Southern Nevada Amendments

To The

2000

International Residential Code

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CHAPTER 1 - ADMINISTRATION

Section R101 Title, Scope and Purpose

Subsections R101.1 through 101.3 are amended to read:

R101.1 Title. These provisions shall be known as the Southern Nevada Amendments to the 2000 *International Residential Code,* and shall be cited as such and will be referred to herein as "this code".

R101.2 Scope. The provisions of the Southern Nevada Amendments to the 2000 *International Residential 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 multiple single-family dwellings (townhouses) not more than three stories in height with a separate means of egress and their accessory structures.

R101.3 Purpose. The purpose of this code is to provide minimum requirements to safeguard the public safety, health and general welfare, through affordability, structural strength, means of egress facilities, stability, sanitation, light and ventilation, energy conservation and safety to life and property from fire and other hazards attributed to the built environment.

Delete Sections R102 through R114

R202 Definitions

Section R202 is amended to read:

CHAPTER 2 - DEFINITIONS
SECTION R202

R202 Definitions

ACCESSORY STRUCTURE. In one-and two- family dwellings not more than three stories high with separate means of egress, a building, the use of which is incidental to that of the main building and is located on the lot.

ADDITION. An extension or increase in floor area or height of a building or structure.

ALTERATION. Any construction or renovation to an existing structure other than repair or addition that requires a permit.

APPROVED. Approved refers to approval by the building official by reason of accepted principles or tests by nationally recognized organizations.

APPROVED AGENCY. An established and recognized agency regularly engaged in conducting tests or furnishing inspection services, when such agency has been approved by the building official.

ATTIC. The unfinished space between the ceiling joist of the top story and the roof rafters.

BALCONY, EXTERIOR. An exterior floor projecting from and supported by a structure without additional independent support.

BASEMENT. That portion of a building that is partly or completely below grade and having a ceiling height of 7 feet 6 inches (2286 mm) or more (see "Story above grade").

BASEMENT WALL. The opaque portion of a wall that encloses one side of a basement and has an average below grade wall area that is 50 percent or more of the total opaque and non-opaque area of that enclosing side.

BASIC WIND SPEED. Three-second gust speed at 33 feet (10 058 mm) above the ground in Exposure C (see Section R301.2.1).

BATHROOM GROUP. A group of fixtures, including or excluding a bidet, consisting of a water closet, lavatory, and bathtub or shower. Such fixtures are located together on the same floor level.

BOND BEAM. A horizontal grouted element within masonry in which reinforcement is embedded.

BRACED WALL LINE. A series of braced wall panels constructed in accordance with Section R602.10 for wood framing and Section R603.7 or R603.8.1.2 for cold-formed steel framing, to resist racing from seismic and wind forces.

BRACED WALL PANEL. A section of braced wall line constructed in accordance with Section R602.10 for wood framing and Section R603.7 or R603.8.1.2 for cold-formed steel framing, which extend the full height of the wall.

BUILDING. Building shall mean any one- or two-family dwelling or portion thereof, including townhouses, that is used, or designed or intended to be used for human habitation, for living, sleeping, cooking or eating purposes, or any combination thereof, and shall include accessory structures thereto.

BUILDING, EXISTING. Existing building is a building erected prior to the adoption of this code, or one for which a legal building permit has been issued.

BUILDING LINE. The line established by law, beyond which a building shall not extend, except as specifically provided by law.

BUILDING OFFICIAL. The officer or other designated authority charged with the administration and enforcement of this code.

BUILDING THERMAL ENVELOPE. The basement walls, exterior walls, floor, roof and any other building element that enclose conditioned spaces.

BUILT-UP ROOF COVERING. Two or more layers of felt cemented together and surfaced with a cap sheet, mineral aggregate, smooth coating or similar surfacing material.

CEILING HEIGHT. The clear vertical distance from the finished floor to the finished ceiling.

CHIMNEY. A primary vertical structure containing one or more flues, for the purpose of carrying gaseous products of combustion and air from fuel-burning appliances to the outside atmosphere.

CLADDING. The exterior materials that cover the surface of the building envelope that is directly loaded by the wind.

CLOSET. A small room or chamber used for storage.

COMBUSTABLE MATERIAL. Any material not defined as noncombustible.

CONDITIONED AREA. That area within a building provided with heating and/or cooling systems or appliances capable of maintaining, through design or heat loss/gain, 68^{o} F (20^{o} C) during the heating season and/or 80^{o} F (27^{o} C) during the cooling season, or has a fixed opening directly adjacent to a conditioned area.

CONDITIONED FLOOR AREA. The horizontal projection of the floors associated with the conditioned space.

CONDITINED SPACE. For energy purposes, space within a building that is provided with heating and/or cooling equipment or systems capable of maintaining, through design or heat loss/gain, 50^{o} F (10^{o} C) during the heating season and 85^{o} F (29^{o} C) during the cooling season, or communicates directly with a conditioned space.

CONSTRUCTION DOCUMENTS. Written, graphic and pictorial documents prepared or assembled for the describing the design, location and physical characteristics of the elements of a project necessary for obtaining a building permit. Construction drawings shall be drawn to an appropriate scale.

COURT. A space, open and unobstructed to the sky, located at or above grade level on a lot and bounded on three or more sides by walls or a building.

DALLE GLASS. A decorative composite glazing material made of individual pieces of glass that are embedded in a cast matrix of concrete or epoxy.

DEAD LOAD. The weight of all materials of construction incorporated into the building, including but not limited to walls, floors, roofs, ceilings, stairways, built-in partitions, finishes, cladding, and other similarly incorporated architectural and structural items, and fixed service equipment.

DECK. An exterior floor system supported on at least two opposing sides by an adjoining structure and/or post, piers, or other independent supports.

DECORATIVE GLASS. A carved, leaded or dalle glass or glazing material whose purpose is decorative or artistic, not functional; whose coloring, texture or other design qualities or components cannot be removed without destroying the glazing material; and whose surface, or assembly into which it is incorporated, is divided in to segments.

DESIGN PROFESSIONAL. See definition of "Registered design professional."

DIAPHRAGM. A horizontal or nearly horizontal system acting to transmit lateral forces to the vertical resisting elements. When the term "diaphragm" is used, it includes horizontal bracing systems.

DRAFT STOP. A material, device or construction installed to restrict the movement of air within open spaces of concealed areas of building components such as crawl spaces, floor–ceiling assemblies, roof-ceiling assemblies and attics.

DWELLING. Any building that contains one or two dwelling units used, intended, or designed to be built, used, rented, leased, let or hired out to be occupied, or that are occupied for living purposes.

