301.2. Lateral bracing requirements shall be in accordance with Section R602.10.

c) Wood structural panels with span ratings of Wall-16 or Wall-24 shall be permitted as an alternate to panels with a 24/0 span rating. Plywood siding rated 16 o.c. or 24 o.c. shall be permitted as an alternate to panels with a 24/16 span rating. Wall-16 and Plywood siding 16 o.c. shall be used with studs spaced not more than 16 inches on center.

d) The following alternative fasteners will be acceptable with a wind exposure category of C or D, 0.099 inch x 2-1/4 inches at 3 inches o.c. along the edge and 6 inches o.c. in the field. Or 0.113 inch x 2 3/8 inch at 6 inches o.c. along the edge and 12 inches o.c. in the field.

Change Summary

This table has been modified to add footnote "d" to the table heading to allow for alternative fasteners when certain criteria is met. No changes to the table itself have been made.

R602.10.5 Minimum length of a braced wall panel.

R602.10.5 Minimum length of a braced wall panel. The minimum length of a braced wall panel shall comply with Table R602.10.5. For methods CS-WSP and CS-SFB, the minimum panel length shall be based on the adjacent clear opening height in accordance with Table R602.10.5 and Figure R602.10.5. Where a panel has an opening on either side of differing heights, the taller opening height shall be used to determine the panel length. For method CS-PF, it is permissible to begin the portal frame at 12 1/2 feet (3810 mm) from the wall line end.

Change Summary

This section has been modified to allow for the portal frame to begin at 12 1/2 feet (3810 mm) from the wall line end for CS-PF method.

R602.10.8 Braced wall panel connections.

R602.10. 8 Braced wall panel connections. Braced wall panels shall be connected to the floor framing or foundations as follows:

1. Where joists are perpendicular to a braced wall panel above or below, a rim joist, band joist or blocking shall be provided along the entire length of the braced wall panel in accordance with Figure R602.10.8(1). Fastening of top and bottom wall plates to framing, rim joist, band joist and/or blocking shall be in accordance with Table R602.3(1).

2. Where joists are parallel to a braced wall panel above or below, a rim joist, end joist or other parallel framing member shall be provided directly above and below the braced wall panel in accordance with Figure R602.10.8(2). Where a parallel framing member cannot be located directly above and below the panel, full-depth blocking at 16-inches (406 mm) spacing shall be provided between parallel framing members to each side of the braced wall panel in accordance with figure R602.10.8(2). Fastening of blocking and wall plates shall be in accordance with Table R602.3(1) and Figure R602.10.8(2).

3. Connections of braced wall panels to concrete or masonry shall be in accordance with Section R403.1.6.

4. Wood sole plates of braced wall panels at building interiors on monolithic slabs maybe anchored using connector(s) with a shear capacity of 2300 pounds and a tensile capacity of 800 pounds over a maximum span of 6 feet (1829 mm).

Change Summary

This section has been modified to include a fourth requirement to the section for anchoring wood sole plates to the building interiors on monolithic slabs using connectors with specific requirements.

R602.12 Simplified wall bracing.

R602.12 Simplified wall bracing. Buildings meeting all of the conditions listed below shall be permitted to be braced in accordance with this section as an alternate to the requirements of Section R602.10. The entire building shall be braced in accordance with this section; the use of other bracing provisions of Section R602.10, except as specified herein, shall not be permitted.

1. There shall be not more than three stories above the top of a concrete or masonry foundation or basement wall. Permanent wood foundations shall not be permitted.
2. Floors shall not cantilever more than 24 inches (610 mm) beyond the foundation or bearing wall below.
3. Wall height shall not be greater than ~~10 feet (3048 mm)~~ 12 feet (3658 mm).
4. The building shall have a roof eave-to-ridge height of ~~15 feet (4572 mm)~~ 20 feet (6096 mm) or less.
5. Exterior walls shall have gypsum board with a minimum thickness of 1/2 inch (12.7 mm) installed on the interior side fastened in accordance with Table R702.3.5.
6. The structure shall be located where the ultimate design wind speed is less than or equal to ~~130 mph (58 m/s)~~ 115 mph (51.4 m/s), and the exposure category is B or C.
7. The structure shall be located in Seismic Design Category A, B or C for detached one- and two-family dwellings or Seismic Design Category A or B for townhouses.
8. Cripple walls shall not be permitted in three-story buildings.

Change Summary

This section has been modified to change wall height, roof eave height, and wind speed conditions.

R602.12.2 Sheathing materials.

R602.12.2 Sheathing materials. The following sheathing materials installed on the exterior side of exterior walls shall be used to construct a bracing unit as defined in Section R602.12.3. Mixing materials is prohibited.

1. Wood structural panels with a minimum thickness of ~~3/8 inch (9.5 mm)~~ 7/16 inch (11.11 mm) fastened in accordance with Table R602.3(3).
2. Structural fiberboard sheathing with a minimum thickness of 1/2 inch (12.7 mm) fastened in accordance with Table R602.3(1).

Change Summary
This section has been modified to change the minimum thickness of wood structural panels.

Chapter 7 Wall Covering

R703.1 General.

R703.1 General. Exterior walls shall provide the building with a weather-resistive exterior wall envelope. The exterior wall envelope shall include flashing as described in Section R703.4. Direct Applied Exterior Finish Systems Cement Board based stucco finish and direct applied masonry or stone shall comply with the following:

1. Direct applied masonry or stone shall comply with Section R703.7.3 Water-resistive barriers and product manufacture's installation specifications.
2. Cement Board Stucco Exterior Finish Systems shall be installed per manufacturer installation instructions and meet the minimum wall assembly details below. Products that make up the finished wall system that consists of base coat, secondary coat, reinforcing mesh and finish coat shall be of same manufacturer to ensure product/material compatibility and performance.
    2.1. Approved Sheathing.
    2.2. Base flashing at bottom of walls and roofs.
    2.3. Water resistant barrier equal to or greater than 60-minute Grade D paper or ASTM D226.
    2.4. Approved Cement Board for wall application base for exterior wall ASTM C1326.
    2.5. Approved Cement Board Joint Reinforcement Coat and Mesh.
    2.6. Base Coat.
    2.7. ~~Reinforcing Mesh ASTM E2098(Alkaline Resistant)~~ Alkaline Resistant Reinforcing Mesh.
    2.8. Second Base Coat.
    2.9. Finish Coat.
    2.10. Other Design Considerations: Separation distance from finish exterior grade must be 6 inches or greater. Separation from roofs must be 1 inch or greater. Through wall flashing must be provided at horizontal locations at dissimilar materials. Expansion joints, if needed, shall comply with finish system manufacturer's recommendations. Expansion gaps are required around all windows, doors, or other dissimilar material integrated in the wall and joints are required to be sealed.

    Exception: Log walls designed and constructed in accordance with the provisions of ICC 400®.

Change Summary
This section has been modified to clarify and add requirements for direct applied exterior finish with water-resistive barrier installations.

R703.4 Flashing.

R703.4 Flashing. Approved corrosion-resistant flashing shall be applied ~~shingle-fashion~~ in a manner to prevent entry of water into the wall cavity or penetration of water to the building structural framing components. 6-mil polyethylene sheeting is an approved corrosion-resistant flashing when not exposed to UV rays. Overlapped flashing shall be applied in shingle fashion. Self-adhered membranes used as flashing shall comply with AAMA 711. Fluid-applied membranes used as flashings in exterior walls shall comply with AAMA 714. The flashing shall extend to the surface of the exterior wall finish. Flashing shall be installed above deck ledgers in accordance with Section R507.9.1.5. Approved corrosion-resistant flashings shall be installed at the following locations:

1. Exterior window and door openings. Flashing at exterior window and door openings shall ~~extend to the surface of the exterior wall finish or to the water-resistive barrier complying with Section R703.2 for subsequent drainage. Mechanically attached flexible flashings shall comply with AAMA 712. Flashing at exterior window and door openings shall~~ be installed in accordance with ~~one or more of the following~~: R703.4.1.

   ~~1.1. The fenestration manufacturer's installation instructions and flashing instructions, or for applications not addressed in the fenestration manufacturer's instructions in accordance with the flashing manufacturer's instructions. Where flashing instructions or details are not provided, flashing to be installed per 1.2, 1.3, 1.4 or, pan flashing shall be installed at the sill of exterior window and door openings. Pan flashing shall be sealed or sloped in a such a manner as to direct water to the surface of the exterior wall finish or to the water-resistive barrier for subsequent drainage. Openings using pan flashing shall incorporate flashing or protection at the head and sides.~~

   ~~1.2. In accordance with the flashing design or method of a registered design professional.~~

   ~~1.3. In accordance with other approved methods.~~

   ~~1.4. Flashing above doors are not required where the door is covered by a minimum of 3 feet.~~

2. At the intersection of chimneys or other masonry construction with frame or stucco walls, with projecting lips on both sides under stucco copings.
3. Under and at the ends of masonry, wood or metal copings and sills.
4. Continuously above all projecting wood trim.
5. Where exterior porches, decks, or stairs attach to a wall or floor assembly of wood-frame construction.
6. At wall and roof intersections.
7. At built-in gutters.

Change Summary

This section has been modified to clarify that 6-mil polyethylene sheeting is an approved corrosion-resistant flashing in certain circumstances.

R703.7.3.2 Moist or marine climates.

R703.7.3.2 Moist or marine climates. In the Moist (A) or Marine (C) climate zones indicated in Figure N1101.7, water-resistive barriers shall comply with one of the following:

1. In addition to complying with Section R703.7.3.1, a space or drainage material not less than three sixteenths inch (5 mm) in depth shall be added to the exterior side of the water-resistive barrier for direct applied materials and stucco applications, not including Stucco Finish over cementitious board.
2. In addition to complying with Section 703.7.3.1, Item 2, drainage on the exterior of the water-resistive barrier shall have a drainage efficiency of not less than 90 percent, as measured in accordance with ASTM E2273 or Annex A2 of ASTME 2925.

Change Summary

This section has been modified to clarify in option one the requirement is for direct applied materials and stucco applications, not including Stucco finish over cementitious board.

R703.8 Anchored stone and masonry veneer, general.

R703.8 Anchored stone and masonry veneer, general. Anchored stone and masonry veneer shall be installed in accordance with this chapter, Table R703.3(1) and Figure R703.8. These veneers installed over a backing of wood or cold-formed steel shall be limited to the first story above grade plane and shall not exceed 5 inches (127 mm) in thickness. See Section R602.10 for wall bracing requirements for masonry veneer for wood-framed construction and Section R603.9.5 for wall bracing requirements for masonry veneer for cold-formed steel and connections. Anchored stone walls shall have an additional layer of No. 15 asphalt felt complying with ASTM D226 for Type I felt or other approved water-resistance barrier to provide a bond break between the primary water-resistive barrier and the back side of stone or mortar.
Exceptions:

1. For buildings in Seismic Design Categories A, B, and C, exterior stone or masonry veneer, as specified in Table R703.8(1) with a backing of wood or steel framing shall be permitted to the height specified in Table R703.8(1) above a noncombustible foundation.
2. For detached one- and two-family dwellings in Seismic Design Categories D_0 ~~(subscript 0)~~, D_1 ~~(subscript 1)~~, and D_2 ~~(subscript 2)~~, exterior stone or masonry veneer, as specified in Table 703.8(2) with a backing of wood framing shall be permitted to the height specified in Table 703.8(2) above a noncombustible foundation.

Change Summary

This section has been modified to specify anchored stone walls shall have an additional layer of No. 15 asphalt felt complying with ASTM D226 for Type I felt or other water-resistive barrier to provide a bond break between the primary water-resistive barrier and the back side of the stone and mortar.

Figure R703.8(1) Typical Masonry Veneer Wall Details.

This figure's footnotes have been modified to read:

a) See Sections R703.4, R703.8.5, and R703.8.6.

b) See Section R703.2 and R703.8.4.

c) See ~~Section R703.8.4. and~~ Table ~~R703.8.4.2~~ R703.8.4(1) and Section R703.8.4.2.

~~d) See Section R703.8.3.~~

~~e~~ d) ~~Figure~~ Figures ~~R703.8~~ R703.8(1) and 703.8(2) ~~illustrates~~ illustrate typical construction details for a masonry veneer wall. For the actual mandatory requirements of this code, see the indicated sections of text. Other details of masonry veneer wall construction shall be permitted provided the requirements of the indicated sections of text are met.

~~f~~ e Flashing ~~to be done~~ shall be installed per Section R703.4, in accordance with a design from a registered design professional or in accordance with other approved methods or standard industry practices.

~~g~~ f) Flashing depicted under sill and above windows ~~are~~ shall not be required with windows that have flanges for their primary attachment. Flange type windows shall be counter flashed into the weather-resistant barrier or installed per Section R703.4 and per window manufacturer's installation instructions.

Change Summary

This figure has been modified to add footnotes "e" and "f" and "g" to the footnote section and amend the figure heading to include a superscript "e" and "f" and "g" to indicate the associated footnotes.

Figure R703.8(2) Typical Masonry Veneer Wall Details.

This figure's footnotes have been modified to read:

a) See Sections R703.4, R703.8.5, and R703.8.6.

b) See Section R703.2 and R703.8.4.

c) See Section R703.8.4(1). and Section R703.8.4.2

d) See Section R703.8.3.

e) Figures R703.8(1) and R703.8(2) illustrate typical construction details for a masonry veneer wall. For the actual mandatory requirements of this code, see the indicated sections of text. Other details of masonry veneer wall construction shall be permitted provided the requirements of the indicated sections of text are met.

f) Flashing shall be installed per Section R703.4, in accordance with a design from a registered design professional or in accordance with other approved methods or standard industry practices.

g) Flashing depicted under sill and above windows shall not be required with windows that have flanges for their primary attachment. Flange type windows shall be counter flashed into the weather-resistant barrier or installed per Section R703.4 and per window manufacturer's installation instructions.

Change Summary

This figure has been modified to add footnotes "f" and "g" to the footnote section and amend the figure heading to include a superscript "f" and "g" to indicate the associated footnotes.

Figure R703.8.2.1 Exterior Masonry Veneer Support by Steel Angles.

The figure heading has been modified to have a superscript letter "a" to indicate a new footnote is applicable. Footnote "a" has been added to read:

a) Flashing ~~to~~ shall be done per Section R703.4, in accordance with a design from a registered design professional or other approved methods as defined by the code for wall flashing.

Change Summary

This figure has been modified by adding a footnote to the figure.

Figure R703.8.2.2 Exterior Masonry Veneer Support by Roof Members.

The figure heading has been modified to have a superscript letter "a" to indicate a new footnote is applicable. Footnote "a" has been added to read:

a) Flashing ~~to~~ shall be done per Section R703.4, in accordance with a design from a registered design professional or other approved methods as defined by the code for wall flashing.

Change Summary

This figure has been modified by adding a footnote "a" to the figure.

R703.8.3.1 Allowable span.

R703.8.3.1 Allowable span. The allowable span shall not exceed the values set forth in Table R703.8.3.1. Additionally, a 3 inches x 3 inches x 3/16 inch (76 mm x 76 mm x 4.8 mm) steel angle 6 feet (1829 mm) long may be used to support 3 vertical feet (914 mm) of masonry veneer and a 3 inches x 3 inches x 3/16 inch (76 mm x 76 mm 4.8 mm) steel angle 5 feet (1524 mm) long may be used to support 4 1/4 vertical feet (1295 mm) of masonry veneer.

Change Summary

This section has been modified to provide guidance to builders using, a typical for Oklahoma, lintel.

R703.9.1 Exterior insulation and finish systems (EIFS).

R703.9.1. Exterior insulation and finish systems (EIFS). EIFS shall comply with the following:

1. ASTM E2568.
2. EIFS shall be limited to applications over substrates of concrete or masonry wall assemblies.
3. Flashing of EIFS shall be provided in accordance with the requirements of Section R703.4.
4. EIFS shall be installed in accordance with same manufacturer's ~~instruction as~~ instructions to ensure product/material compatibility and performance.
5. EIFS shall terminate not less than 6 inches (152 mm) above the finished ground level.
6. Decorative trim shall not be face-nailed through the EIFS.

Change Summary

This section has been modified to clarify EFIS shall be installed in accordance with the same product manufacturer's instructions to ensure product/material compatibility and performance.

R703.9.2 Exterior insulation and finish systems (EIFS) with drainage.

R703.9.2 Exterior insulation and finish systems (EIFS) with drainage. EIFS with drainage shall comply with the following:

1. ASTM E2568.
2. EIFS with drainage shall be required over all wall assemblies with the exception of substrates of concrete or masonry wall assemblies.

3. EIFS with drainage shall have an average minimum drainage efficiency of 90 percent when tested in accordance with ASTM E2273.
4. The water-resistive barrier shall comply with Section R703.2 or ASTM 2570.
5. The water-resistive barrier shall be applied between the EIFS and the wall sheathing.
6. Flashing of EIFS with drainage shall be provided in accordance with the requirements of Section R703.4.
7. EIFS with drainage shall be installed in accordance with the same manufacturer's instructions to ensure product/material compatibility and performance.
8. EIFS with drainage shall terminate not less than 6 inches (152 mm) above the finished ground level.
9. Decorative trim shall not be face-nailed through the EIFS.

Change Summary

This section has been modified to clarify EFIS shall be installed in accordance with the same product manufacturer's instructions to ensure product/material compatibility and performance.

Chapter 8 Roof-Ceiling Construction

R801.3 Roof drainage.

R801.3 Roof drainage. This section has been stricken from the code.

Change Summary

This section has been stricken from the code.

R802.3 Ridge.

R802.3 Ridge. A ridge board used to connect opposing rafters shall be not less than 1 inch (25 mm) nominal thickness and not less in depth than the cut end of the rafter. Where ceiling joists or rafter ties do not provide continuous ties across the structure, a ridge beam shall be ~~provided~~ designed, in accordance with acceptable engineer practices, and supported on each end of the wall or girder when roof loads exceed 10 per square foot pound dead loads and 20 per square foot pound live loads. In the case where rafters are used to support roof and finished ceiling (also known as a cathedral ceiling) with no connection of opposing rafters, ridge beam shall be designed, in accordance with acceptable engineer practices to carry one half of tributary load of the roof.

Change Summary

This section has been modified to clarify a ridge beam shall be designed in accordance with acceptable engineer practices when the roof load exceeds specific criteria to carry one-half of the tributary load.

R802.4.1 Rafter size.

802.4.1 Rafter size. Rafters shall be sized based on the rafter spans in Tables R802.4.1(1) through R802.4.1(8). Rafter spans shall be measured along the horizontal projection of the rafter. For other grades and species and for other loading conditions, refer to the AWC STJR. ~~The tabulated rafter spans in Tables R802.4.1(1) through R802.4.1(8) assume ceiling joists are~~

~~located at the bottom of the attic space or some other method of resisting the outward push of the rafter on the bearing walls, such as rafter ties is provided at that location. Where ceiling joists or rafter ties are located higher in the attic space, the rafter span in these tables shall be multiplied by the following rafter reduction factors: Where ceiling joists or rafter ties are located at one third the span of the rafter the adjustment factor is 0.67, at one quarter of the span of the rafter the rafter adjustment factor is 0.76, at one fifth the span of the rafter the adjustment factor is 0.83, at one sixth of the span of the rafter, the adjustment factor is 0.90, and at two fifteenths of the rafter or less, there is no need for adjusting the rafter capacity~~. Exception: Collar Ties. Installation of the collar ties to reduce the span of the rafters is permitted as shown in Figure R802.4.5. When collar ties are used to reduce rafter spans, the ~~Collar~~ collar ties shall be installed at every rafter and sized not less than the required size of the rafters they are connected.

Change Summary

This section has been modified to provide an exception to require collar ties to be sized not less than the required size of the rafters they are connected to.

R802.4.2 Framing details.

R802.4.2 Framing details. Rafters shall be framed opposite from each other to a ridge board, shall not be offset more than one and 1.5 inches (38 mm) from ~~or to~~ each other and shall be connected with a collar tie~~, gusset plate~~ or ridge strap in accordance with Section R802.4.6 or directly opposite from each other to a gusset plate in accordance with Table R602.3(1). Rafters shall be nailed to the top wall plates in accordance with Table R602.3 (1) unless the roof assembly is required to comply with the uplift requirements of Section R802.11. Ridge board shall not be less than 1-inch (25 mm) nominal thickness and not less in depth and one size greater than the rafters attached to it.

Where a 1-inch (25 mm) nominal thickness ridge is used, all rafters shall be framed not more than 1.5 inches (38 mm) offset from each other at the ridge board or if no ridge is used, they should be framed directly opposite from each other with a gusset plate as a tie. When a nominal 2-inch rafter is used they may be offset with no limitations.

Change Summary

This section has been modified to change the rafter framing details.

R802.4.3 Hips and valleys.

R802.4.3 Hips and Valleys. Hip and valley rafters shall be not less than 2 inches (51 mm) nominal in thickness and not less in depth than the cut end of the rafter. Hip and valley rafters shall be supported at the ridge by a brace to a bearing partition, or beam, or be designated to carry and distribute the specific load at that point. Exception: The use of a "Blind Valley," also known as a "Farmers Valley" or "California Valley" will be allowed. In this type of valley, the main roof is framed as usual, it may or may not be sheathed and the intersecting roof is framed on top of the main roof. The two valley plates or sleeps lie on the top of the main roof rafters or sheathing and provide a nailing base for the jack rafters and the ridge board of the intersecting roof. A definition of a brace includes:

1. A triangular configuration of framing members with a horizontal tie and rafter members.

2. King post or similar.

Change Summary

This section has been modified to provide an exception for the use of a "Blind Valley," and provide a definition of a brace.

R802.4.5 Purlins.

R802.4.5. Purlins. Installation of purlins to reduce the span of rafters is permitted as shown in Figure R802.4.5. Purlins shall be sized not less than the required size of the rafters that they support. Purlins shall be continuous and shall be supported by 2-inch by 4-inch (51 mm by 102 mm) braces installed to bearing walls at a slope not less than 45 degrees (0.79 rad) from the horizontal. The braces shall be spaced not more than 4 feet (1219 mm) on center and the unbraced length of the braces shall not exceed 8 feet (2438 mm). The tabulated rafter spans in Tables R802.4.1(1) through R802.4.1(8) assume ceiling joists are located at the bottom of the attic space or some other method of resisting the outward push of the rafter on the bearing walls, such as rafter ties is provided at that location. Where ceiling joists or rafter ties are located higher in the attic space, the rafter span in these tables shall be multiplied by the following rafter reduction factors: Where ceiling joists or rafter ties are located at one third the span of the rafter the adjustment factor is 0.67, at one quarter of the span of the rafter the rafter adjustment factor is 0.76, at one fifth the span of the rafter the adjustment factor is 0.83, at one sixth of the span of the rafter, the adjustment factor is 0.90, and at two fifteenths of the rafter or less, there is no need for adjusting the rafter capacity. Exception: Braces may be spaced not more than 6 feet (1829 mm) on center if:

1. The purlin brace is 2-inch by 6-inch (51 mm by 153 mm),
2. Purlins shall be sized one nominal size larger than the rafter they support, and;
3. Unbraced length of braces shall not exceed 8 feet (2438 mm).

Change Summary

This section has been modified to include an exception for spacing the braces at not more than 6 feet (1829 mm) when certain conditions are met.

R802.5.2 Ceiling joist and rafter connections.

R802.5.2 Ceiling joists and rafter connections. Where ceiling joists run parallel to rafters, they shall be connected to rafters at the top wall plate in accordance with Table R802.5.2. Where ceiling joists are not connected to the rafters at the top of the wall plate, they shall be installed in the bottom third of the rafter height in accordance with Figure R802.4.5 and Table R802.5.2(1). ~~Where the ceiling joists are installed above the bottom third of the rafter height, the ridge shall be designed as a beam.~~ Where ceiling joists do not run parallel to the rafters, the ceiling joists shall be connected to top plates in accordance with Table R602.3(1). Each rafter shall be tied across the structure with a rafter tie spaced 4 ft (1219 mm) on center. Where ceiling joists or rafter ties are not provided, the ridge formed by these rafters shall be supported by a wall or girder designed in accordance with accepted engineer practices.

Change Summary

This section has been modified to reflect current framing practices.

R802.5.2.2 Rafter ties.

R802.5.2.2 Rafter ties. Wood rafter ties shall be not less than 2 inches by 4 inches (51 mm by 102 mm) installed in accordance with Table R802.5.2(1) at a maximum of ~~24~~ 48 inches (1219 mm) on center. Other approved rafter tie methods shall be permitted.

Change Summary

This section has been modified to change the required length of the rafter ties from 24 to 48 inches on center.

R802.7.1.2 Ceiling joist taper cut.

R802.7.1.2 Ceiling joists taper cut. Taper cuts at the ends of the ceiling joists shall not exceed one-fourth the depth of the member in accordance with Figure R802.7.1.2. Exception: For ceiling joists not carrying more than 25 pounds of live load (limited attic storage) then taper cut at end of joist may be able to be increased to D/2.

Change Summary

This section has been modified to include an exception to the section requirements for ceiling joists not carrying more than a 25-pound live load for limited attic storage.

Chapter 9 Roof Assemblies

R905.1.2 Ice barriers.

R905.1.2 Ice barriers. ~~In areas where there has been a history of ice forming along the eaves causing a backup of water as designated in Table R301.2(1), an ice barrier shall be installed for asphalt shingles, metal roof shingles, mineral-surfaced roll roofing, slate and slate-type shingles, wood shingles and wood shakes. The~~ An ice barrier shall consist of not fewer than two layers of underlayment cemented together, or a self-adhering polymer-modified bitumen sheet shall be ~~used in place of normal underlayment and extend from the lowest edges of all roof surfaces to a point not less than 24 inches (610 mm) inside the exterior wall line of the building. On roofs with a slope equal to or greater than eight units vertical in 12 units horizontal (67 percent slope), ice barrier shall also be applied not less than 36 inches (914 mm) measured along the roof slope from the eave edge of the building~~ installed in the following locations:~~.~~

1. A 36-inch wide (914 mm) ice barrier shall be installed in all valleys, run the length of the valley, and centered on the valley.
2. A 36-inch wide (914 mm) ice barrier shall be installed at all change in roof pitch in which the lower roof has a lower pitch than the upper roof. The ice barrier ~~is run~~ runs the length of the change in pitch and cemented on the change in pitch.
3. For new construction, an 18-inch wide (457 mm) ice barrier shall be installed at wall and roof intersections, run the length of the wall, and be cemented on the wall and roof intersection adjacent to living space.
4. In areas where there has been a history of ice forming along the eaves causing a backup of water as designated in Table R301.2(1), an ice barrier shall be installed for asphalt shingles, metal roof shingles, mineral roll roofing, slate and slate-type shingles, wood shingles and wood shakes. The ice barrier shall be used in place of normal underlayment and extend

from the lowest edges of all roof surfaces to a pint not less than 24 inches (610 mm) inside the exterior wall line of the building. On roofs with a slope equal to or greater than eight units vertical in 12 units horizontal (76 percent slope) ice barrier shall also be applied not less than 36 inches (914 mm) measured along the roof slope from the eve edge of the building.

~~Exception: Detached accessory structures not containing conditioned floor area.~~

Change Summary

This section has been modified to clarify the conditions and locations where ice barriers shall to be installed on the roof.

R905.2.8.5 Drip edge.

R905.2.8.5 Drip edge. A drip edge shall be provided at eaves and rake edges of shingle roofs. Adjacent segments of drip edge shall be overlapped not less than 2 inches (51 mm). Drip edges shall extend not less than 1/4 inch (6.4 mm) below the roof sheathing and extend up back onto the roof deck not less than 2 inches (51 mm). Drip edges shall be mechanically fastened to the roof deck at not less than 12 inches (305 mm) o.c. with fasteners as specified in Section R905.2.5. ~~Underlayment~~ Drip edges shall be installed over the ~~drip edge~~ underlayment along ~~eves and under the underlayment along~~ rake edges. Exception: If a nominal 1 inch by 2 inch (25 mm by 51 mm) shingle mold is used, attached to the fascia and the starter course of shingles is extended a minimum of 1/4 inch (6.35 mm) and not more than 1 inch (25 mm) then a metal drip edge is not required.

Change Summary

This section has been modified to add an exception to the section when certain criteria is met.

R908.4 Roof re-cover.

R908.4 Roof re-cover. The installation of a new roof covering over an existing roof covering shall be permitted where any of the following conditions occur:

1. Where a new roof covering is installed in accordance with the roof covering manufacturer's approved instructions.
2. Complete and separate roofing systems, such as standing-seam metal roof systems, that are designed to transmit the roof loads directly to the building's structural system and do not rely on existing roofs and roof coverings for support, shall not require the removal of existing roof coverings.
3. Metal panel, metal shingle and concrete and clay tile roof coverings shall be permitted to be installed over existing wood shake roofs where applied in accordance with Section 908.4.1.
4. The application of a new protective roof coating over an existing protective roof coating, metal roof panel, metal roof shingle, mineral surfaced roll roofing, built-up roof, modified bitumen roofing, thermoset and thermoplastic single-ply roofing and spray polyurethane foam roofing system shall be permitted without tear-off of existing roof coverings.

Exceptions: A roof re-cover shall not be permitted where any of the following conditions occur:

1. Where the existing roof or roof covering is water soaked or has deteriorated to the point that the existing roof or roof covering is not adequate as a base for additional roofing.

2. Where the existing roof covering is slate, clay, cement or asbestos-cement tile.
3. Where the existing roof has two or more applications of any type of roof covering.
4. Where the existing roof has one or more application of asphalt shingles additional applications of asphalt shingles shall not be permitted.

Change Summary
This section has been modified to list a fourth exception when a roof re-cover shall not be permitted.

Chapter 11 Energy Efficiency

N1101.5 (R105.2) Information on construction documents when required by the authority having jurisdiction.

N1101.5 (R105.2) Information on construction documents when required by the authority having jurisdiction. Construction documents shall be drawn to scale on suitable material. Electronic media documents are permitted to be submitted when approved by the code official Construction documents shall be of sufficient clarity to indicate the location, nature and extent of the work proposed, and show in sufficient detail pertinent data and features of the building, systems and equipment as herein governed. Details shall include the following as applicable:

1. Energy compliance path prescriptive or performance.
2. Insulation materials and their R-values.
3. Fenestration U-factors and solar heat gain coefficients (SHGC)
4. ~~Area-weighted U-factor and solar heat gain coefficient SHGC calculations.~~
5. Mechanical system design criteria
6. Mechanical and service water heating systems and equipment types, sizes and efficiencies.
7. Equipment and systems controls.
8. Duct sealing, duct and pipe insulation and location.
9. Air sealing details to comply with Table N1102.5.1.1.