DWELLING UNIT. A single unit providing complete independent living facilities for one or more persons, including permanent provisions for living, sleeping, eating, cooking and sanitation.

EMERGENCY ESCAPE AND RESCUE OPENING. An operable window, door or similar device that provides for a means of escape and access for rescue in the event of an emergency.

EXTERIOR WALL. An above-grade wall enclosing conditioned space. Includes between floor spandrels, peripheral edges of floors, roof and basement knee walls, dormer walls, gable end walls, walls enclosing a mansard roof, and basement walls with an average below grade wall area that is less than 50 percent of the total opaque and non opaque area of that enclosing side.

FACTORY-BUILT CHIMNEY. A listed and labeled chimney composed of factory-made components assembled in the field in accordance with the manufacturer's instructions and the conditions of the listing.

FENESTRATION. Skylights, roof windows, vertical windows (whether fixed or moveable); opaque doors, glazed doors; glass block; and combination of opaque/glazed doors.

FIREBLOCKING. Building material installed to resist the free passage of flame to other areas of the building through concealed spaces.

FIREPLACE. An assembly consisting of a hearth and fire chamber of noncombustible material and provided with a chimney, for use with solid fuels.

> **Factory-built fireplace.** A listed and labeled fireplace and chimney system composed of factor-made components, and assembled in the field in accordance with manufacturer's instructions and the conditions of the listing.
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> **Masonry chimney.** A field-constructed chimney composed of solid masonry units, bricks, stones or concrete.
>
> **Masonry fireplace.** A field-constructed fireplace composed of solid masonry units, bricks, stones or concrete.

FIREPLACE STOVE. A free-standing, chimney-connected solid-fuel-burning heater designed to be operated with the fire chamber doors in either the open or closed position.

FIRE SEPARATION DISTANCE. The distance measured from the building face to the closest interior lot line, to the centerline of a street, alley or public way, or to an imaginary line between two buildings on the property. The distance shall be measured at right angles from the property line.

FLAME SPREAD. The propagation of flame over a surface.

FLAME SPREAD INDEX. The number value assigned to a material tested in accordance with ASTM E 84.

FOAM PLASTIC INSULATION. A plastic that is intentionally expanded by the use of a foaming agent to produce a reduced-density plastic consisting of open and closed cells distributed throughout the plastic and has a density less than 20 pounds per cubic foot. (320 kg/m^3).

GLAZING AREA. The interior surface area of all glazing fenestration, including the area of sash, curbing or other framing elements, that enclose conditioned spaces. Includes the area of glazing fenestration assembles in walls bounding conditioned basements.

GRADE. The finished ground level adjoining and within five feet of the building at all exterior walls.

GRADE FLOOR OPENING. A window or other opening located such that the sill height of the opening is not more than 44 inches (1118mm) above or below the finished ground level adjacent to the opening.

GRADE PLAN. A reference plane representing the average finished ground level adjoining the building at exterior walls. Where the finished ground level slopes away from the exterior walls, the reference plane shall be established by the lowest points within the area between the building and the lot line or, where the lot line is more than 6 feet (1829 mm) from the building, between the building and a point 6 feet (1829 mm) from the building.

GROSS AREA OF EXTERIOR WALLS. The normal projection of all exterior walls, including the area of all windows and doors installed therein.

GUARD. A building component or a system of building components located near the open sides of elevated walking surfaces that minimizes the possibility of a fall from the walking surface to the lower level.

HABITABLE SPACE. A space in a building for living, sleeping, eating or cooking. Bathrooms, toilet rooms, closets, halls, storage or utility spaces or similar areas are not considered habitable spaces.

HANDRAIL. A horizontal or sloping rail intended for grasping by the hand for guidance or support.

HEATING DEGREE DAYS (HDD). The sum, on an annual basis, or the difference between 65^o F (18^o C) and the mean temperature for each day as determined from "NOAA Annual Degree Days to

Selected Based Derived from the 1960-1990 Normals" or other weather data source acceptable to the code official.

HEIGHT, BUILDING. The vertical distance above a reference datum measured to the highest point of the coping of a flat roof or to the deck line of a mansard roof or to the average height of the highest gable of a pitched or hipped roof. The reference datum shall be selected by either of the following, whichever yields a greater height of building:

1. The elevation of the highest adjoining sidewalk or ground surface within 5 feet (1829 mm) horizontal distance of the exterior wall of the building when such sidewalk or ground surface is not more than 10 feet (3048 mm) above lowest grade.

2. An elevation 10 feet (3048 mm) higher than the lowest grade when the sidewalk or ground surface described in Item 1 is more than 10 feet (3048 mm) above the lowest grade.

The height of the stepped or terraced building is the maximum height if any segment of the building.

HEIGHT, STORY. The vertical distance from top to top of two successive tiers of beams or finished floor surfaces; and, for the topmost story, from top of the floor finish to the top of the ceiling joists or, where there is not ceiling, to the top of the roof rafters.

INSULATING CONCRETE FORM (IFC). A concrete forming system using stay-in-place forms of rigid foam plastic insulation, a hybrid of concrete and foam insulation, a hybrid of cement and wood chips, or other insulating materials for constructing cast-in-place concrete walls.

INSULATING SHEATHING. An insulating board having a minimum thermal resistance of R-2 of the core material.

JURISDICTION. The governmental unit that has adopted this code under due legislative authority.

LABEL. An identification applied on a product by the manufacturer which contains the name of the manufacturer, the function and performance characteristics of the product or material, and the name and identification of an approved agency and that indicates that the representative sample of the product or material has been tested and evaluated by an approved agency. (See also "Manufacturer's designation" and "Mark.")

LABELED. Devices, equipment or materials to which have been affixed a label, seal, symbol or other identifying mark of a testing laboratory, inspection agency or other organization concerned with product evaluation that maintains periodic inspection of the production of the above labeled items that attests to compliance with a specific standard.

LIGHT-FRAMED CONSTRUCTION. A type of construction whose vertical and horizontal structural elements are primarily formed by a system of repetitive wood or light gage steel framing members.

LIVE LOAD. Those loads produced by the use and occupancy of the building or other structure and do not include construction or environmental loads such as wind, snow load, rain load, earthquake load, flood load or dead load.

LIVING SPACE. Space within a dwelling utilized for living, sleeping, eating, bathing, washing, and sanitation purposes.

LOT. A portion or parcel of land considered a unit.

LOT LINE. A line dividing one lot from another, or from a street or public place.