Change Summary
This section has been amended to add language to the heading to clarify it is required only if the local authority having jurisdiction has adopted the section, clarify the energy path is for prescriptive and performance, remove a requirement to include the area weighted U-factor and solar heat gain coefficient SHGC calculations from the required construction documents when they are completed, and require the air sealing details to comply with Table N1102.5.1.1.

N1101.13.1 (R401.2.1) Prescriptive Compliance Option.

N1103.13.1 (R401.2.1) The Prescriptive Compliance Option requires compliance with Sections N1101 through N1103 ~~1104 and Section N1108~~.

Change Summary
This section has been modified to delete references to Sections N1104 and N1108.

N1101.14 (R401.3) Certificate

N1101.14 (R401.3) Certificate. A permanent certificate shall be completed by the builder or other approved party and posted on a wall in the space where the furnace is located, a utility room or an approved location in inside the building. Where located on an electrical panel, the certificate shall not cover or obstruct the visibility of the circuit directory label, service disconnect label or other required labels. The certificate shall indicate the following:

1. The predominate R-values of insulation installed in or on the ceilings, roofs, walls, foundation components such as slabs, basement walls, crawl space walls and floors, and ducts outside conditioned spaces.
2. U-factors of fenestration and the solar heat gain coefficient (SHGC) of fenestration. Where there is more than one value for any component of the building thermal envelope, the certificate shall indicate both the value covering the largest area and the area weighted average value if available.
3. The results from any required duct system and building thermal envelope air leakage testing performed on the building.
4. The types, sizes and efficiencies of heating, cooling and service water-heating equipment. Where a gas-fired unvented room heater, electric furnace, or baseboard electric heater is installed in the residence, the certificate shall indicate "gas-fired unvented room heater," "electric furnace" or "baseboard electric heater," as appropriate. An efficiency is not required to be indicated for gas-fired unvented room heaters, electric furnace and electric baseboard heaters.
5. Where on-site photovoltaic panel systems have been installed, the array capacity, inverter efficiency, panel title and orientation shall be noted on the certificate.
6. For building where an Energy Rating Index score is determined in accordance with Section N1106, the Energy Rating Index score, both with and without any on-site generation, shall be listed on the certificate.
7. ~~7.~~ The code edition under which the structure was permitted and the compliance path used ~~and, where applicable, the additional efficiency measures selected for compliance with Section N1108~~.
8. The location and dimensions of a solar-ready zone where one is provided.

Change Summary

This section has been modified to delete a reference to Section N1108.

Table N1102.1.2 (R402.1.2) Maximum Assembly U-Factors[a] and Fenestration Requirements.

Table N1102.1.2 (R402.1.2) Maximum Assembly U-Factors[a] and Fenestration Requirements.

CLIMATE ZONE	0	1	2	3	4 EXCEPT MARINE	5 AND MARINE 4	6	7 AND 8
VERTICAL FENESTRATION U-FACTOR	0.50	0.50	0.40	~~0.30~~ 0.35	0.30	0.28	0.28	0.27
SKYLIGHT U-FACTOR	0.60	0.60	0.60	0.53	0.53	0.50	0.50	0.50
GLAZED VERTICAL FENESTRATION SHGC	0.25	0.25	0.25	0.25	0.40	NR	NR	NR
SKYLIGHT SHGC	0.28	0.28	0.28	0.28	0.40	NR	NR	NR
CEILING U-FACTOR	0.035	0.035	0.030	0.030	0.026	0.026	0.026	0.026

INSULATION ENTIRELY ABOVE ROOF DECK	0.039	0.039	0.039	0.039	0.032	0.032	0.032	0.028
WOOD-FRAMED WALL U-FACTOR	0.084	0.084	0.084	~~0.060~~ 0.067	0.045	0.045	0.045	0.045
MASS WALL U-FACTOR	0.197	0.197	0.165	0.098	0.098	0.082	0.060	0.057
FLOOR U-FACTOR	0.064	0.064	0.064	0.047	0.047	0.033	0.033	0.028
BASEMENT WALL U-FACTOR	0.360	0.360	0.360	0.091	0.059	0.050	0.050	0.050
UNHEATED SLAB F-FACTOR	0.73	0.73	0.73	~~0.54~~ zero	0.51	0.51	0.48	0.48
HEATED SLAB F-FACTOR	0.74	0.74	0.74	0.66	0.66	0.66	0.66	0.66
CRAWL SPACE WALL U-FACTOR	0.477	0.477	0.477	0.136	0.065	0.055	0.055	0.055

For SI: 1 foot = 304.8 mm.

a) Nonfenestration U-factors and F-factors shall be obtained from measurement, calculation, an approved source or Appendix NE where adopted or approved.

b) Mass walls shall be in accordance with Section N1102.2.6. Where more than half the insulation is on the interior, the mass wall U-factors shall not exceed 0.17 in Climate Zones 0 and 1, 0.14 in Climate Zone 2, 0.12 in Climate Zone 3, 0.087 in Climate Zone 4 except Marine, 0.065 in Climate Zone 5 and Marine 4, and 0.057 in Climate Zones 6 through 8.

c) In Warm Humid locations as defined by Figure N1101.7 and Table N 1101.7, the basement wall U-factor shall not exceed 0.360.

d) A maximum U-factor of 0.30 applies in specified Marine Climate Zone 4 and Climate Zones 5 through 8 conditions to vertical fenestration products installed in buildings located either:

1. Above 4,000 feet in elevation above sea level, or
2. In windborne debris regions where protection of openings is required by Section R301.2.1.2.

e) F-factors for slabs correspond to the R-values of Table N1102.1.3 and Section N1102.2.10.1.

Change Summary

This table has been modified to change in Climate Zone 3, the Vertical Fenestration U-Factor from "0.30" to "0.35", the Wood Frame Wall U-Factor from "0.060" to "0.067" and the Unheated slab F-factor from "0.54" to "zero."

Table N1102.1.3 (R402.1.3) Insulation Minimum R-Values and Fenestration Requirements by Component[a]

TABLE N1102.1.3 (R402.1.3) INSULATION MINIMUM R-VALUES AND FENESTRATION REQUIREMENTS BY COMPONENT[a]

CLIMATE ZONE	0	1	2	3	4 EXCEPT MARINE	5 AND MARINE 4	6	7 AND 8
VERTICAL FENESTRATION U-FACTOR	0.50	0.50	0.40	~~0.30~~ 0.35	0.30	0.28[g]	0.28[g]	0.27[g]
SKYLIGHT U-FACTOR	0.60	0.60	0.60	0.53	0.53	0.50	0.50	0.50
GLAZED VERTICAL FENESTRATION SHGC	0.25	0.25	0.25	~~0.25~~ 0.30	0.40	NR	NR	NR
SKYLIGHT SHGC	0.28	0.28	0.28	0.28	0.40	NR	NR	NR
CEILING R-VALUE	30	30	38	38	49	49	49	49
INSULATION ENTIRELY ABOVE ROOF DECK	25ci	25ci	25ci	25ci	30ci	30ci	30ci	35ci
WOOD-FRAMED WALL R-VALUE[e]	13 or 0&10ci	13 or 0&10ci	13 or 0&10ci	~~20 or 13&5ci or 0&15ci[h]~~ R-15[i]	30 or 20&5ci or 13&10ci or 0&20ci	30 or 20&5ci or 13&10ci or 0&20ci	30 or 20&5ci or 13&10ci or 0&20ci	30 or 20&5ci or 13&10ci or 0&20ci
MASS WALL R-VALUE[f]	3/4	3/4	4/6	8/13	8/13	13/17	15/20	19/21
FLOOR R-VALUE	13 or 7+5ci or 10ci	13 or 7+5ci or 10ci	13 or 7+5ci or 10ci	19 or 13+5ci or 15ci	19 or 13+5ci or 15ci	30 or 19+7.5ci or 20ci	30 or 19+7.5ci or 20ci	38 or 19+10ci or 25ci
BASEMENT WALL R-VALUE[b]	0	0	0	5ci or 13[d]	10ci or 13	15ci or 19 or 13&5ci	15ci or 19 or 13&5ci	15ci or 19 or 13&5ci
UNHEATED SLAB R-VALUE & DEPTH[c]	0	0	0	~~10ci, 2 ft~~	10ci, 3 ft	10ci, 3 ft	10ci, 4 ft	10ci, 4 ft

HEATED SLAB R-VALUE & DEPTH[c]	R-5ci edge and R-5 full slab	R-5ci edge and R-5 full slab	R-5ci edge and R-5 full slab	R-10ci, 2 ft and R-5 full slab	R-10ci, 3 ft and R-5 full slab	R-10ci, 3 ft and R-5 full slab	R-10ci, 4 ft and R-5 full slab	R-10ci, 4 ft and R-5 full slab
CRAWL SPACE WALL R-VALUE[b, e]	0	0	0	5ci or 13[d]	10ci or 13	15ci or 19 or 13&5ci	15ci or 19 or 13&5ci	15ci or 19 or 13&5ci

For SI: 1 foot = 304.8 mm.

NR = Not Required. ci = Continuous insulation.

a) R-values are minimum. U-factors and SHGC are maximum. Where insulation is installed in a cavity that is less than the label or design thickness of the insulation, the installed R-value of the insulation shall be not less than the R-value specified in the table.

b) "5ci or 13" means R-5 continuous insulation (ci) on the interior or exterior surface of the wall or R-13 cavity insulation on the interior side of the wall. "10ci or 13" means R-10 continuous insulation (ci) on the interior or exterior surface of the wall or R-13 cavity insulation on the interior side of the wall. "15ci or 19 or 13&5ci" means R-15 continuous insulation (ci) on the interior or exterior surface of the wall; or R-19 cavity insulation on the interior side of the wall; or R-13 cavity insulation on the interior of the wall in addition to R-5 continuous insulation on the interior or exterior surface of the wall.

c) Slab insulation shall be installed in accordance with Section N1102.2.10.1.

d) Basement wall insulation shall not be required in Warm Humid locations as defined by Figure N1101.7 and Table N1101.7.

e) The first value is cavity insulation; the second value is continuous insulation. Therefore, as an example, "13&5" means R-13 cavity insulation plus R-5 continuous insulation.

f) Mass walls shall be in accordance with Section N1102.2.6. The second R-value applies where more than half of the insulation is on the interior of the mass wall.

g) A maximum U-factor of 0.30 shall apply in Marine Climate Zone 4 and Climate Zones 5 through 8 to vertical fenestration products installed in buildings located either: 1. Above 4,000 feet in elevation. 2. In windborne debris regions where protection of openings is required by Section R301.2.1.2.

h) "30 or 19+7.5ci or 20ci" means R-30 cavity insulation alone or R-19 cavity insulation with R-7.5 continuous insulation or R-20 continuous insulation alone.

i) Full depth open cell foam complies with wood-framed wall R-value for 2x4 wall.

Change Summary

This table has been modified to change in Climate Zone 3, the Vertical Fenestration U-Factor from "0.32 0.30" to "0.38 0.35", the Glazed Fenestration SHGC from "0.25" to "0.30", the Ceiling R-value from "38" to "30" and the Wood Frame Wall R-Value from "R20 or 13 +5 13 +5ci or 0&15ci[h]" to indicate footnote "h" is applicable to "R13.R15[i]" to indicate footnote "i" is applicable, delete the requirement for an Unheated Slab R-Value and Depth, and add footnote "i" to the table.

N1102.2.2 (R402.2.2) Ceilings without attics.

N1102.2.2 (R404.2.2) Ceilings without attics. Where Section N1102.1.3 requires insulation R-values greater than R-30 in the interstitial space above a ceiling and below the structural roof deck, and the design of the roof/ceiling assembly does not allow sufficient space for the required insulation, the minimum required insulation R-value for such roof/ceiling assemblies shall be R-30. Insulation shall extend over the top of the wall plate to the outer edge of such plate and shall not be compressed. This reduction of insulation from the requirements of Section N1102.1.3 shall be limited to 500 square feet (46 meters squared) or 20 percent of the total insulated ceiling area, whichever is less. This reduction shall not apply to the component performance alterative in Section N1102.1.5. Exception: Where the ceiling is formed by the rafter in a slope or vaulted ceiling from plate height to ceiling level of 2 feet, that slope shall be considered an extension of the wall up to 4 feet and be insulated with R-19.

Change Summary
This section has been modified to add an exception where the ceiling is formed by the rafter in a slope or vaulted ceiling from the plate height to ceiling level of 2 feet, that the slope shall be considered an extension of the wall up to 4 feet and be insulated with R-19.

N1102.2.10.1 (R402.2.10.1) Slab-on-grade floor insulation installation.

N1102.2.10.1 (R402.2.10.1) Slab-on-grade ~~floors~~ floor insulation installation. ~~Slab-on-grade floors with a floor surface less than 12 inches (305 mm) below grade shall be insulated in accordance with Table N1102.1.2. The~~ For buildings complying with Section N1101.13.1, the slab edge continuous insulation shall extend downward from the top of the slab on the outside or inside of the foundation wall. Insulation located below grade shall ~~be extended~~ extend the vertical distance provided in Table ~~N1102.1.2~~ N1102.1.3, ~~by any combination of vertical insulating, insulation extending under the slab or insulation extending out from the building~~ but need not exceed the footing depth in accordance with Section R403.1.4. ~~Insulation~~ Where a proposed design includes insulation extending away from the building it shall be protected by pavement or by not less than 10 inches (254 mm) of soil. The top edge of the insulation installed between the exterior wall and the edge of the interior slab shall be permitted to be cut a 45-degree (0.79 rad) angle away from the exterior wall. Full-slab insulation shall be continuous under the entire area of the slab-on-grade floor, except at structural column locations and service penetrations. Slab-edge insulation ~~is not~~ required ~~in jurisdiction designated by the building official as having a very heavy termite infestation.~~ at the heated slab perimeter shall not be required to extend below the bottom of the heated slab and shall be continuous with the full slab insulation. Exception: If foundation/slab insulation is used in vertical application on inside of stem wall and a slab ledge exists, 1/2-inch insulation in vertical position is allowed as a thermal break between slab edge and foundation wall so that slab can still bear on the horizontal ledge.

Change Summary
This section has been modified to add an exception to the section under certain circumstances.

N1102.5.1.2 (R402.5.1.2) Air leakage testing where required by the authority having jurisdiction.

N1102.5.1.2 (R402.5.1.2) Air leakage testing where required by the authority having jurisdiction. The building or each dwelling unit or sleeping unit in the building shall be tested for air leakage. Testing shall be conducted in accordance with ANSI/RESNET/ICC 380, ASTM E770, ASTM E1827 or ASTM E3158 and reported at pressure differential of 0.2-inch water gauge (50 pascals). Where required by the code official, testing shall be conducted by an approved third party. A written report of the results shall be signed by the party conducting the test and provided to the code official. Testing shall be performed at any time after creation of all penetrations of the building thermal envelope has been sealed.
During testing:

1. Exterior windows and doors, fireplace and stove doors shall be closed, but not sealed, beyond the intended weather-stripping or other infiltration control measures.
2. Dampers including exhaust, intake, makeup air, backdraft and flue dampers shall be closed, but not sealed beyond intended infiltration control measures.

3. Interior doors, where installed at the time of the test, shall be open.
4. Exterior or interior terminations for continuous ventilation systems shall be sealed.
5. Heating and cooling systems, where installed at the time of the test, shall be turned off.
6. Supply and return registers, where installed at the time of the test, shall be fully open.