MANUFACTURER'S DESIGNATION. An identification applied on a product by the manufacturer indicating that a product or material complies with a specified standard or set of rules. (See also "Mark" and "Label.")

MARK. An identification applied on a product by the manufacturer indicating the name of the manufacturer and the function of a product or material. (See also "Manufacturer's designation" and "Label.")

MASONRY CHIMNEY. A field-constructed chimney composed of solid masonry units, bricks, stones, or concrete.

MASONRY, SOLID. Masonry consisting of solid masonry units laid contiguously with the joints between the units filled with mortar.

MASONRY UNITS. Brick, tile, stone, block or concrete block conforming to the requirement specified in Section 2103 of the International Building Code.

Clay. A building unit larger in size than a brick, composed of burned clay, shale, fire clay or mixtures thereof.

Concrete. A building unit or block larger in size than 12 inches by 4 inches by 4 inches (305 mm by 102 mm by 102 mm) made of concrete and suitable aggregates.

Glass. Nonload-bearing masonry composed of glass units bonded by mortar.

Hollow. A masonry unit whose net cross-sectional area in any plane parallel to the loadbearing surface is less than 75 percent of the gross cross-sectional area measured in the same plane.

Solid. A masonry unit whose net cross-sectional area in every plane parallel to the loadbearing surface is 75 percent or more of its cross-sectional area measured in the same plane.

MASS WALL. Masonry or concrete walls having a mass greater than or equal to 30 pounds per square foot (146 kg/m^2), solid wood walls having a mass greater than or equal to 20 pounds per square foot (98 kg/m^2), and any other walls having a heat capacity greater than or equal to 6 Btu/ft^2°F [266 J/(m^2·k)]

MEAN ROOF HEIGHT. The average of the roof eave height and the height to the highest point on the roof surface, except that eave height shall be used for roof angle of less than or equal to 10 degrees (0.18 rad).

METAL ROOF PANEL. An interlocking metal sheet having a minimum installed weather exposure of at least 3 square feet (0.28 m 2) per sheet.

METAL ROOF SHINGLE. An interlocking metal sheet having an installed weather exposure less than 3 square feet (0.28 m 2) per sheet.

MEZZANINE, LOFT. An intermediate level or levels between the floor and ceiling of any story with an aggregate floor area of not more than one-third of the area of the room or space in which the level or levels are located.

MODIFIED BITUMEN ROOF COVERING. One or more layers of polymer modified asphalt sheets. The sheet materials shall be fully adhered or mechanically attached to the substrate or held in place with an approved ballast layer.

MULTIPLE STATION SMOKE ALARM. Two or more single station alarm devices that are capable of interconnection such that actuation of one causes all integral or separate audible alarms to operate.

NONCOMBUSTIBLE MATERIAL. Materials that pass the test procedure for defining noncombustibility of elementary materials set forth in ASTM E 136.

NONCONDITIONED SPACE. A space that is not a conditioned space by insulated walls, floors or ceilings.

OCCUPIED SPACE. The total area of all buildings or structures on any lot or parcel of ground projected on a horizontal plane, excluding permitted projections as allowed by this code.

OWNER. Any person, agent, firm, or corporation having a legal or equitable interest in the property.

PERMIT. An official document or certificate issued by the authority having jurisdiction that authorizes performance of a specified activity.

PERSON. An individual, heirs, executors, administrators or assigns, and also includes a firm, partnership or corporation, its or their successors or assigns, or the agent of any of the aforesaid.

PLATFORM CONSTRUCTION. A method of construction by which floor framing bears on load bearing walls that are not continuous through the story levels or floor framing.

POSITIVE ROOF DRAINAGE. The drainage condition in which consideration has been made for all loading deflections of the roof deck, and additional slope has been provided to ensure drainage of the roof within 48 hours of precipitation.

PUBLIC WAY. Any street, alley or other parcel of land open to the outside air leading to a street, that has been deeded, dedicated or otherwise permanently appropriated to the public for public use and that has a clear width and height of not less than 10 feet (3048 mm).

R-VALUE, THERMAL RESISTANCE. The inverse of the time rate of heat flow through a building thermal envelope element from one of its bounding surfaces to the other for a unit temperature difference between the two surfaces, under steady state conditions, per unit area ($h \cdot ft^2 \cdot {}^{o}F/Btu$).

RAMP. A walking surface that has a running slope steeper than 1 unit vertical in 20 units horizontal (5-percent slope).

REGISTERED DESIGN PROFESSIONAL. An individual who is registered or licensed to practice their respective design profession as defined by the statutory requirements of the professional registration laws of the state or jurisdiction in which the project is to be constructed.

REPAIR. The reconstruction or renewal of any part of an existing building for the purpose of its maintenance.

REROOFING. The process of recovering or replacing an existing roof covering. See "Roof recover."

RESIDENTIAL BUILDING TYPE. The type of residential building for determining building thermal envelope criteria. Detached one- and two-family dwellings are Type A-1. Town-houses are Type A-2.

ROOF ASSEMBLY. A system designed to provide weather protection and resistance to design loads. The system consists of a roof covering and roof deck or a single component serving as both the roof covering and the roof deck. A roof assembly includes the roof deck, vapor retarder, substrate or thermal barrier, insulation, vapor retarder, and roof covering.

ROOF COVERING. The covering applied to the roof deck for weather resistance, fire classification or appearance.

ROOF COVERING SYSTEM. See "Roof assembly."

ROOF DECK. The flat or sloped surface not including its supporting members or vertical supports.

ROOF REPAIR. Reconstruction or renewal of any part of an existing roof for the purposes of its maintenance.

ROOFTOP STRUCTURE. An enclosed structure on or above the roof of any part of a building.

RUNNING BOND. The placement of masonry units such that head joints in successive courses are horizontally offset at least one-quarter the unit length.

SCUPPER. An opening in a wall or parapet that allows water to drain from a roof.

SEISMIC DESIGN CATEGORY. A classification assigned to a structure based on its Seismic Group and the severity of the design earthquake ground motion at the site.

SHALL. The term, when used in the code, is construed as mandatory.

SHEARWALL. A general term for walls that are designed and constructed to resist racking from seismic and wind by use of masonry, concrete, cold-formed steel or wood framing in accordance with Chapter 6 of this code and the associated limitations in Section R301.2 of this code.

SINGLE PLY MEMBRANE. A roofing membrane that is field applied using one layer of membrane material (either homogeneous or composite) rather than multiple layers.

SINGLE STATION SMOKE ALARM. An assembly incorporating the detector, control equipment and alarm sounding device in one unit that is operated from a power supply either in the unit or obtained at the point of installation.

SKYLIGHT AND SLOPED GLAZING. See Section R308.6.1.

SMOKE-DEVELOPED RATING. A numerical index indicating the relative density of smoke produced by burning assigned to a material tested in accordance with ASTM E 84.

SOLAR HEAT GAIN COEFFICIENT (SHGC). The solar heat gain through a fenestration or glazing assembly relative to the incident solar radiation (Btu/h $\cdot$ ft^2 $\cdot$ ^{o}F).

SOLID MASONRY. Load-bearing or nonload-bearing construction using masonry units where the net cross-sectional area of each unit in any plane parallel to the bearing surface is not less than 75 percent of its gross cross-sectional area. Solid masonry units shall conform to ASTMC 55, C 62, C 73, C145 or C 216.

STACK BOND. The placement of masonry units in a bond pattern is such that head joints in successive courses are vertically aligned. For the purpose of this code, requirements for stack bond shall apply to all masonry laid in other than running bond.

STANDARD TRUSS. Any construction that does not permit the roof/ceiling insulation to achieve the required R-value over the exterior walls.

STORY. That portion of a building included between the upper surface of a floor and the upper surface of the floor or roof next above.

STORY ABOVE GRADE. Any story having its finished floor surface entirely above grade, except that a basement shall be considered as a story above grade where the finished surface of the floor above the basement is:

1. More than 6 feet (1829 mm) above grade plane.
2. More than 6 feet (1829 mm) above the finished ground level for more than 50 percent of the total building perimeter.
3. More than 12 feet (3658 mm) above the finished ground level at any point.

STRUCTURE. That which is built or constructed

STRUCTURAL INSULATED PANELS (SIPS). Factory fabricated panels of solid core insulation with structural skins of oriented strand board (OSB) or plywood.

SUNROOM ADDITION. A one-story structure added to an existing dwelling with a glazing area in excess of 40 percent of the gross area of the structure's exterior walls and roof.

THERMAL ISOLATION. A separation of conditioned spaces, between a sunroom addition and a dwelling unit, consisting of existing or new wall(s), doors, and/or windows.

THERMAL RESISTANCE, R-VALUE. The inverse of the time rate of heat flow through a body from one of its bounding surfaces to the other for a unit temperature difference between the two surfaces, under steady state conditions, per unit area ($h \cdot ft^2 \cdot {}^oF/Btu$)

THERMALTRANSMITTANCE, U-FACTOR. The coefficient of heat transmission (air to air) through a building envelope component or assembly, equal to the time rate of heat flow per unit area and unit temperature difference between the warm side and cold side air films ($Btu/h \cdot ft^2 \cdot {}^oF$).

TOWNHOUSE. A single-family dwelling unit constructed in a group of three or more attached units in which each unit extends from foundation to roof and with open space on at least two sides.

TRIM. Picture molds, chair rails, baseboards, handrails, door and window frames, and similar decorative or protective materials used in fixed applications.

TRUSS DESIGN DRAWING. The graphic depiction of an individual truss, which describes the design and physical characteristics of the truss.

U-FACTOR, THERMALTRANSMITTANCE. The coefficient of heat transmission (air to air) through a building envelope component or assembly, equal to the time rate of heat flow per unit area and unit temperature difference between the warm side and cold side air films ($Btu/h \cdot ft^2 \cdot {}^oF$).

UNDERLAYMENT. One or more layers of felt, sheathing paper, nonbituminous saturated felt, or other approved material over which a s roof covering, with a slope of 2 to 12 (17-percent slope) or greater, is applied.

VAPOR RETARDER. A material having a permeance rating of 1.0 or less when tested in accordance with ASTM E 96.

VENTILATION. The natural or mechanical process of supplying conditioned or unconditioned air to, or removing such air from, any space.

WALL, LOAD BEARING. Any wall meeting either of the following classifications:

1. Any metal or wood stud wall that supports more than 100 pounds per linear foot (1459 N/m) of vertical load in addition to its own weight.
2. Any masonry or concrete wall that supports more than 200 pounds per linear foot (2919 N/m) of vertical load in addition to its own weight.

WALL, NONLOAD BEARING. Any wall that is not a load-bearing wall.

WIND BORNE DEBRIS REGION. Areas within hurricane-prone regions within one mile of the coastal mean high water line where the basic wind speed is 110 miles per hour (177 km/h) or greater; or where the basic wind speed is equal to or greater than 120 miles per hour (193 km/h); or Hawaii.

WOOD STRUCTURAL PANEL. A panel manufactured from veneers; or wood strands or wafers; bonded together with waterproof synthetic resins or other suitable bonding systems. Examples of wood structural panels are plywood, OSB or composite panels.

YARD. An open space, other than a court, unobstructed from the ground to the sky, except where specifically provided by this code, on the lot on which a building is situated.

R301.1.2 Engineered Design

Section R301.1.2 is amended to read:

CHAPTER 3

R301.1.2 Engineered design. When a building of otherwise conventional light-frame construction contains structural elements not conforming to this code, these elements shall be designed in accordance with accepted engineering practice. The extent of such design need only demonstrate compliance of non-conventional elements with other applicable provisions and shall be compatible with the performance of the conventional framed system. Engineered design in accordance with the *International Building Code* is permitted for all buildings and structures, and parts thereof, included in the scope of this code.

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

Table R301.2(1) is amended to read:

TABLE R301.2(1)
CLIMATIC AND GEOGRAPHIC DESIGN CRITERIA

GROUND SNOW LOAD	Wind SPEED[e] (mph)	SEISMIC DESIGN CATEGORY[g]	SUBJECT TO DAMAGE FROM: Weathering[a]	Frost Line Depth[b]	Termite[c]	Decay[d]	Winter Design Temp[f]	Ice Shield Underlay-ment Required[i]	Flood Hazards[h]
0< 2000' 5 < 3600' 10 < 4500' 15 < 6000' IBC for elevations > 6000'	90	D1	Negligible	0 < 5000' 3 ≥ 5000'	Moderate to Heavy	None to Slight	28	NA	Ref: Clark County Regional Flood Control District

(No change to Footnotes a – h)

i In accordance with Sections R905.2.7.1, R905.4.3, R905.5.3, R905.6.3, R905.7.3 and R905.8.3, for areas where the average daily temperature in January is 25? F (-4? C) or less, or 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".