Exceptions:

1. 1: For heated, attached private garages and heated, detached private garages accessory to one- and two-family dwellings and townhouses not more than three stories above grade plane in height, building thermal envelope tightness and insulation installation shall be considered acceptable where the items in Table N1102.5.1.1, applicable to the method of construction, are field verified. Where required by the code official, an approved third-party independent from the installer shall inspect both the air barrier and insulation installation criteria. Heated, attached private garage space and heated detached private garage space shall be thermally isolated from all other habitable, conditioned spaces in accordance with Sections N1102.2.13 and N1102.4.2, as applicable.
2. 2: Visual inspection of air barrier shall be allowed to ensure leakage rates comply with Section N1102.5.1.3 and installation and sealing comply with Table N1102.5.1.1. by a local jurisdiction having authority or by approved third party.

Change Summary

This section has been amended to add language to the heading to clarify it is required only if the authority having jurisdiction has adopted the section and add a second exception to the section for visual testing.

N1102.5.1.3 (R402.5.1.3) Maximum air leakage rate.

N1102.5.1.3 (R402.5.1.3) Maximum air leakage rate. Where tested in accordance with Section N1102.5.1.2, the air leakage rate for buildings, dwelling units or sleeping units shall be as follows:

1. Where complying with Section N1101.13.1, the building or the dwelling units or sleeping units in the building shall have an air leakage rate not greater than 5.0 air changes per hour in Climate ~~Zones 0, 1, and 2;~~ Zone 3 ~~3.0~~ 4.0 air changes per hour in Climate ~~Zones 3 through 5; and 2.5 air changes per hour in Climate Zones 6 through 8~~ Zone 4.
2. Where complying with Section N1101.13.2 or N1101.13.3, the building or the dwelling units or sleeping units in the building shall have an air leakage rate not greater than 4.0 air changes per hour, or 0.22 cubic feet per minute square foot [1.1 L/s times meters squared)] of the building thermal envelope area or the dwelling testing enclosure area, as applicable.

Exceptions:

1. Where dwelling units or sleeping units are attached or located in an R-2 occupancy, and are tested without simultaneously testing adjacent dwelling units or sleeping units, the air leakage rate is permitted to be not greater than 0.27 cubic feet per minute per square foot [1.4 L/s times meters squared)] of testing unit enclosure area. Where adjacent dwelling units are simultaneously tested in accordance with ASTM E799, the air leakage rate is

permitted to be not greater than 0.27 cubic feet per minute per square feet [1.4 L/s times meters squared)] of the testing unit enclosure area that separates conditioned space from the exterior.

2. Where buildings have 1,500 square feet (139.4 meters squared) or less of conditioned floor area, the air leakage rate is permitted to be not greater than 0.27 cubic feet per minute per square foot [1.4 L/(s times meters squared)].

Change Summary

This section has been amended to delete non-applicable Climate Zones and change the maximum air leakage rate in Climate Zone 3 from "4.0" "5.0" air changes per hour and change the air leakage rate in Climate Zone 4 from "3.0" to "4.0" changes per hour.

N1103.3.2 Building Cavities.

N1103.3.2 (R403.3.2) Building cavities. Building cavities shall not be used as supply ductwork. Building cavities used as plenums shall be sealed and comply with M1601.1.1.

Change Summary

This section has been modified to clarify building cavities used as plenums shall be sealed and comply with Section M1601.1.1.

N1103.3.6 (R403.3.6.) Sealing

N1103.3.6 (R403.3.6.) Sealing. ~~Ducts~~ Ductwork, ~~air handler~~ air-handling units, return air and filter boxes, ~~plenums, start collar connections to plenum and filter boxes~~ shall be sealed. ~~Joints and seams shall comply with Section M1601.4.1. For duct systems with~~ In addition, all sheet metal ~~Plenums~~ plenums, start collars, or any other seam or connection to the coil, Y's and supply ~~boots~~ boot inner-liners to metal supply boots shall be sealed with only liquid applied or mastic sealants complying with 181 BM ~~(Mastic or similar) shall be used to seal inner liners and start collars to plenum and any other seams in system~~ and shall comply with Section M1601.4.1.

Change Summary

This section has been modified to add return air, all sheet metal plenums and start collar or any other seam or connection to coil, Y's and supply boot inner-liners to metal supply boots to the items that shall be sealed by liquid applied or mastic sealants that comply with 181 BM and comply with Section M1601.4.1.

N1103.3.7 (R403.3.7) Duct system testing where required by the authority having jurisdiction.

N1103.3.7 (R403.3.7) Duct system testing where required by the authority having jurisdiction. ~~(A) Ducts shall be pressure tested to determine~~ Each duct system shall be tested for air leakage in accordance with ANSI/RESNET/ICC 380 OR ASTM E1554. ~~by one of the following methods: 1: Rough-in-test:~~ Total leakage shall be measured with a pressure differential of 0.1 inch w.g. (25 Pa) across the duct system, ~~including~~ and shall include the measured leakage from the supply and return ductwork. A written report of the test results shall be signed by the party conducting the test and provided to the code official. Duct system leakage testing at either rough-in or post construction shall be permitted with or without the installation of registers or grilles. ~~the manufacturer's air handler enclosure if installed at the time of the test. Registers~~ Where installed, registers and grilles shall be ~~taped or otherwise~~ sealed during the test. Where registers and grilles are not installed, the face of the register boots shall be sealed during the test. ~~2: Post~~

~~construction test: Total leakage shall be measured with a pressure differential of 0.1 inch w.g. (25 Pa) across the entire system, including manufacturer's air handler enclosure. Registers shall be taped or otherwise sealed during the test.~~

Exceptions:

~~1: A duct air leakage test shall not be required where the ducts and air handlers are located entirely within the building thermal envelope.~~

1: ~~A duct air leakage test~~ Testing shall not be required for ~~ducts~~ duct systems serving ~~heat or energy recovery ventilators~~ ventilation systems that are not integrated with ducts serving heating or cooling systems.

2: Testing shall be required where there is not more than 10 feet (3048 mm) of total ductwork external to the space conditioning equipment and both the following are met:

2.1: The duct system is located entirely within the conditioned space.

2.2: The ductwork does not include plenums constructed of building cavities or gypsum board.

3: Where the space conditioning equipment is not installed, testing shall be permitted. The total measured leakage of the return ductwork shall be less than or equal to 3.0 cubic feet per minute (85 L/min) per 100 square feet (9.29 meters) of conditioned floor area.

4: Visual verification by Authority having Jurisdiction, approved ~~agency~~ third party or licensed inspector.

~~A written report of the results of the test shall be signed by the party conducting the test and provided to the building official.~~

Change Summary

This section has been modified to add language to the heading to clarify it is required only if the authority having jurisdiction has adopted the section and add a fourth exception for visual testing.

N1103.3.8 (R403.3.8) Duct system leakage where required by the authority having jurisdiction.

N1103.3.8 (R403.3.8) Duct system leakage where required by the authority having jurisdiction. The total measured duct system leakage shall not be greater than the values in Table 1103.3.8, based on the conditioned floor area, number of ducted returns and the location of the duct system. For buildings complying with N1105 or N1106, where duct system leakage to outside is tested in accordance with ANSI/RESNET/ICC 380 OR ASTM E1553, the leakage to the outside value shall not be used for compliance with this section, but shall be permitted to be used in the calculation procedures of Sections N1105 and N1106.

Change Summary

This section has been amended to add language to the heading to clarify it is required only if authority having jurisdiction has adopted the section.

N1103.4 (R403.4) Mechanical system piping insulation.

N1103.4 Mechanical system piping insulation ~~(Mandatory)~~. Mechanical system piping capable of carrying fluids greater than ~~105~~ 120 degrees Fahrenheit (~~41~~ 49 degrees Celsius) or less than 55 degrees Fahrenheit (13 degrees Celsius) shall be insulated to an R-value of not less than R-3 or to the manufacturer's installation instructions, whichever is more stringent.

Change Summary
This section has been modified to change the temperature the mechanical piping systems are required to carry fluids at and to add language specifying that the piping shall be insulated to a specific R-value or to the manufacturer's installation instructions, whichever is more stringent.

N1103.5 (R403.5) Service hot water systems where required by the authority having jurisdiction.

N1103.5 (R403.5) Service hot water systems where required by the authority having jurisdiction. Energy conservation measures for service hot water systems shall be in accordance with Sections N1103.5.1 through N1103.5.3

Change Summary
This section has been amended to add language to the heading to clarify it is required only if the authority having jurisdiction has adopted the section.

N1103.5.3 (R403.5.3) Hot water pipe insulation.

N1103.5.3 (R403.5.3) Hot water pipe insulation ~~(Prescriptive)~~. Insulation for hot water piping with a thermal resistance R-value of not less than R-3 shall be applied to the following:

1. ~~Piping 1 inch (25 mm) and larger in nominal diameter.~~
2. Piping serving more than one dwelling unit.
3. Piping located outside the conditioned space.
4. ~~Piping from the water heater to a distribution manifold~~
5. ~~Piping located under a floor slab.~~
6. Buried piping outside structure
7. Supply and return piping in recirculation systems other than demand recirculation systems.

Change Summary
This section has been modified to delete three of the items where insulation of the hot water pipe is required.

N1103.6.2 (R403.6.2) Fan Efficacy for whole house mechanical ventilation systems and outdoor air ventilation systems.

~~**N1103.6.2 (R403.6.2) Fan efficacy for whole-house mechanical ventilation systems and outdoor air ventilation systems.** Fans used to provide whole-dwelling mechanical ventilation shall meet the efficacy requirements of Table N1103.6.2 at one or more rating points. Fans shall be tested in accordance with the test procedure referenced by Table N1103.6.2 and listed. The airflow shall be reported in the product listing or on the label. Fan efficacy shall be reported in the product listing or shall be derived from the input power and airflow values reported in the product listing or on the label. Fan efficacy for fully ducted HRV, ERV, balanced ventilation systems and in-line fans shall be determined at a static pressure of not less than 0.2 inch water gauge (50 Pa). Fan efficacy for ducted range hoods, bathroom, and utility room fans shall be determined at a static pressure of not less than 0.1 inch water gauge (25 Pa).~~

Change Summary
This section has been stricken from the code.

Table N1103.6.2 (R403.6.2) Fan Efficacy for whole house mechanical ventilation systems and outdoor air ventilation systems.

~~SYSTEM TYPE~~	~~AIRFLOW RATE (CFM)~~	~~MINIMUM EFFICACY (CFM/WATT)~~	~~TEST PROCEDURE~~
~~HRV or ERV~~	~~Any~~	~~1.2[a]~~	~~CAN/CSA C439~~
~~Balanced ventilation system without heat or energy recovery~~	~~Any~~	~~1.2[a]~~	~~ANSI/AMCA 210-ANSI/ASHRAE 51~~
~~Range Hood~~	~~Any~~	~~2.8~~	~~ANSI/AMCA 210-ANSI/ASHRAE-51~~

Change Summary

This table has been stricken from the code.

N1103.6.3 (R403.6.3) Testing where required by the authority having jurisdiction.

N1103.6.3 (R403.6.3) Testing where required by the authority having jurisdiction. Mechanical ventilation systems shall be tested and verified to provide the minimum ventilation flow rates required by Section N1103.6 in accordance with ANSI/RESNET/ICC 380. Where required by the code official, testing shall be conducted by an approved third party. A written report of the results of the test shall be signed by the party conducting the test and provided to the code official. Exceptions:

1. Kitchen range hoods that are ducted to the outside with ducting having a diameter of 6 inches (152 mm) or larger, a length of 10 feet (3048 mm) or less, and not more than two 90-degree (1.57 rad) elbows or equivalent shall not require testing.
2. A third-party test shall not be required where the ventilation system has an integrated diagnostic tool used for airflow measurement, and a user interface that communicates the installed airflow rate.

Change Summary

This section has been amended to add language to the heading to clarify it is required only if the authority having jurisdiction has adopted the section.

N1103.6.4 (R403.6.5) Intermittent exhaust control for bathrooms and toilet rooms where required by the authority having jurisdiction.

N1103.6.4 (R403.6.5) Intermittent exhaust control for bathrooms and toilet rooms where required by the authority having jurisdiction.

Where an exhaust system serving a bathroom or toilet room is designed for intermittent operation, the exhaust system controls shall include one or more of the following:

1. A timer control with one or more delay setpoints that automatically turns off exhaust fans when the selected setpoint is reached. Not fewer than one delay-off setpoint shall be 30 minutes or less.

1. 2 An occupant sensor control with one or more delay setpoints that automatically turns off exhaust fans in accordance with the selected delay setpoint after all occupants have vacated the space. Not fewer than one delay-off setpoint shall be 30 minutes or less.
2. A humidity control with an adjustable setpoint ranging between 50 percent or more and 80 percent or less relative humidity that automatically turns off exhaust fans when the selected setpoint is reached.
3. A contaminant control that responds to a particle or gaseous concentration and automatically turns off exhaust fans when a design setpoint is reached.

Manual-off functionality shall not be used in lieu of the minimum setpoint functionality required by this section.

Exception: Bathroom and toilet room exhaust systems serving as an integral component of an outdoor air ventilation system or a whole-house mechanical ventilation system.

Change Summary

This section has been amended to add language to the heading to clarify it is required only if the authority having jurisdiction has adopted the section.

N1103.10.2 (R403.10.2) Time switches where required by the authority having jurisdiction.

1103.10.2 (R403.10.2) Time switches where required by the authority having jurisdiction.
Time switches or other control methods that can automatically turn heaters and pump motors off and on according to a preset schedule shall be installed for heaters and pump motors. Heaters and pump motors that have built-in time switches shall be in compliance with this section. Exceptions:

1. Where public health standards require 24-hour pump operation.
2. Pumps that operate on-site renewable energy and waste-heat-recovery pool heating systems.

Change Summary

This section has been amended to add language to the heading to clarify it is required only if the authority having jurisdiction has adopted the section.

N1104 (R404) Electrical Power, Lighting and Renewable Energy Systems.

This section and all subsections and tables have been stricken from the code.

N1105.1 (R405.1) Scope.

N1105.1 (R405.1) Scope. This section establishes criteria for compliance using simulated building performance analysis. Such analysis shall include heating, cooling, mechanical ventilation and service water-heating energy only. Such analysis shall be limited to dwelling units. Spaces other than dwelling units in Group R-2, R-3 or R-4 buildings shall comply with Sections N1102 and N1103 ~~through N1104~~.

Change Summary

This section has been modified to remove a reference to Section N1104.

N1105.2 Simulated building performance compliance.

N1105.2 (R405.2) Simulated building performance compliance. Compliance based on simulated building performance requires that the building comply with the following:

1. The requirements of the sections indicated within Table N1105.2
2. The proposed total building thermal envelope thermal conductance (TC) shall be less than or equal to the required total building thermal envelope TC using prescriptive U-factors and F-factors from Table N1102.1.2 multiplied by 1.08 in Climate Zones 0, 1 and 2 and 1.15 in Climate Zones 3 through 8, in accordance with Equation 11-6 and Section N1102.1.5. The area-weighted maximum fenestration SHGC permitted in Climate Zones 0 through 3 shall be 0.30.

   Equation 11-6: For Climate Zones 0-2: TC proposed design is less than or equal to 1.08 times the TC prescriptive reference design. For Climate Zones 3 -8: TC proposed design is less than or equal to 1.15 times TC prescriptive reference design.

3. For ~~each~~ all dwelling units, ~~with one or more fuel-burning appliances for space heating, water heating, or both~~, the annual energy cost of the dwelling unit shall be less than or equal to ~~80~~ 85 percent of the annual energy cost of the standard reference design. For each dwelling unit with greater than 5,000 square feet (465 square meters) of living space located above grade plane, the annual energy cost of the dwelling unit shall be reduced by an additional 5 percent of annual energy of the standard reference design. Energy prices shall be taken from an approved source, such as the US Energy Information Administration's State Energy Data System prices and expenditures reports. Code officials shall be permitted to require time-of-use pricing in energy cost calculations. **Exceptions:**

   1. The energy use based on full fuel cycle (FCC) energy expressed in Btu or Btu per square foot of conditioned floor area shall be permitted to be substituted for the energy cost. FCC energy conversions from annual site energy consumption shall use FCC factors shown in Table N1105.3.
   2. The energy use based on site energy expressed in Btu or Btu per square foot of conditioned floor area shall be permitted to be substituted for the energy cost.

Change Summary

This section has been amended to remove the requirement from Item 3 related to units with one or more fuel-burning appliance for space heating, water heating or both to have the annual energy cost of the dwelling unit be less than or equal to 80 percent of the annual energy cost of the standard reference design and modifies the first exception to allow the energy use to be based on full fuel cycle energy expressed in Btu or BTU per square foot of conditioned floor area to be substituted for energy costs utilizing conversions from Table N1105.3.

Table N1105.2 (R405.2) Requirements for Simulated Building Performances.

Table N1105.2 (R405.2) Requirements for Simulated Building Performances.

SECTION[a]	TITLE
General	**General**
N1101.14	Certificate
Building thermal envelope	**Building thermal envelope**
N1102.1.1	Vapor retarder

N1102.1.6	Rooms containing fuel-burning appliances
N1102.2.3	Attic knee wall
N1102.2.4	Eave baffle
N1102.2.5.1	Access hatch and door insulation installation and retention
N1102.2.10	Slab-on-grade floors
N1102.2.11	Crawl space walls
N1102.5.1.1	Installation
N1102.5.1.2	Air leakage testing
N1102.5.1.3	Maximum air leakage rate
N1102.5.2	Fireplaces
N1102.5.3	Fenestration air leakage
N1102.5.4	Recessed lighting
N1102.5.5	Air-sealed electrical and communication outlet boxes
N1102.6	Maximum fenestration U-factor and SHGC
Mechanical	**Mechanical**
N1103.1	Controls
N1103.2	Hot water boiler temperature reset
N1103.3	Duct systems
N1103.4	Mechanical system piping insulation
N1103.5	Service hot water systems
N1103.6	Mechanical ventilation
N1103.7, except Section N1103.7.1	Equipment sizing and efficiency rating
N1103.8	Systems serving multiple dwelling units
N1103.9.2	Snow melt and ice system controls
N1103.10	Energy consumption of pools and spas
N1103.11	Portable spas
N1103.12	Residential pools and permanent residential spas
N1103.13	Gas fireplaces
~~**Electrical power and lighting systems**~~	~~**Electrical power and lighting systems**~~
~~N1104.1~~	~~Lighting equipment~~
~~N1104.2~~	~~Interior lighting controls~~

a. Reference to a code section includes all the relative subsections except as indicated in the table.

Change Summary

This table has been modified to remove references to Section N1104.

Table N1105.3 Full Fuel Cycle Conversion Factors.

Table N1105.3 Full Fuel Cycle Conversion Factors.

ENERGY SOURCE	FFC ENERGY CONVERSION FACTOR
Fossil Fuels Delivered to Buildings	
Natural Gas	1.092
LPG or propane	1.151
Fuel oil (residual)	1.191
Fuel oil (distillate)	1.158
Coal	1.187
Gasoline	1.048
Other fuels not specified	1.098
Electricity	
AKGD-ASCC Alaska Grid	2.37
AKMS-ASCC Miscellaneous	1.82
AZNM-WECC Southwest	2.61
CAMX-WECC California	1.96
ERCT-ERCOT All	2.27

ENERGY SOURCE	FFC ENERGY CONVERSION FACTOR
FRCC-FRCC All	2.60
HIMS-HICC Miscellaneous	2.68
HIOA-HICC Oahu	3.20
MROE-MRO East	3.00
MROW-MRO West	2.27
NEWE-NPCC New England	2.40
NWPP-WECC Northwest	1.95
NYCW-NPCC NYC/Westchester	2.75
NYLI-NPCC Long Island	3.11
NYUP-NPCC Upstate NY	2.20
PRMS-Puerto Rico Miscellaneous	Not Available
RFCE-RFC East	2.78
RFCM-RFC Michigan	2.63
RFCW-RFC West	2.89
RMPA-WECC Rockies	2.40
SPNO-SPP North	2.41
SPSO-SPP South	2.89
SRMV-SERC Mississippi Valley	2.71
SRMW-SERC Midwest	2.82
SRSO-SERC South	2.70
SRTV-SERC Tennessee Valley	2.90
SRVC-SERC Virginia/Carolina	2.82
All other electricity	2.55
Thermal Energy	
Chilled water	0.60
Steam	1.84
Hot water	1.73

Change Summary

This table has been added to provide full-fuel cycle energy conversion factors for energy consumption requirements required in Section N1105.2, Item 3.

N1105.4.3 (R405.4.3) Input values.

N1105.4.3 (R405.4.3 Input values. When calculations require input values not specified by Section N1102, ~~through~~ N1103 and N1105, those input values shall be taken from an approved source.

Change Summary

This section has been modified to remove a reference to section N1104.

N1105.5.4.1 (R405.5.4.1) Compliance report for permit application where required by the authority having jurisdiction.

N1105.5.4.1 (R405.5.4.1) Compliance report for permit application where required by the authority having jurisdiction. A compliance report generated for submission with the application for building permit shall include the following:

1. Building street address or other building site identification.
2. The name of the individual performing the analysis and generating the compliance report.
3. The name and version of the compliance software tool.
4. Documentation of all inputs to the software used to produce the results for the standard reference design and the proposed design.
5. A certificate indicating that the proposed design complies with Section N1105.2. The certificate shall document the building components' energy specifications that are included

in the calculation including: component-level insulation R-values or U-factors; duct system and building thermal envelope air leakage testing assumptions; and the type and rated efficiencies of proposed heating, cooling, mechanical ventilation and service water-heating equipment to be installed. Where on-site renewable energy systems will be installed, the certificate shall report the type and production size of the proposed system.

6. Where a site-specific report is not generated, the proposed design shall be based on the worst-case orientation and configuration of the rated dwelling unit.

Change Summary

This section has been amended to add language to the heading to clarify it is required only if the authority having jurisdiction has adopted the section.

N1105.5.4.2 (R405.5.4.2) Compliance report for certificate of occupancy where required by the authority having jurisdiction.

N1105.5.4.2 (R405.5.4.2) Compliance report for certificate of occupancy where required by the authority having jurisdiction. A compliance report generated for submission prior to obtaining the certificate of occupancy shall include the following:

1. Building street address or other building site identification.
2. Declaration of the simulated building performance path on the title page of the energy report and the title page of the building plans.
3. A statement, bearing the name of the individual performing the analysis and generating the report, indicating that the as-built building complies with Section N1105.2.
4. The name and version of the compliance software tool.
5. A site-specific energy analysis report that is in compliance with the requirements of Section N1105.4, where all inputs for the proposed design have been replaced in the simulation with confirmed energy features of the as-built dwelling unit.
6. A final confirmed certificate indicating compliance based on inspection, and a statement indicating that the as-built building complies with Section N1105.2. The certificate shall report the energy features that were confirmed to be in the building, including component-level insulation R-values or U-factors; results from any required duct system and building thermal envelope air leakage testing; and the type and rated efficiencies of the heating, cooling, mechanical ventilation and service water-heating equipment installed.
7. When on-site renewable energy systems have been installed, the certificate shall report the type and production size of the installed system.

Change Summary

This section has been amended to add language to the heading to clarify it is required only if the authority having jurisdiction has adopted the section.

N1106.1 (R406.1) Scope.

N1106.1 (R406.1) Scope. This section establishes criteria for compliance using an Energy Rating Index (ERI) analysis. Such analysis shall be limited to dwelling units. Spaces other than dwelling units in Group R-2, R-3, or R-4 buildings shall comply with Sections N1102 and N1103 ~~through N1104~~.

Change Summary

This section has been modified to remove a reference to section N1104.

Table N1106.2 (R406.2) Requirements for Energy Rating Index.

TABLE N1106.2 (R406.2) REQUIREMENTS FOR ENERGY RATING INDEX

SECTION[a]	TITLE
General	**General**
N1101.14	Certificate
Building thermal envelope	**Building thermal envelope**
N1102.1.1	Vapor retarder
N1102.1.6	Rooms containing fuel-burning appliances
N1102.2.4	Eave baffle
N1102.2.5.1	Access hatches and door insulation installation and retention
N1102.2.14	Slab-on-grade floors
N1102.2.11	Crawl space walls
N1102.5.1.1	Installation
N1102.5.1.2	Air leakage testing
N1102.5.1.3	Maximum air leakage rate
N1102.5.2	Fireplaces
N1102.5.3	Fenestration air leakage
N1102.5.4	Recessed lighting
N1102.5.5	Air-sealed electrical and communication outlet boxes
N1106.3	Building thermal envelope
Mechanical	**Mechanical**
N1103.1	Controls
N1103.2	Hot water boiler temperature reset
N1103.3	Duct systems
N1103.4	Mechanical system piping insulation
N1103.5	Service hot water systems
N1103.6	Mechanical ventilation
N1103.7, except Section N1103.7.1	Equipment sizing and efficiency rating
N1103.8	Systems serving multiple dwelling units
N1103.9.2	Snow melt and ice system controls
N1103.10	Energy consumption of pools and spas
N1103.11	Portable spas
N1103.12	Residential pools and permanent residential spas
N1103.13	Gas fireplaces
~~**Electrical power and lighting systems**~~	~~**Electrical power and lighting systems**~~
~~N1104.1~~	~~Lighting equipment~~
~~N1104.2~~	~~Interior lighting controls~~

a) Reference to a code section includes all of the relative subsections except as indicated in the table.

Change Summary
This table has been modified to remove references to Section N1104.

Table N1106.5 (R406.5) Maximum Energy Rating Index.

TABLE N1106.5 (R406.5) MAXIMUM ENERGY RATING INDEX

CLIMATE ZONE	ENERGY RATING INDEX NOT INCLUDING OPP	ENERGY RATING INDEX WITH OPP
0 and 1	51	35
2	51	34
3	~~50~~ 58	~~33~~ 41
4	~~53~~ 58	~~40~~ 41
5	54	43
6	53	43
7	52	46
8	52	46

Change Summary
This table has been modified to change the Energy Rating Index Not Including OOP in Climate Zone 3 from "57 50" to "64 58" and change the Energy Rating Index With OOP from "33" to "41." The table also modifies Climate Zone 4 to change the Energy Rating Index Not Including OOP from "53" to "53" and the Energy Rating Index With OOP from "40" to "41."

N1106.7.2.1 (R406.7.2.1) Proposed compliance report for permit application where required by the authority having jurisdiction.

N1106.7.2.1 (R406.7.2.1) Proposed compliance report for permit application where required by the authority having jurisdiction. Compliance reports submitted with the application for a building permit shall include the following:

1. Building street address, or other building site identification.
2. Declare ERI on title page of building plans.
3. The name of the individual performing the analysis and generating the compliance report.
4. The name and version of the compliance software tool.
5. Documentation of all inputs entered into the software used to produce the results for the ERI referenced design and the rated design.
6. A certificate indicating that the proposed design has an ERI less than or equal to the appropriate score indicated in Table N1106.5 when compared to the ERI reference design. The certificate shall document the building component energy specifications that are included in the calculation, including: component level insulation R-values or U-factors; assumed duct system and building thermal envelope air leakage testing results; and the type and rated efficiencies of proposed heating, cooling, mechanical ventilation and service water-heating equipment to be installed. Where on-site renewable energy systems will be installed, the certificate shall report the type and production size of the proposed system.
7. When a site-specific report is not generated the proposed design shall be based on a worst-case orientation and configuration of the rated dwelling unit.

Change Summary
This section has been amended to add language to the heading to clarify it is required only if the authority having jurisdiction has adopted the section.

N1106.7.2.2 (R406.7.2.2) Confirmed compliance report for a certificate of occupancy where required by the authority having jurisdiction.

N1106.7.2.2 (R406.7.2.2) Confirmed compliance report for a certificate of occupancy where required by the authority having jurisdiction. A confirmed compliance report submitted for obtaining the certificate of occupancy shall be made site and address specific and include the following:

1. Building street address or other building site identification.
2. Declaration of ERI on the title page and on the building plans.
3. The name of the individual performing the analysis and generating the report.
4. The name and version of the compliance software tool.
5. Documentation of all inputs entered into the software used to produce the results for the ERI reference design and the as-built dwelling unit.
6. A final confirmed certificate indicating that the as-built building complies with Sections N1106.2, N1106.4 and 1106.5. The certificate shall report the energy features that were confirmed to be in the building, including: component-level insulation R-values or U-factors; results from any required duct system and building thermal envelope air leakage testing; and the type and rated efficiencies of the heating, cooling, mechanical ventilation, and service water-heating equipment installed. Where on-site renewable energy systems have been installed on or in the building, the certificate shall report the type and production size of the installed system.

Change Summary

This section has been amended to add language to the heading to clarify it is required only if the authority having jurisdiction has adopted the section.

N1106.7.3 (R406.7.3) Renewable energy certificate (REC) documentation.

This section has been stricken from the code.

N1106.7.6 Input values.

N1106.7.6 (R406.7.6) Input values. Where calculations require input values not specified by Sections N1102, N1103~~, N1104~~ and N1105, those input values shall be taken from ANSI/RESNET/ICC-301.

Change Summary

This section has been modified to remove a reference to Section N1104.

N1107.2 (R407.2) Tropical climate region.

N1107.2 (R407.2) Tropical climate region. Compliance with this section requires the following:

1. Not more than one-half of the occupied space is air conditioned.
2. The occupied space is not heated.
3. Solar, wind or other renewable energy source supplies not less than 80 percent of the energy for service water heating.

4. Glazing in conditioned spaces has a solar heat gain coefficient (SHGC) of less than or equal to 0.40, or has an overhang with a projection factor equal to or greater than 0.30.
5. This item has been stricken from the code.
6. The exterior low slope roof surface complies with one of the options in Table N1107.2 or the roof or ceiling has insulation with an R-value of R-15 or greater. Where attics are present, attics above the insulation are vented and attics below the insulation are unvented.
7. Roof surfaces have a slope of not less than 1/4 unit vertical in 12 units horizontal (2 percent slope). The finished roof does not have water accumulation areas.
8. Operable fenestration provides a ventilation area of not less than 14 percent of the floor area in each room. Alternatively, equivalent ventilation is provided by a ventilation fan.
9. Bedrooms with exterior walls facing two different directions have operable fenestration on exterior walls facing two directions.
10. Interior doors to bedrooms are capable of being secured in the open position.
11. A ceiling fan or ceiling fan rough-in is provided for bedrooms and the largest space that is not used as a bedroom.

Change Summary

This section has been modified to remove a reference to section N1104.

N1108 (R408) Additional Efficiency Requirements.

This section, including all subsections, tables and equations (1108.1 through 1108.2.11) has been stricken from the code.

N1110.2.4 (R502.2.4) Lighting.

This section has been stricken from the code.

N1110.2.5 (R502.2.5) Additional efficiency credit requirements for additions.