R301.2.1.1 Design Criteria

Add item 5 to read:

5. Concrete construction shall be designed in accordance with the provisions of this code.

Table R301.4 Live Load

Amend Table R301.4 to read:

TABLE R301.4
MINIMUM UNIFORMLY DISTRIBUTED LIVE LOADS
(in pounds per square foot)

USE	LIVE LOAD
Exterior balconies	60
Decks [e]	40
Fire escapes	40
Passenger vehicle garages [a]	50[a]
Attics without storage [b]	10
Attics with storage [b]	20
Rooms	40
Stairs	40[c]
Guardrails and handrails [d]	200
Guard in-fill components [f]	50

For SI: 1 pound per square foot = 0.0479 kN/m^2,
1 square inch = 645 mm^2,
1 pound = 4.45 N.

a. Elevated garage floors shall be capable of supporting a 2,000-pound load applied over a 20-square-inch area.
b. No storage with roof slope not over 3 units in 12 units.
c. Individual stair treads shall be designed for the uniformly distributed live load or a 300-pound concentrated load acting over an area of 4 square inches, whichever produces the greater stresses.
d. A single concentrated load applied in any direction at any point along the top.
e. See Section R502.2.1 for decks attached to exterior walls.
f. Guard in-fill components (all those except the handrail), balusters and panel fillers shall be designed to withstand a horizontally applied normal load of 50 pounds on an area equal to 1 square foot. This load need not be assumed to act concurrently with any other live load requirement.

R302.1 Exterior Walls

Amend section R302.1 to read:

R302.1 Exterior walls. Exterior wall assemblies, including framing, interior and exterior finish materials, glazing surfaces, and openings with a fire separation distance less than 3 feet (914 mm) as measured from the exterior surface of these materials to the property line, shall have not less than a 1-hour fire-resistance rating with exposure from both sides. Projections shall not extend to a point closer than 2 feet (610 mm) from the line used to determine the fire separation distance.

Projections extending into the fire separation distance shall have not less than 1-hour fire-resistance-rated construction on the underside. The above provisions shall not apply to walls which are perpendicular to the line used to determine the fire separation distance.

Exception: Tool and storage sheds, playhouses and similar structures exempted from permits by the Administrative Code adopted by the local jurisdiction 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.

R303.2 Adjoining Rooms

Add a new exception to section R303.2 to read:

Exception: Openings required for light and/or ventilation shall be permitted to open into a thermally isolated sunroom addition or patio cover, provided that there is an openable area between the adjoining room and the sunroom addition or patio cover of not less than one- tenth of the floor area of the interior room but not less than 20 square feet (1.86m^2). The minimum openable area to the outdoors shall be based upon the total floor area being ventilated.

R303.4 Stairway Illumination

Section R303.4 is amended to read:

R303.4 Stairway illumination. All interior and exterior stairways shall be provided with a means to illuminate the stairs, including the landings and treads. Interior stairways shall be provided with an artificial light source located in the immediate vicinity of each landing of the stairway. For interior stairs the artificial light sources shall be capable of illuminating treads and landings to levels not less than 1 foot-candle (11 lux) measured at the center of treads and landings. Exterior stairways shall be provided with an artificial light source located in the immediate vicinity of the top landing of the stairway. Exterior stairways providing access to a basement from the outside grade level shall be provided with an artificial light source located in the immediate vicinity of the bottom landing of the stairway.

Exception: An artificial light source is not required at the top and bottom landing, provided an artificial light source is located directly over each stairway section.

R303.4.1 Light Activation.

Section R303.4.1 is amended to read:

R303.4.1 Light activation. The control for activation of the required interior stairway lighting shall be accessible at the top and bottom of each stairway without traversing any steps. The illumination of exterior stairways shall be controlled from inside the dwelling unit.

Exceptions:

1. Lights that are continuously illuminated or automatically controlled.

2. Interior stairways consisting of less than six steps.

R303.6 Required Heating.

Section R303.6 is amended to read:

R303.6 Required heating. When the winter design temperature in Table R301.2(1) is below 60°F (16°C), every dwelling unit shall be provided with heating facilities capable of maintaining a minimum room temperature of 68° F (20°C) at a point 3 feet (914mm) above the floor and 2 feet (610mm) from exterior walls in all habitable rooms at the design temperature. The installation of one or more portable space heaters shall not be used to achieve compliance with this section.

R304.2 Other Rooms.

Section R304.2 is amended to read:

R304.2 Other rooms. Other habitable rooms shall have a floor area of not less than 70 square feet (6.5 M^2).

Exception: Kitchens.

R305.1 Minimum Height.

Section R305.1 is amended to read:

R305.1 Minimum height. Habitable rooms, and basements shall have a ceiling height of not less than 7 feet, 6 inches (2286mm). Hallways, bathrooms, toilet rooms, kitchens, storage rooms and laundry rooms shall have a ceiling height of not less than 7 feet (2134mm). The required height shall be measured from the finish floor to the lowest projection from the ceiling.

Exceptions:

1. Beams and girders spaced not less than 4 feet (1219 mm) on center may project not more than 6 inches (152 mm) below the required ceiling height.

2. Not more than 50 percent of the required floor area of a room or space is permitted to have a sloped ceiling less than 7 feet (2134 mm) in height with no portion of the required floor area less than 5 feet (1524 mm) in height.

3. Bathrooms shall have a minimum ceiling height of 6 feet 8 inches (2036 mm) over the fixture and at the front clearance area for fixtures. A shower or tub equipped with a showerhead shall have a minimum ceiling height of 6 feet 8 inches (2036 mm) above a minimum area 30 inches (762 mm) by 30 inches (762 mm) at the showerhead.

306.1 Toilet Facilities.

Section R306.1 is amended to read:

306.1 Toilet facilities. Every dwelling unit shall be provided with a water closet, lavatory, and a bathtub or shower. A room in which a water closet is located shall be separated from food preparation or storage rooms by a tight fitting door.

R307.1 Space Required.

Section R307.1 is amended to read:

R307.1 Space Required. Fixtures shall be spaced as per UPC, Chapter 4.

Section 307.2 Bathtub and Shower Spaces.

Section R307.2 is amended to read:

Section 307.2 Bathtub and shower spaces. Bathtub and shower floors and walls above bathtubs with installed shower heads and in shower compartments shall be finished with a nonabsorbent surface. Such wall surfaces shall extend to a height of not less than 70 inches above the drain outlet.

Figure 307.2 Minimum Fixture Clearances

Delete Figure 307.2

R308.4 Hazardous Locations.

Section R308.4 is amended to read:

R308.4 Hazardous locations. The following shall be considered specific hazardous locations for the purposes of glazing:

1. Glazing in swinging doors except jalousies.

2. Glazing in fixed and sliding panels of sliding door assemblies and panels in sliding and bi-fold closet door assemblies.

3. Glazing in storm doors.

4. Glazing in all unframed swinging doors.

5. Glazing in doors and enclosures for hot tubs, whirlpools, saunas, steam rooms, bathtubs and showers. Glazing in any part of a building wall enclosing these compartments where the bottom exposed edge of the glazing is less than 60 inches (1524 mm) measured vertically above any standing or walking surface.

6. Glazing, in an individual fixed or operable panel adjacent to a door where the nearest

vertical edge is within a 24-inch (610 mm) arc of the door in a closed position and whose bottom edge is less than 60 inches (1524 mm) above the floor or walking surface.

7. Glazing in an individual fixed or operable panel, other than those locations described in Items 5 and 6 above, that meets all of the following conditions:

7.1 Exposed area of an individual pane greater than 9 square feet (0.836 m^2).

7.2 Bottom edge less than 18 inches (457 mm) above the floor.

7.3 Top edge greater than 36 inches (914 mm) above the floor.

7.4 One or more walking surfaces within 36 inches (914 mm) horizontally of the glazing.

8. All glazing in railings regardless of an area or height above a walking surface. Included are structural baluster panels and nonstructural in-fill panels.

9. Glazing in walls and fences enclosing indoor and outdoor swimming pools, hot tubs and spas where the bottom edge of the glazing is less than 60 inches (1524 mm) above a walking surface and within 60 inches (1524 mm) horizontally of the water's edge. This shall apply to single glazing and all panes in multiple glazing.

10. Glazing adjacent to stairways, landings and ramps within 36 inches (914 mm) horizontally of a walking surface when the exposed surface of the glass is less than 60 inches (1524 mm) above the plane of the adjacent walking surface.

11. Glazing adjacent to stairways within 60 inches (1524 mm) horizontally of the bottom tread of a stairway in any direction when the exposed surface of the glass is less than 60 inches (1524 mm) above the nose of the tread.

Exception: The following products, materials and uses are exempt from the above hazardous locations:

1. Openings in doors through which a 3-inch (76 mm) sphere is unable to pass.

2. Decorative glass in Items 1, 6 or 7.

3. Glazing in Section R308.4, Item 6, when there is an intervening wall or other permanent barrier between the door and the glazing.

4. Glazing in Section R308.4, Item 6, in walls perpendicular to the plane of the door in a closed position or where access through the door is to a closet or storage area 3 feet (914 mm) or less in depth. Glazing in these applications shall comply with Section R308.4, Item 7.

5. Glazing in Section R308.4, Items 7 and 10, when a protective bar is installed on the accessible side(s) of the glazing 36 inches ± 2 inches (914 mm ± 51 mm) above the floor. The bar shall be capable of withstanding a horizontal load of 50 pounds per linear foot (74.5 kg/m) without contacting the glass and be a minimum of 1-1/2 inches (38 mm) in height.

6. Outboard panes in insulating glass units and other multiple-glazed panels in Section R308.4, Item 7, when the bottom edge of the glass is 25 feet (7620 mm) or more above grade, a roof, walking surface, or other horizontal [within 45° (0.79 rad) or horizontal] surface adjacent to the glass exterior.

7. Louvered windows and jalousies complying with the requirements of Section R308.2.

8. Mirrors and other glass panels mounted or hung on a surface that provides a continuous backing support.

9. Safety glazing in Section R308.4, Items 10 and 11, is not required where:

   9.1. The side of a stairway, landing or ramp has a guardrail or handrail, including balusters or in-fill panels, complying with the provisions of Sections 1003.2.12 and 1607.7 of the *International Building Code;* and

   9.2. The plane of the glass is greater than 18 inches (457 mm) from the railing.

R309.1 Opening Protection.

Section R309.1 is amended to read:

R309.1 Opening protection. Openings from a private garage directly into a room used for sleeping purposes shall not be permitted. Other openings between the garage and residence shall be equipped with solid wood doors not less than 1 3/8 inches (35 mm) thick or 20-minute fire-rated doors each with a self-closer.

R309.2 Separation Required.

Section R309.2 is amended to read.

R309.2 Separation required. The garage shall be separated from the residence and its attic area by not less than 5/8-inch (15.9 mm) Type X gypsum board applied to the garage side. Where garage ceilings provide a portion of the occupancy separation, the ceiling and supporting members shall be covered with one layer of 5/8-inch (15.9 mm) Type X gypsum board fastened to trusses or conventional framing spaced a maximum of 24 inches (610 mm) on center.

R310.1 Emergency Escape and Rescue Openings Required.

Section R310.1 is amended to read:

R310.1 Emergency escape and rescue openings required. Basements 70 square feet or greater in area and every sleeping room shall have at least one openable emergency escape and rescue opening. Such opening shall open directly into a public street, public alley, yard or court. Where emergency escape and rescue openings are provided they shall have a sill height of not more than 44 inches (1118 mm) above the floor. Where a door opening having a threshold below the adjacent ground elevation serves as an

emergency escape and rescue opening and is provided with a bulkhead enclosure, the bulkhead enclosure shall comply with Section R310.3. The net clear opening dimensions required by this section shall be obtained by the normal operation of the emergency escape and rescue opening from the inside. Emergency escape and rescue openings with a finished sill height below the adjacent ground elevation shall be provided with a window well in accordance with Section R310.2.

R310.2 Window Wells.

Section R310.2 is amended to read:

R310.2 Window wells. The minimum horizontal area of the window well shall be 9 square feet (0.84 m^2), with a minimum horizontal projection and width of 36 inches (914 mm). The area of the window well shall allow the emergency escape and rescue opening to be fully opened.

Exception. The ladder or steps required by Section R310.2.1 shall be permitted to encroach a maximum of 6 inches (152 mm) into the window well.

R310.2.1 Ladder and Steps.

Section R310.2.1 is amended to read:

R310.2.1 Ladder and steps. Window wells with a vertical depth greater than 44 inches (1118 mm) shall be equipped with a permanently affixed ladder or steps usable with the window in the fully open position. Ladders or steps required by this section shall not be required to comply with Subsections R311.5.1 through R311.5.8.4 and R311.6.3 through R311.6.3.3. Ladders or rungs shall have an inside width of at least 12 inches (305 mm), shall project at least 3 inches (76 mm) from the wall and shall be spaced not more than 18 inches (457 mm) on center vertically for the full height of the window well.

R310.4 Operational Constraints.