This section has been stricken from the code.

N1111.1.4 (R503.1.4 Lighting.

This section has been stricken from the code.

N1111.5 (R503.5) Additional efficiency credit requirements for substantial improvements.

This section has been stricken from the code.

Chapter 13 General Mechanical System Requirements

M1308.2.1 Piping through bored holes or notches.

M1308.2.1 Piping through bored holes or notches. Where piping is installed through holes or notches in framing members and is located less than 1 1/2 inches (38 mm) from the framing member face to which wall, ceiling or floor membranes will be attached, the pipe shall be protected by shield plates that cover the width of the pipe and the framing member that extend 2 inches (51 mm) to each side of the framing member. Where the framing member that the pipe passes through is a bottom plate, bottom track, top plate or top track the shield plates shall

cover the framing member and extend 2 inches (51 mm) above the bottom framing member and 2 inches (51 mm) below the top framing member.

Change Summary

This section has been modified to change the clearance distance from 1 1/4 inches to 1 1/2 inches for pipes to match modifications made in other codes adopted by the OUBCC.

M1308.2.2 Piping in other locations.

M1308.2.2 Piping in other locations. Where piping is located within a framing member and is less than 1 1/2 inches (38 mm) from the framing member face to which wall, ceiling or floor membranes will be attached, the piping shall be protected by shield plates that cover the width and length of the piping. Where piping is located outside of a framing member and is located less than 1 1/2 inches (38 mm) from the nearest edge of the face of the framing member to which the membrane will be attached, the piping shall be protected by shield plates that cover the width and length of the piping.

Change Summary

This section has been modified to change the clearance distance from 1 1/4 inches to 1 1/2 inches for pipes to match modifications made in other codes adopted by the OUBCC.

Chapter 14 Heating and Cooling Equipment and Appliances

M1411.2 Refrigeration system listing.

M1411.2 Refrigeration system listing. Refrigeration systems using Group A2L refrigerants shall be listed and labeled to UL/CSA 60335-2-40. Refrigeration systems using Group A1 refrigerants shall be listed to UL/CSA 60335-2-40 or UL 1995. Refrigerants designated as acceptable for use pursuant to and in accordance with 42 U.S.C. 7671K, provided any equipment containing such refrigerants is listed and installed in accordance with safety standards and use conditions imposed pursuant to such designation shall be allowed per 59 O.S. 1000.30. The equipment shall be installed in accordance with the listing.

Change Summary

This section has been modified to add a reference to Oklahoma statutory language in Title 59, Section 1000.30, related to the use of refrigerants.

M1411.5 Signs and identification

M1411.5 Signs and identification. Each refrigeration system using Group A2L refrigerant shall have the following information legibly and permanently indicated on a markable label provided by the equipment manufacturer:

1. Contact information of the responsible company that installed the refrigeration system.
~~2. The system refrigerant charge and the refrigerant number.~~

Change Summary

This section has been modified to remove the requirement for the system refrigerant charge and the refrigerant number to be indicated on a marked label provided by the equipment manufacturer for refrigeration systems using Group A2L refrigerant.

M1411.8 Refrigeration coils in warm-air furnaces.

M1411.8 Refrigeration coils in warm-air furnaces. Where a cooling coil is located in the supply plenum of a warm-air furnace, the furnace blower shall be rated at not less than 0.5-inch water column (124 Pa) static pressure unless the furnace is listed and labeled for use with a cooling coil. Cooling coils shall not be located upstream from heat exchangers unless listed and labeled for such use. Conversion of existing furnaces for use with cooling coils shall be permitted provided that the furnace will operate within the temperature rise specified for the furnace. The existing furnace must be compatible with the A2L safety controls as provided by the equipment manufacturer or listed and labeled components to provide shutdown in the event of refrigerant leak or alternate approved methodology.

Change Summary

This section has been modified to require an existing furnace to be compatible with A2L safety controls as provided by the equipment manufacturer or the listed and labeled components to provide shutdown in the event of a refrigerant leak or an alternate approved methodology.

M1411.9 Condensate disposal.

M1411.9 Condensate disposal. Condensate from cooling coils and evaporators shall be conveyed from the drain pan outlet to an approved place of disposal. Such piping shall maintain a minimum horizontal slope in the direction of discharge of not less than 1/8 unit vertical in 12 units horizontal (1-percent slope). Condensate drains shall be allowed to terminate to an approved pit or French drain consisting of a minimum of 24 inches by 24 inches by 24 inches (610 mm by 610 mm by 610 mm), or equivalent; of 1 inch (25 mm) washed rock. Condensate shall not discharge into a street, alley or other areas so as to cause a nuisance.

Change Summary

This section has been modified to allow condensate drains to terminate to an approved pit or French drain.

M1411.9.1.1 Water-level monitoring devices.

M1411.9.1.1 Water-level monitoring devices. On down-flow units and all other coils that do not have a secondary drain or provisions to install a secondary or auxiliary drain pan, a water-level monitoring device shall be installed inside the primary drain pan. This device shall shut off the equipment served in the event that the primary drain becomes restricted. Devices installed in the drain line shall not be permitted. Exception: This section shall not apply to appliances installed in areas outside on the ground or elevated structure where condensate overflow will not damage building components or contents.

Change Summary

This section has been modified to add an exception for when the section shall not apply.

M1411.15 Locking access port caps.

M1411.15 Locking access port caps. Refrigerant circuit access ports located outdoors shall be fitted with locking-type tamper-resistant caps or shall be otherwise secured to prevent unauthorized access. Shall apply to new and retrofit outdoor condensers only.

Change Summary

This section has been modified to specify the section will apply to new and retrofit outdoor condensers only.

Chapter 15 Exhaust Systems

M1502.3 Duct termination.

M1502.3 Duct termination. Exhaust ducts shall terminate on the outside of the building. Exhaust duct terminations shall be in accordance with the dryer manufacturer's installation instructions. If the manufacturer's instructions do not specify a termination location, the exhaust duct shall terminate not less than 3 feet (914 mm) in any direction from the openings into buildings including openings into ventilated soffits, and not ~~nor~~ less than 12 inches from finished ground level or other ~~obstacles~~ obstruction. Exhaust duct terminations shall be equipped with a backdraft damper. Additionally, exhaust shall not terminate within 3 feet (914 mm) of condensing units and a minimum 12 inches (305 mm) from the ground or any obstruction. Screens shall not be installed at the duct termination. Existing dryer terminations shall be exempt.

Change Summary

This section has been modified to add requirements for the exhaust duct to terminate a minimum of 12 inches (305 mm) above the ground or any obstructions; terminate at least 3 feet (914 mm) from any condensing unit; and exempts existing dryer terminations.

Chapter 16 Duct Systems

Table M1601.1.1 Duct Construction Minimum Sheet Metal Thickness for Single Dwelling Units.

DUCT SIZE	GALVANIZED Minimum thickness (inches)	GALVANIZED Equivalent Galvanized Gauge No.	APPROXIMATE Aluminum B and S Gauge
Round ducts and enclosed	-	-	-
Rectangular ducts	-	-	-
14 inches or less	0.013	30	26
Over 14 inches	0.016	28	24
Exposed rectangular ducts	-	-	-
14 inches or less	0.016	28	24
Over 14 inches	0.019	26	22

Change Summary

Duct construction minimum sheet metal thickness for single dwelling units has been stricken from the code and replaced with a newly created table with the same table heading.

M1601.4.1 Joints, seams, and connections.

M1601.4.1 Joints, seams and connections. Longitudinal and transverse joints, seams and connections in metallic and nonmetallic ducts shall be constructed as specified in SMACNA HVAC Duct Construction Standards-Metal and Flexible and NAIMA Fibrous Glass Duct Construction Standards. Joints, longitudinal and transverse seams, and connection in ductwork shall be securely fastened and sealed with welds, gaskets, mastics (adhesive), mastic-plus-embedded-fabric systems, liquid sealants or tapes. Tapes and mastics used to seal fibrous glass

ductwork shall be listed and labeled in accordance with UL 181A and shall be marked "181A-P" for pressure-sensitive tape, "181 A-M" for mastic or "181 A-H" for heat sensitive tape.

Tapes and mastics used to seal metallic and flexible air ducts and flexible air connectors shall comply with UL 181B and shall be marked "181 B-FX" for pressure-sensitive tape or "181 BM" for mastic. Duct connections to flanges of air distribution system equipment shall be sealed and mechanically fastened. Mechanical fasteners for use with flexible nonmetallic air ducts shall comply with UL 181B and shall be marked 181B-C. Crimps joints for round metallic ducts shall have a contact lap of not less than 1 inch (25 mm) and shall be mechanically fastened by means of not less than three sheet-metal screws or rivets equally spaced around the joint.

Closure systems used to seal all ductwork shall be installed in accordance with the manufacturers' instructions.

Exceptions:

1. Spray polyurethane foam shall be permitted to be applied without additional joint seals.
2. Where a duct connection is made that is partially inaccessible, three screws or rivets shall be equally spaced on the exposed portion of the joint so as to prevent a hinge effect.
3. For ducts having a static pressure classification of less than 2 inches of water column (500 Pa), additional closure systems shall not be required for continuously welded joints and seams and locking-type joints and seams. This exception shall not apply to snap-lock and button-lock type joints and seams that are located outside of conditioned space.
4. For duct systems with sheet metal plenums, Y's and supply boots, only liquid applied sealants complying with UL 181 BM (Mastic or similar) or equivalent method, shall be used to seal inner liners and start collars to plenum and any other seams in system.

Change Summary

This section has been modified to add a fourth exception for duct systems with sheet metal plenums, Y's and supply boots with liquid applied sealants.

Chapter 23 Solar Thermal Energy Systems

M2301.2.2.1 Roof-mounted collectors.

M2301.2.2.1 Roof-mounted collectors. The roof shall be constructed to support the loads imposed by roof-mounted solar collectors. Roof-mounted solar collectors that serve as a roof covering shall conform to the requirements for roof coverings in Chapter 9 of this code. Where mounted on or above the roof coverings, the collectors and supporting structure shall be constructed on noncombustible materials or fire-retardant-treated wood equivalent to that required for roof construction. A mechanical means of disconnect shall be installed on piping to allow the disconnecting and removal of collectors for service or replacement of the roof.

Change Summary
This section has been modified to add a requirement for a mechanical means of disconnect to be installed on piping to allow for the disconnecting and removal of collectors to service or replace the roof.

Chapter 24 Fuel Gas

G2415.12 Minimum burial depth.

G2415.12 Minimum burial depth. Underground piping systems shall be installed a minimum depth of ~~12 inches (305 mm)~~ 18 inches (457.5 mm) below grade, except as provided for in Section G2415.12.1.

Change Summary
This section has been modified to require all underground piping systems to be installed a minimum of 18 inches below grade.

G2415.17.1 (404.17.1) Limitations.

G2415.17.1 Limitations. Plastic pipe and plastic composite piping (where listed and labeled) shall be installed outdoors underground only. Plastic pipe shall not be used within or under any building or slab or be operated at pressures greater than 100 psig (689 kPa) for natural gas or 30 psig (207 kPa) for LP-gas. **Exceptions:**

1. Plastic pipe shall be permitted to terminate above ground outside of buildings where installed in premanufactured anodeless risers or service head adapter risers that are installed in accordance with the manufacturer's instructions.
2. Plastic pipe shall be permitted to terminate with a wall head adapter within buildings where the plastic pipe is inserted in a piping material for fuel gas use in buildings.
3. Plastic pipe shall be permitted under outdoor patio, walkway and driveway slaps provided that the burial depth complies with Section G2415.12.

Change Summary
This section has been modified to add plastic composite piping (where listed and labeled) to the list of piping that can be installed outdoors underground only.

Chapter 25 Plumbing Administration

P2503.4 Building sewer testing.

P2503.4 Building sewer testing. Where required by local authority having jurisdiction, the building sewer shall be tested by insertion of a test plug at the point of connection with the public sewer, filling the building sewer with water and pressurizing the sewer to not less than ~~10-foot (3048 mm)~~ 5-foot (1524 mm) head of water. The test pressure shall not decrease during a period of not less than 15 minutes. The building sewer shall be watertight at all points.

A forced sewer test shall consist of pressuring the piping to a pressure of not less than 5 psi (34.5 kPa) greater than the pump rating and maintaining such pressure for not less than 15 minutes. The forced sewer shall be watertight at all points.

Change Summary
This section has been modified to clarify that the building sewer test is only necessary when the local authority having jurisdiction requires the testing to be done and to change the building sewer test height requirement from a 10-foot high test to a 5-foot high test.

P2503.7 Water-supply system testing.

P2503.7 Water-supply system testing. Upon completion of the water-supply system or a section of it, the system or portion completed shall be tested and proved tight under a water pressure of not less than the working pressure of the system or, for piping systems other than PVC or CPVC, by an air test of not less than 50 psi (345 kPa). This pressure shall be held for not less than 15 minutes. The water used for tests shall be obtained from a potable water source. **Exception:** For PEX piping systems, testing with compressed gas shall be an alternative to hydrostatic testing where compressed air or other gas pressure testing is specifically authorized by the manufacturer's instructions for the PEX pipe and fittings products installed at the time the system is being tested, and compressed air or the gas testing is not otherwise prohibited by applicable codes, laws or regulations outside of this code.

Change Summary
This section has been modified to delete the word "plastic" and replace it with the terms "PVC" and "CPVC."

Chapter 26 General Plumbing Requirements

P2603.2.1 Protection against physical damage.

P2603.2.1 Protection against physical damage. In concealed locations, where piping, other than cast-iron or galvanized steel, is installed through holes or notches in studs, joists, rafters or similar members less than ~~1 ¼~~ 1 1/2 inches (38 mm) from the nearest edge of the member, the pipe shall be protected by steel shield plates. ~~Such shield plates shall have a thickness of not less than 0.0575 inch (1.463mm) (No. 16 Gage).~~ Such plates shall cover the area of the pipe where the member is notched or bored and shall extend not less than 2 inches (51 mm) above sole plates and below top plates.

Change Summary
This section has been modified to change the installation sizing requirement of the holes or notches in studs, joists, rafters or similar members for piping other than cast-iron or galvanized steel from "1 1/4 inches (32 mm)" to "1 1/2 inches (38 mm)."

P2603.4 Pipes through foundation walls.

P2603.4 Pipes through foundation walls. A pipe that passes through a foundation wall shall be provided with a relieving arch, or a pipe sleeve shall be built into the foundation wall. The relieving arch or pipe sleeve shall conform to one of the materials and standards listed in Table P3002.1(2). The sleeve shall be two pipe sizes greater than the pipe passing through the wall.

Change Summary
This section has been modified to add a requirement for the relieving arch or pipe sleeve to comply with the materials and standards listed in Table 3002.1(2).

P2603.5.1 Sewer depth.

P2603.5.1 Sewer depth. Building sewers that connect to private sewage disposal systems shall be not less than 12 inches (305 mm) or as approved by the authority having jurisdiction below finished grade at the point of septic tank connection. Building sewers shall be not less than 12 inches (305 mm) below grade.

Change Summary

This section has been modified to include a depth for the septic tank connection unless otherwise approved by the authority having Jurisdiction.

Chapter 27 Plumbing Fixtures

P2705.1 General.

P2705.1 General. The installation of fixtures shall conform to the following:

1. Floor-outlet or floor-mounted fixtures shall be secured to the drainage connection and to the floor, where so designed, by screws, bolts, washers, nuts and similar fasteners of copper, copper alloy, or other corrosion-resistant material.
2. Wall-hung fixtures shall be rigidly supported so that the strain is not transmitted to the plumbing system.
3. Where fixtures come into contact with walls and floors, the contact area shall be watertight.
4. Plumbing fixtures shall be usable.
5. Water closets, urinals, lavatories, and bidets. A water closet, urinal, lavatory or bidet shall not be set closer than 15 inches (381 mm) from its center to any side wall, partition, ~~or~~ vanity or other obstruction. Where partitions or other obstructions do not separate adjacent water closets, urinals or bidets, these fixtures shall not be set closer than 30 inches (762 mm) center-to-center between adjacent ~~fixtures~~ water closets, urinals, or bidets. There shall be a clearance of not less than 21 inches (533 mm) in front of a water closet, urinal, lavatory or bidet to any wall, fixture, or door.
6. The location of piping, fixtures or equipment shall not interfere with the operation of windows or doors.
7. In flood hazard areas as established by Table R301.2(1), plumbing fixtures shall be located or installed in accordance with Section ~~R322.1.6~~ R306.1.6.
8. Integral fixture-fitting mounting surfaces on manufactured plumbing fixtures or plumbing fixtures constructed on site, shall meet the design requirements of ASME A112.19.1/CSA ~~B41.1~~ B45.1 or ASME A112.19.3/CSA B45.4.
9. Vanity countertops shall be permitted to extend a maximum of 1.5 inches (38.1 mm) into the water closet floor space.

Change Summary

This section has been modified to add a ninth requirement for fixtures to conform to that specifies vanity countertops are permitted to extend a specific length into the water closet floor

space and clarify where partitions or other obstructions do not separate adjacent water closets, urinals or bidets, those fixtures shall not be set closer than 30 inches center to center between adjacent water closets, urinals or bidets.

P2709.2 Lining required.

P2709.2 Lining required. Where required by the authority having jurisdiction, the adjoining walls and floor framing enclosed on-site built-up shower receptors shall be lined with one of the following materials:

1. Sheet lead.
2. Sheet copper.
3. Plastic liner material complies with ASTM D 4068 or ASTM D 4551.
4. Hot mopping in accordance with Section P2709.2.3.
5. Sheet-applied load bearing, bonded waterproof membranes that comply with ANSI A118.10.

The lining material shall extend not less than ~~3~~ 2 inches (~~76~~ 51 mm) beyond or around the rough jambs and not less than ~~3~~ 2 inches (~~76~~ 51 mm) above finished thresholds. Sheet-applied load bearing, bonded waterproof membranes shall be applied in accordance with the manufacturer's installation instructions.

Change Summary

This section has been modified to clarify it is only effective where required by the authority having jurisdiction and to change the distance the lining material must extend from 2 inches to 3 inches (51 mm to 76 mm).

Chapter 28 Water Heaters

P2801.6.1 Stands and/or platforms.

P2801.6.1 Stands and/or platforms. Where water heaters are required to be elevated, they shall be placed on a stand or platform that is structurally appropriate for the intended load of the water heater and its contents.

Change Summary

This section has been added to improve public safety by preventing unsafe, makeshift stands for water heaters.

P2802.3 Solar water heater panels means of disconnect.

P2802.3 Solar Water heater panels means of disconnect. When solar water heater panels are installed on the roof, a union shall be installed on all piping entering and exiting the solar panel to allow a mechanical means of disconnect for service or replacement of the roof.

Change Summary

This section has been added to specify when solar water heater panels are installed on a roof, a union will be installed on all piping entering and exiting the solar panel to allow for a mechanical means of disconnect for service or replacement of the roof.

P2904.1.1 Required sprinkler locations.

P2904.1.1 Required sprinkler locations. Sprinklers shall be installed to protect all areas of a townhouse dwelling unit.

1. Attics, crawl spaces and normally unoccupied concealed spaces that do not contain fuel-fired appliances do not require sprinklers. In attics, crawl spaces and normally unoccupied concealed spaces that contain fuel-fired equipment, a sprinkler shall be installed above the equipment; however, sprinklers shall not be required in the remainder of the space.
2. Clothes closets, linen closets, and pantries not exceeding 24 square feet (2.2 meters squared) in area with the smallest dimension not greater than 3 feet (915 mm) and having wall and ceiling surfaces of gypsum board.
3. Bathrooms not more than 55 square feet (5.1 square meters) in area.
4. Garages; carports; exterior porches; unheated entry areas, such as mud rooms, that are adjacent to an exterior door and similar spaces.

Exception: An automatic fire sprinkler system shall not be required when a two-hour fire-resistance rated wall is installed between dwelling units.

Change Summary

This section has been modified to clarify sprinklers shall only be installed to protect all areas of a townhouse dwelling unit and add an exception to the section when a two-hour fire-resistance rated wall is installed between dwelling units.

P2906.4 Water service pipe.

P2906.4 Water service pipe. Water service pipe shall conform to NSF 61 and shall conform to one of the standards indicated in Table P2906.4. Water service pipe or tubing, installed underground and outside of the structure, shall have a minimum working pressure rating of not less than 160 pounds per square inch at 73 degrees Fahrenheit (1103 kPa at 23 degrees Celsius). Where the water pressure exceeds 160 pounds per square inch, (1103 kPa), piping material shall have a rated working pressure equal to or greater than the highest available pressure. Water service piping materials not third-party certified for water distribution shall terminate at ~~or before the full open valve located at the entrance to the structure~~ least 30 inches outside the exterior wall. Ductile iron water service piping shall be cement or mortar lined in accordance with AWWA C104/A21.4.

Change Summary

This section has been modified to require piping materials not third-party certified for water distribution, to terminate at least 30 inches outside of the exterior wall. It has also been modified to strike the requirement of the termination to be before the full open valve located at the entrance to the structure.

Chapter 30 Sanitary Drainage

P3003.2 Prohibited joints.

P3003.2 Prohibited joints. Running threads and bands shall not be used in the drainage system. Drainage and vent piping shall not be drilled, tapped, burned, or welded. The following types of joints and connections shall be prohibited:

1. Cement or concrete.
2. Mastic or hot-pour bituminous joints.
3. Joints made with fittings not approved for the specific installation.
4. Joints between different diameter pipes made with elastomeric rolling O-rings.
5. Solvent-cement joints between different types of plastic pipe except where provided for in section P3003.13.4.
6. Saddle-type fittings. Exception: Where approved by the jurisdiction, saddle-type fittings shall be permitted to connect the building sewer to a public sewer.

Change Summary

This section has been modified to include an exception for "Saddle-type" fittings.

P3008.4 Location.

P3008.4 Location. Backwater valves shall be installed so that access is provided to the working parts. Backwater valves shall be a maximum of 24 inches deep below finish grade. Exception: Extendable type backwater valves.

Change Summary

This section has been amended to clarify backwater valves shall be a maximum of 24 inches deep below the finished grade with an exception for extendable type backwater valves.

Chapter 36 Services

E3601.8 Emergency disconnects.

This section has been stricken from the code.

Chapter 39 Power and Lighting Distribution

E3902.14 Outdoor outlets.

E3902.14 Outdoor outlets. All outdoor outlets, including outlets installed in the following locations, and supplied by single-phase branch circuits rated 150 volts or less to ground, 50 amperes or less, shall be provided with GFCI protection:

1. Garages that have floors located at or below grade level.
2. Accessory buildings.
3. Boathouses.

Exceptions:

1. GFCI protection shall not be required on lighting outlets other than those covered in Section 210.8(F) of NFPA 70.
2. GFCI protection shall not be required for receptacles that are not readily accessible and are supplied by a branch circuit dedicated to electric snow-melting, deicing, or pipeline and vessel heating equipment where such equipment is protected as required by NFPA 70.
3. ~~3.~~ GFCI protection shall not be required for listed HVAC equipment. ~~This exception shall expire September 1, 2026.~~
4. GFCI protection shall not be required for refrigerators or freezers in garages.

Change Summary

This section has been modified to remove the expiration date in exception number 3 and add a fourth exception for refrigerators or freezers in garages.

Chapter 41 Appliance Installation

E4101.3.1 Gas-fired central furnaces.

4101.3.1 Gas-fired central furnaces. Gas-fired furnaces supplying dwelling units shall be permitted to be connected by a flexible code-and-plug. The flexible cord shall have an equipment grounding conductor and be terminated into a grounding-type attachment plug. The cord and attachment plug shall have sufficient ampacity for the load, and shall be routed or otherwise protected to prevent physical damage to the cord or attachment plug. The cord length shall not be greater than 9 feet.

Change Summary

Section 4101.3 1. Gas-fired central furnaces has been added to the code to correlate with a change made to the adoption of the National Electrical Code.

Chapter 42 Swimming Pools

E4204.2 Bonded Parts.

E4204.2 Bonded Parts. The parts of pools, spas, and hot tubs specified in Items 1 through 7 shall be bonded together using insulated, covered or bare solid copper conductors not smaller than 8 AWG or using rigid metal conduit of brass or other identified corrosion-resistant metal. Connections to bonded parts shall be made in accordance with Section E3406.14. An 8 AWG or larger solid copper bonding conductor provided to reduce voltage gradients in the pool, spa, or hot tub area shall not be required to be extended or attached to remote panelboards, service equipment, or electrodes. [680.26(B)]

1. Conductive pool shells. Bonding to conductive pool shells shall be provided as specified in Item 1.1 or 1.2. Cast-in-place concrete, pneumatically applied or sprayed concrete, and concrete block with painted or plastered coatings shall be considered to be conductive materials because of their water permeability and porosity. Reconstructed pool shells shall also meet the requirements of this section. Vinyl liners and fiberglass composite shells shall

be considered to be nonconductive materials and not subject to these requirements. **Exception:** Bonding of conductive pool shells shall not be deemed to satisfy the pool water bonding requirement unless a listed conductive surface meeting the requirements of this section is in direct contact with the pool water.

1.1 Structural reinforcing steel. Unencapsulated structural reinforcing steel shall be bonded together by steel tie wires or the equivalent. Where structural reinforcing steel is encapsulated in a nonconductive compound, a copper conductor grid shall be installed in accordance with Item 1.2.

1.2. Copper conductor grid. A copper conductor grid shall be provided and shall comply with Items 1.2.1 through 1.2.4:

1.2.1. It shall be constructed of minimum 8 AWG bare solid copper conductors bonded to each other at all points of crossing.

1.2.2. It shall conform to the contour of the pool.

1.2.3. It shall be arranged in a 12-inch (305 mm) by 12-inch (305 mm) network of conductors in a uniformly spaced perpendicular grid pattern with a tolerance of 4 inches (102 mm).

1.2.4. It shall be secured within or under the pool not more than 6 inches (152 mm) from the outer contour of the pool shell. [680.26(B)(1)]

2. Perimeter surfaces. The perimeter surface to be bonded shall be considered to extend for 3 feet (914 mm) horizontally beyond the inside walls of the pool while also at a height between 3 feet (914 mm) above and 2 feet (610 mm) below the maximum water level. The perimeter surface shall include unpaved surfaces, concrete and other types of paving. Perimeter surfaces that are separated from the pool by a permanent wall or building 5 feet (1524 mm) or more in height shall require equipotential bonding only on the pool side of the permanent wall or building. Bonding to perimeter surfaces shall be provided as specified in Item 2.1 or 2.2, 2.3 and 2.4. For conductive pool shells where bonding to perimeter surfaces is required, it shall be attached to the pool, spa, or hot tub reinforcing steel or copper conductor grid at a minimum of four points uniformly spaced around the perimeter of the pool, spa, or hot tub, or if the bonded perimeter surface does not surround the entire pool, it shall be attached to the pool, spa or hot tub reinforcing steel or copper gird at a minimum of four uniformly spaced points along the bonded perimeter surface. For nonconductive pool shells, where bonding to the perimeter surfaces is required, bonding at four points shall not be required, and the bonding shall be attached to the 8 WAG copper equipotential bonding conductor and, if present, to any conductive support for the pool, spa or hot tub. **Exceptions:**

1. Equipotential bonding of perimeter surfaces shall not be required for spas and hot tubs where all of the following conditions apply:

1.1. The spa or hot tub is listed as a self-contained spa for above-ground use.

1.2. The spa or hot tub is not identified as suitable only for indoor use.

1.3. The installation is in accordance with the manufacturer's instructions and is located on or above grade.

1.4. The top rim of the spa or hot tub is not less than 28 inches (711 mm) above all perimeter surfaces that are within 30 inches (762 mm), measured horizontally from the spa or hot tub. The height of nonconductive external steps for entry to or exit from the self-contained spa is not used to reduce or increase this rim height measurement.

2. The equipotential bonding requirements for perimeter surfaces shall not apply to a listed self-contained spa or hot tub located indoors and installed above a finished floor. [608.26(B)(2), 608.42(B) and 608.43 Exception No. 2]

2.1. Conductive paved portions of perimeter surfaces. Conductive paved portions of perimeter surfaces, including masonry pavers, if used, shall be bonded with encapsulated structural reinforcing steel in accordance with Item 1.1, or with unencapsulated steel structural welded wire reinforcement (welded wire mesh, welded wire fabric), bonded together by stee tie wires or the equivalent. Steel welded wire reinforcement shall be fully embedded within the pavement unless the pavement will not allow for embedding. If the reinforcing steel is absent, or is encapsulated in a nonconductive compound, or embedding is not possible, unencapsulated welded wire steel reinforcement or a copper conductor grid shall be provided and shall be secured directly under the paving and not more than 6 inches (152 mm) below finished grade.

Unencapsulated steel welded wire reinforcement that is not fully embedded in concrete, and copper grid regardless of location, used for equipotential bonding shall be listed for corrosion resistance and mechanical performance. This listing requirement shall become effective January 1, 2025. The copper grid or unencapsulated steel welded wire reinforcement shall also meet the following:

2.1.1 Copper grid is constructed of 8 AWG solid bare copper and arranged in accordance with Item 1.2.3.

2.1.2 Steel welded wire reinforcement is minimum ASTM 6x6-W2.0 x W2.0 or minimum No. 3 rebar constructed in a 12-inch (305 mm) grid.

2.1.3 Copper grid and steel welded wire reinforcement follow the contour of the perimeter surface extending not less than 3 feet (914 mm) horizontally beyond the inside walls of the pool.

2.1.4 Only listed splicing devises or exothermic welding are used. [608.26(B)(2)(a)]

2.2 Unpaved portions of perimeter surfaces. Unpaved portions of perimeter surfaces shall be bonded with any of the following methods:

2.2.1 Copper conductor(s) shall be used in accordance with Items 2.2.1.1. through 2.2.1.6.

2.2.1.1. At least one minimum 8 AWG bare solid copper conductor, including the 8 AWG copper equipotential bonding conductor, if available.