Section R310.4 is amended to read:

R310.4 Operational constraints. Emergency escape and rescue openings shall be operational from the inside of the room without special knowledge or the use of keys or tools. Where bars, grills, grates or similar devices are installed on buildings, smoke alarms shall be installed in accordance with Section R317.

SECTION R311 EXITS

Section R311through R315 is amended to read:

SECTION R311
MEANS OF EGRESS

R311.1 General. Stairways, ramps, exterior exit balconies, hallways and doors shall comply with this section.

R311.2 Construction.

R311.2.1 Attachment. Exterior exit balconies, stairs and similar exit facilities shall be positively anchored to the primary structure to resist both vertical and lateral forces. Such attachment shall not be accomplished by use of toenails or nails subject to withdrawal.

R311.2.2 Under stair protection. Enclosed accessible space under stairs shall have walls, under stair surface and any soffits protected on the enclosed side with 5/8-inch *(15.9 mm)* Type X gypsum board.

R311.3 Hallways. The minimum width of a hallway shall be not less than 3 feet (914 mm).

R311.4 Doors.

R311.4.1 Exit door required Not less than one exit door conforming to this section shall be provided for each dwelling unit. The required exit door shall provide for direct access from the habitable portions of the dwelling to the exterior without requiring travel through a garage. Access to habitable levels not having an exit in accordance with this section shall be by a ramp in accordance with Section R311.6 or a stairway in accordance with Section R311.5.

R311.4.2 Door type and size. The required exit door shall be a side-hinged door not less than 3 feet (914 mm) in width and 6 feet 8 inches (2032 mm) in height. Other doors shall not be required to comply with these minimum dimensions.

R311.4.3 Landings at doors. There shall be a floor or landing on each side of each exterior door.

Exception. Where a stairway of two or fewer risers is located on the exterior side of a door, other than the required exit door, a landing is not required for the exterior side of the door, provided the door does not swing over the stair.

The floor or landing at the exit door required by Section R311.4.1 shall not be more than 1.5 inches (38 mm) lower than the top of the threshold. The floor or landing at exterior doors other than the exit door required by Section R311.4.1 shall not be required to comply with this requirement but shall have a rise no greater than that permitted in Section R311.5.3.

Exception: The landing at an exterior doorway shall not be more than 8 inches (203 mm) below the top of the threshold, provided the door, other than an exterior storm or screen door does not swing over the landing.

The width of each landing shall not be less than the door served. Every landing shall have a minimum dimension of 36 inches (914 mm) measured in the direction of travel.

R311.4.4 Type of lock or latch. All egress doors shall be readily openable from the side from which egress is to be made without the use of a key or special knowledge or effort.

R311.5 Stairways

R311.5.1 Width. Stairways shall not be less than 36 inches (914 mm) in clear width at all points above the permitted handrail height and below the required headroom height. Handrails shall not project more than 4.5 inches (114 mm) on either side of the stairway and the minimum clear width of the stairway at and below the handrail height, including treads and landings, shall not be less than 31.5 inches (787 mm) where a handrail is installed on one side and 27 inches (698 mm) where handrails are provided on both sides.

Exception. The width of spiral stairways shall be in accordance with Section R311.5.8.

R311.5.2 Headroom. The minimum headroom in all parts of the stairway shall not be less than 6 feet 8 inches (2032 mm) measured vertically from the sloped plane adjoining the tread nosing or from the floor surface of the landing or platform.

R311.5.3 Stair treads and risers. The maximum riser height shall be 8 inches (203mm) and the minimum tread depth shall be 9 inches (229mm). The riser height shall be measured vertically between leading edges of the adjacent treads. The tread depth shall be measured horizontally between the vertical planes of the foremost projection of adjacent treads and at a right angle to the tread's leading edge.

R311.5.3.1 Dimensional uniformity. The greatest riser height within any flight of stairs shall not exceed the smallest by more than 3/8 inch (9.5 mm). The greatest tread depth within any flight of stairs shall not exceed the smallest by more than 3/8 inch (9.5 mm).

R311.5.4 Landings for stairways. There shall be a floor or landing at the top and bottom of each stairway.

Exception: At the top of an interior flight of stairs, provided a door does not swing over the stairs.

The width of each landing shall not be less than the stairway served. Every landing shall have a minimum dimension of 36 inches (914 mm) measured in the direction of travel.

R311.5.5 Stairway walking surface. The walking surface of treads and landings of stairways shall be sloped no steeper than one unit vertical in 48 inches horizontal (2-percent slope).

R311.5.6 Handrails. Handrails shall be provided on at least one side of each stairway with four or more risers.

R311.5.6.1 Height. Handrail height, measured above stair tread nosing, or finish surface of ramp slope, shall be not less than 34 inches (864 mm) and not more than 38 inches (965 mm).

R311.5.6.2 Continuity. Handrails for stairways shall be continuous for the full length of the stairs, from a point directly above the top riser of the flight to a point directly above lowest riser of the flight. Handrail ends shall be returned or shall terminate in newel posts or safety terminals. Handrails adjacent to a wall shall have a space of not less than 1-1/2 inches (38 mm) between the wall and the handrails.

Exceptions:

1. Handrails shall be permitted to be interrupted by a newel post at the turn.

2. The use of a volute, turnout or starting easing shall be allowed over the lowest tread.

R311.5.6.3 Handrail grip size. All required handrails shall be of one of the following types or provide equivalent graspability.

1. Type I. Handrails with a circular cross section shall have an outside diameter of at least 1 1/4 inches (32 mm) and not greater than 2 inches (51 mm). If the handrail is not circular it shall have a perimeter dimension of at least 4 inches (102 mm) and not greater than 6 1/4 inches (160 mm) with a maximum cross section of dimension of 2 1/4 inches (57 mm).

2. Type II. Handrails with a perimeter greater than 6-1/4 inches (160 mm) shall provide a graspable finger recess area on both sides of the profile. The finger recess shall begin within a distance of 3/4 inches (19 mm) measured vertically from the tallest portion of the profile and achieve a depth of at least 5/16 inches (8 mm) within 7/8 inches (22 mm) below the widest portion of the profile. This required depth shall continue for at least 3/8 inches (10 mm) to a level that is not less than 1-3/4 inches (45 mm) below the tallest portion of the profile. The minimum width of the handrail above the recess shall be 1-1/4 inches (32 mm) to a maximum of 2-3/4 inches (70 mm). Edges shall have a minimum radius of 0.01 inches (0.25 mm).

R311.5.7 Illumination. All stairs shall be provided with illumination in accordance with Section R303.4

R311.5.8 Special stairways. Circular stairways, spiral stairways, winders and bulkhead enclosure stairways shall comply with all requirements of Section R311.5 except as specified, below.