2.2.1.2. The conductors shall follow the contour of the perimeter surface.

2.2.1.3. Only listed splicing devices or exothermic welding are used.

2.2.1.4. The conductor(s) is 18 to 24 inches (457 to 610 mm) from the inside walls of the pool.

2.2.1.5. The required conductor(s) is under the perimeter surface 4 to 6 inches (102 mm to 152 mm) below the subgrade.

2.2.1.6. Be installed only in perimeter surfaces not intended to have direct access to swimmers in the pool.

2.2.2 Copper grid or unencapsulated steel welded wire reinforcement used for equipotential bonding of unpaved portions of perimeter surfaces shall meet the following:

2.2.2.1 Be installed in accordance with 2.1

2.2.2.2 Be located within unpaved surfaces between 4 to 6 inches (102 to 152 mm) below finished grade. [608.26(B)(2)(b)]

2.3 Nonconductive perimeter surfaces. Equipotential bonding shall not be required for nonconductive portions of perimeter surfaces that are separated from earth or raised on nonconducting supports, and it shall not be required for any perimeter surface that is electrically separated from the pool structure and raised on nonconductive supports above an equipotentially bonded surface. [680.26(B)(2)(c)]

2.5 Interconnection of bonded portions of perimeter surfaces. All surfaces where equipotential bonding is required shall be interconnected using listed splicing devices or exothermic welding. Where copper wire is used for this purpose, it shall be solid copper not smaller than 8 AWG. The conductor shall be permitted to encircle the pool to facilitate bonding connections to portions of the perimeter covered in 2.1 and 2.2 that are not contiguous. [680.26(B)(2)(d)]

3. Metallic components. All metallic parts of the pool structure, including reinforcing metal not addressed in Item 1.1, shall be bonded. Where reinforcing steel is encapsulated with a nonconductive compound, the reinforcing steel shall not be required to be bonded. [680.26(B)(3)]

4. Underwater lighting. All metal forming shells and mounting brackets of no-niche luminaires shall be bonded. [680.26(B)(4)] Exception: Listed low-voltage lighting systems with nonmetallic forming shells shall not require bonding. [680.26(B)(4) Exception]

5. Metal fittings. All metal fittings within or attached to the pool structure shall be bonded. [608.26(B)(5)] Exceptions:
    1. Isolated parts that are not over 4 inches (102 mm) in any dimension and do not penetrate into the pool structure more than 1 inch (25 mm) shall not require bonding.
    2. Metallic pool cover anchors intended for insertion in a concrete or masonry deck surface, 1 inch (25 mm) or less in any dimension and 2 inches (51 mm) or less in length, shall not require bonding.
    3. Metallic pool cover anchors intended for insertion in a wood or composite deck surface, 2 inches (51 mm) or less in any flange dimension and 2 inches (51 mm) or less in length, shall not require bonding. [680.26(B)(5) Exception]
6. Electrical equipment. Metal parts of the following electrical equipment shall be bonded: electrically powered pool covers; pool water circulation, treatment, heating, cooling or dehumidification equipment; and equipment not separated from the pool by a permanent barrier that prevents contact by a person, any other electrical equipment within 5 feet (1.5 m) measured horizontally from the inside wall of the pool or 12 feet (3.7 m) measured vertically above the maximum water level of the pool, or as measured vertically above any observation stands, towers, platforms or diving structures. **Exception:** Metal parts of listed equipment incorporating an approved system of double insulation shall not be bonded. [680.26(B)(6) Exception]
    6.1. Double-insulated water pump motors. Where a double-insulated water pump motor is installed under the provisions of this item, a solid 8 AWG copper conductor of sufficient length to make a bonding connection to a replacement motor shall be extended from the bonding grid to an accessible point in the vicinity of the pool pump motor. Where there is no connection between the swimming pool bonding grid and the equipment grounding system for the premises, this bonding conductor shall be connected to the equipment grounding conductor of the motor circuit. [680.26(B)(6)(a)]
    6.2. Pool water heaters. For pool water heaters rated at more than 50 amperes and having specific instructions regarding bonding and grounding, only those parts designated to be bonded shall be bonded and only those parts designated to be grounded shall be grounded. [680.26(B)(6)(b)]
7. All fixed metal parts including, but not limited to, metal-sheathed cables and raceways, metal piping, metal awnings, metal fences and metal door and window frames, shall be bonded where located no greater than either of the following: **Exceptions**
    1. Five feet (1.5 m) horizontally from the inside walls of the pool. Those separated from the pool by a permanent barrier that prevents contact by a person shall not be required to be bonded. [680.26(B)(7) Exception No. 1]
    2. Twelve feet (3.7 m) vertically above the maximum water level of the pool, observation stands, towers, or platforms or any diving structures. [680.26(B)(7)]

Change Summary
Bonded Parts has been modified to add an exception to Item 1 to clarify bonding of conductive pool shells shall not be deemed to satisfy the pool water bonding requirement unless a listed conductive surface meeting the requirements of the section is in direct contact with the pool water.

Chapter 44 Referenced Standards

The reference to ACI 318-19 Building Code Requirements for Structural Concrete® has been modified to change the edition year from 2019 to 2025. This section has been modified to read: ACI 318-25 Building Code Requirements for Structural Concrete®

A reference for the standard ANSI/APSP/ICC 7-20 has been added to the chapter. This section has been added to read: ANSI/APSP/ICC 7-20 American National Standard for Suction Entrapment Avoidance in Swimming Pools, Wading Pools, Spas, Hot Tubs, and Catch Basins®. Referenced in code section number R326.5.

A reference for the standard ANSI/APSP/ICC 16-17 has been added to the chapter. This section has been added to read: ANSI/APSP/1CC 16-17 American National Standard for Suction Fittings for Use in Swimming Pools, Wading Pools, Spas and Hot Tubs®. referenced in code section number R326.4.

A reference for the standard ASTM D7957/D7957M-22 has been added to the chapter. This section has been added to read: ASTM D7957/D7957M-22 Standard for Specification for Solid Round Glass Fiber Reinforced Polymer Bars for Concrete reinforcement. Referenced in code section number R404.1.3.3.7.1.b.

A reference for the standard CSA C22.2 No. 218.1-17 has been added to the chapter. This section has been added to read: CSA C22.2 No. 218.1-17. Spas, Hot Tubs and Associated Equipment®. Referenced in code section number R326.5.

The reference to the ICC 500® has been modified to update the code section references. This section has been modified to read: ~~ICC 500-14~~ ICC 500-2020 ICC/NSSA Standard on the Design and Construction of Storm Shelters®. Referenced in code section number ~~R323.1, R323.2, R323.2.1, R323.2.2, R323.2.3~~ R307.3, R307.3.1, R307.3.2, R307.3.3, R307.3.4 and ~~R323.2.4~~ R307.3.4.1.

The reference to the International Building Code® has been modified to update the edition year to ~~2018~~ 2024 and include after the title the words "as adopted and modified by the State of Oklahoma through the OUBCC." This section has been modified to read: ~~IBC®-18~~ IBC®-24 International Building Code® as adopted and modified by the State of Oklahoma through the OUBCC.

The reference to the International Existing Building Code® has been modified to include after the title the words "as adopted and modified by the State of Oklahoma through the OUBCC."

This section has been modified to read: IEBC®-24 International Existing Building Code® as adopted and modified by the State of Oklahoma through the OUBCC.

The reference to the International Fire Code® has been modified to update the edition year to ~~2018~~ 2024 and include after the title the words "as adopted and modified by the State of Oklahoma through the OUBCC." This section has been modified to read: ~~IFC®-18~~ IFC®-24 International Fire Code® as adopted and modified by the State of Oklahoma through the OUBCC.

The reference to the International Fuel Gas Code® has been modified to update the edition year to ~~2018~~ 2024 and include after the title the words "as adopted and modified by the State of Oklahoma through the OUBCC." This section has been modified to read: ~~IFGC®-18~~ IFGC®-24 International Fuel Gas Code® as adopted and modified by the State of Oklahoma through the OUBCC.

The reference to the International Mechanical Code® has been modified to update the edition year to ~~2018~~ 2024 and include after the title the words "as adopted and modified by the State of Oklahoma through the OUBCC." This section has been modified to read: ~~IMC®-18~~ IMC®-24 International Mechanical Code® as adopted and modified by the State of Oklahoma through the OUBCC.

The reference to the International Plumbing Code® has been modified to update the edition year to ~~2018~~ 2024 include after the title the words "as adopted and modified by the State of Oklahoma through the OUBCC." This section has been modified to read: ~~IPC®-18~~ IPC®-24 International Plumbing Code® as adopted and modified by the State of Oklahoma through the OUBCC.

The referenced standard for NFPA® 70 National Electrical Code® has been modified to update the edition year to 2023 and include after the title the words "as adopted and modified by the State of Oklahoma through the OUBCC." This section has been modified to read: 70-23 National Electrical Code® as adopted and modified by the State of Oklahoma through the OUBCC.

A reference for the standard UL 1563 has been added to the chapter. This section has been added to read: UL 1563-2009: Standard for Electric Hot Tubs, Spas and Associated Equipment®, with revisions through September 2020. Referenced in code section number R326.5.

Appendix BP, Automatic Fire Systems

This appendix has been newly created and entitled "Automatic Fire Sprinkler Systems." The provisions contained in this appendix are not mandatory unless specifically referenced in the adopting ordinance or order.

Section BP101 General.
BP101 General.

Change Summary
This section heading has been added to clarify the sections of text applicable to installing residential fire sprinkler systems in one- and two-family dwellings.

BP101.1 One- and two-family dwellings automatic fire sprinkler systems.

BP101.1 One- and two-family dwellings automatic fire sprinkler systems. An automatic residential fire sprinkler system shall be installed in one- and two-family dwellings. Exception: An automatic residential fire sprinkler system shall not be required for additions or alterations to existing buildings that are not already provided with an automatic residential sprinkler system.

Change Summary
This section formerly numbered Section R309.2 has been moved into appendix BP, entitled "Automatic Fire Sprinkler Systems" and specifies the provisions of this appendix shall apply to one- and two-family dwellings.

BP101.2 Design and installation.

BP101.2 Design and installation. Automatic residential fire sprinkler systems shall be designed and installed in accordance with the provisions of this appendix and NFPA 13D.

Change Summary
This section, formerly numbered Section R309.2.1 has been moved into Appendix BP, entitled "Automatic Fire Sprinkler Systems" and specifies the design and installation of automatic residential fire sprinkler systems shall comply with the provisions of this appendix and NFPA 13D.

Appendix BQ, Swimming Pools, Spas, and Hot Tubs

BQ101 Swimming Pools, Spas, and Hot Tubs.

BQ101 Swimming Pools, Spas, and Hot Tubs.

Change Summary
This section header has been added to clarify the sections of text that apply to the general requirements for swimming pools, spas and hot tubs.

BQ101 General.

BQ101 General. The design and construction of pools and spas shall comply with the International Swimming Pool and Spa Code.

Change Summary
This section formerly numbered R328.1 General has been moved into an appendix.

Appendix BR, Residential Tornado Provisions

Appendix BR Residential Tornado Provisions

Appendix BR Residential Tornado Provisions

Change Summary
This appendix has been newly created and entitled "Residential Tornado Provisions." The provisions contained in this appendix are not mandatory unless specifically referenced in the adopting ordinance or order.

BR101 Scope.

BR101 Scope.

Change Summary
This section heading has been added to specify the sections of this appendix that deal with the Scope of the appendix.

BR101.1 General.

BR101.1 General. These provisions shall be applicable for new construction where residential tornado provisions are required. This appendix provides prescriptive based requirements for construction of a residential structure meeting or exceeding a 135-mph wind event corresponding to an EF-2 tornado rating. The single most important objective in protecting a structure against high wind is achieving a continuous load path from the roof to the foundation. Based on the findings of studies and failures associated with various construction types, a group of 11 building practices (each associated with a different aspect of the structure) are summarized in this section.

Change Summary
This section has been added to clarify the provisions shall be applicable for new construction.

BR101.2 Application.

BR101.2 Application. In addition to the general administration requirements of Chapter 1, the administrative provisions of this appendix shall also apply to the building planning and construction requirements of Chapters 1 through 10.

Change Summary
This section has been added to clarify the administrative provisions of this appendix are applicable in the administrative and building planning and construction requirements in Chapters 1 through 10 of this code.

BR101.3 Wind design criteria.

BR101.3 Wind design criteria. Modifying section R301.2.1 buildings and portions thereof shall be constructed in accordance with the wind provisions of this code using the ultimate design wind speed 135 mph.

Change Summary
This section has been added to clarify that if Section R301.2.1 is modified, the buildings and portions thereof shall be constructed in accordance with the code and the ultimate wind speed design of 135 mph.

BR101.4 Lumber sheathing.

BR101.4 Lumber sheathing. Only OSB or plywood sheathing is permitted. Dimensional lumber sheathing may not be used. Allowable spans and attachment for lumber used as roof or exterior wall sheathing shall conform to the following:

BR101.4.1 Sixteen Inch Framing. For rafter, stud, or beam spacing of 16 inches, the minimum nominal sheathing panel thickness will be 7/16 inch, the minimum wood structural panel span rating 24/16, to be nailed with 8d ring shank (0.131 inch x 2.5 inch) or 10d (0.148 inch x 3 inch) nails on 4 inches on center along the edges and 6 inches on center in the field.

BR101.4.2 Twenty-four Inch Framing. For rafter, stud or beam spacing of 24 inches, the minimum nominal sheathing panel thickness will be 23/32 inch, the minimum wood structural panel span rating 24/16 to be nailed with 8d ring shank (0.131 inch x 2.5 inch) or 10d (0.148 inch x 3 inch) nails on 4 inches on center along the edges and 4 inches on center in the field.

Change Summary

This section has been added to address the permitted forms of lumber sheathing.

BR101.5 Ceiling joist and rafter connections.

BR101.5 Ceiling joist and rafter connections. In addition to the provisions of Chapter 8, ceiling joists and rafters shall be nailed to each other in a manner to achieve a connection that can transfer a 500-pound force in both compression and tension across the connection.

Change Summary

This section has been added to require ceiling joists and rafters to be nailed to each other in a manner to achieve a connection that can transfer a 500-pound force in both compression and tension across the connections.

BR101.6 Rafter uplift resistance.

BR101.6 Rafter uplift resistance. Individual rafters shall be attached to supporting wall assemblies by connections capable of resisting uplift forces of 500 pounds.

Change Summary

This section has been added to require individual rafters to be attached to supporting wall assemblies by connections capable of resisting uplift forces of 500 pounds.

BR101.7 Gable end walls.

BR101.7 Gable end walls. Gable end walls will be sheathed per BR101.4 and will have connections to both a.) supporting wall assemblies and b.) roof framing by connections capable of resisting uplift forces of 500 pounds in both compression and tension across the connection.

Change Summary

This section has been added to clarify connections and sheathing for gable end walls.

BR101.8 Exterior wall bracing.

BR101.8 Exterior wall bracing. Only continuous sheathing methods per R602.10.4.2 may be used to brace exterior walls. Frame garage doors using the sheathed portal frame method CS-PF. Lumber sheathing and attachment per BR101.4. Any form of intermittent bracing is not allowed on an exterior wall. Intermittent bracing may only be used for interior braced wall lines.

Change Summary

This section has been added to clarify sheathing methods to be utilized to brace exterior walls and prohibit intermittent bracing on exterior walls.

BR101.9 Multi-story construction.

BR101.9 Multi story construction. Nail upper and lower story wall sheathing to common rim board in order to maintain continuity between stories.

Change Summary
This section has been added to require nailing upper and lower story wall sheathing to a common rim board.

BR101.10 Wood floor above crawl space construction.

BR101.10 Wood floor above crawl space construction. Extend structural wood sheathing to lap the sill plate. Nail to sill plate at 4 inches on center along the edges. Nail to rim board if present with 8d ring shank (0.131 inch x 2.5 inch) or 10d (0.148 inch x 3 inch) nails at 4 inches on center along both the top and bottom edges of the rim board.

Change Summary
This section has been added to require extending structural wood sheathing to lap the sill plate.

BR101.11 Garage Doors.

BR101.11 Garage Doors. Garage doors are to be wind rated to 135 mph.

Change Summary
This section has been added to require garage doors to be rated for 135 mile per hour winds.