R311.5.8.1 Circular stairways. Circular stairways shall have a tread depth of not less than 10 inches (254 mm) at a point not more than 12 inches (305 mm) from the side where the treads are narrower, and the minimum depth of any tread shall not be less than 6 inches (152 mm). Tread depth at a point 12 inches (305 mm) from the side where the treads are narrower shall be uniform as specified in Section R311.5.3.1.

R311.5.8.2 Winders. Winders are permitted, if the minimum width of run is provided at a point not more than 12 inches (305 mm) from the side where the treads are narrower, and the minimum width of any tread is not less than 6 inches (153 mm). The continuous handrail required by Section 311.5.6.2 shall be located on the side where the tread is narrower.

R311.5.8.3 Spiral stairways. Spiral stairways are permitted, provided the minimum width shall be 26 inches (660 mm) with each tread having a 7-1/2 inch (190 mm) minimum tread depth at 12 inches from the narrower edge. All treads shall be identical, and the rise shall be no more than 9-1/2 inches (241 mm). A minimum headroom of 6 feet 6 inches (1982 mm) shall be provided.

R311.5.8.4 Bulkhead enclosure stairways. Stairways serving bulkhead enclosures, not part of the required building egress, providing access from the outside grade level to the basement shall be exempt from the requirements of Sections R311.4.3 and R311.5 where the maximum height from the basement finished floor level to grade adjacent to the stairway is covered by a bulkhead enclosure with hinged doors or other approved means.

R311.6 Ramps.

R311.6.1 Maximum slope. Ramps shall have a maximum slope of one unit vertical in eight units horizontal (12.5-percent slope).

R311.6.2 Landings required. A minimum 3-foot-by-3-foot (914 mm by 914 mm) landing shall be provided:

1. At the top and bottom of ramps;

2. Where doors open onto ramps; and

3. Where ramps change direction.

R311.6.3 Handrails required. Handrails shall be provided on at least one side of all ramps exceeding a slope of one unit vertical in 12 units horizontal (8.33-percent slope).

R311.6.3.1 Height. Handrail height, measured above the finished surface of the ramp slope, shall be not less than 34 inches (864 mm) and not more than 38 inches (965 mm).

R311.6.3.2 Handrail grip size. Handrails on ramps shall comply with Section R311.5.6.3.

R311.6.3.3 Continuity. Handrails where required on ramps shall be continuous for the full length of the ramp. Handrail ends shall be returned or shall terminate in newel posts or safety terminals. Handrails adjacent to a wall shall have a space of not less than 1.5 inches (38 mm) between the wall and the handrails.

R312 through R 315

Delete sections R312 through R315

R316.2 Guardrail Opening Limitations.

Section R316.2 is amended to read:

R316.2 Guardrail opening limitations. Required guards on open sides of stairways, raised floor areas, balconies and porches shall have intermediate rails or ornamental closures which do not allow passage of a sphere 4 inches (102mm) or more in diameter.

Exceptions:

1. The triangular openings formed by the riser, tread and bottom rail of a guard at the open side of a stairway are permitted to be of such a size that a sphere 6 inches (152 mm) cannot pass through.

2. Openings for required guards on the sides of stair treads shall not allow a sphere 4-3/8 inches (107 mm) to pass through.

R318.2.7 Sill Plates and Headers

Add a new section R318.2.7 to read:

R318.2.7 Sill plates and headers. Foam plastic shall be permitted to be spray applied to a sill plate and header subject to all of the following:

1. The maximum thickness of the foam plastic shall be 3-1/4 inches (82.6 mm).

2. The density of the foam plastic shall be in the range of 1.5 to 2.0 pcf (24 to 32 kg/m3).

3. The foam plastic shall have a flame spread index of 25 or less and an accompanying smoke-developed index of 450 or less when tested in accordance with ASTM E84.

R319.4 Alternate Test Method

Add a new section R319.4 to read:

R319.4 Alternate test method. As an alternate to having aflame spread classification of not greater than 200 and a smoke-developed index of not greater than 450 when tested in accordance with ASTM E84, wall and ceiling finishes, other than textiles, shall be permitted to be tested in accordance with NFPA 286. Materials tested in accordance with NFPA 286 shall meet the following criteria:

During the 40 kW exposure, the interior finish shall comply with Item 1. During the 160 kW exposure, the interior finish shall comply with Item 2. During the entire test, the interior finish shall comply with Item 3.

1. During the 40 kW exposure, flames shall not spread to the ceiling.

2. During the 160 kW exposure, the interior finish shall comply with the following:

   2.1. Flame shall not spread to the outer extremity of the sample on any wall or ceiling.

   2.2. Flashover, as defined in NFPA 286, shall not occur.

3. The total smoke released throughout the NFPA 286 test shall not exceed 1,000 m2.

R321.1 Two-family Dwellings

Section R321.1 is amended to read:

R321.1 Two-family dwellings. Dwelling units in two-family dwellings shall be separated from each other by wall and/or floor assemblies of not less than 1-hour fire-resistive rating when tested in accordance with ASTM E 119. Fire-resistance-rated floor-ceiling and wall assemblies shall extend to and be tight against the exterior wall, and fire-resistance rated wall assemblies shall extend to the underside of the roof sheathing.

Exception: A fire resistance rating of ½ hour shall be permitted in buildings equipped throughout with an automatic sprinkler installed in accordance with NFPA 13, 13R, or 13D.

R321.2 Townhouses
Section R321.2, Exception is amended to read:

Exception: A common 2-hour fire-resistance-rated wall is permitted for townhouses if such walls do not contain plumbing or mechanical equipment, ducts or vents in the cavity of the common wall. Electrical installations shall be installed in accordance with the *National Electrical Code*. Penetrations of electrical outlet boxes shall be in accordance with Section R321.3.

R321.3.1.2 Penetration Firestop System.

Section R321.3.1.2 is amended to read:

R321.3.1.2 Penetration firestop system. Penetrations shall be protected by an approved penetration firestop system installed as tested in accordance with ASTM E814 or UL1479, with a minimum positive pressure differential of 0.01 inch of water (3 Pa) and shall have an F rating of not less than the required fire-resistance rating of the wall or floor/ceiling assembly penetrated.

R321.3.2 Membrane Penetrations

Section R321.3.2 is amended to read:

R321.3.2 Membrane penetrations. Membrane penetrations shall comply with Section R321.3.1. Where walls are required to have a minimum 1-hour fire-resistance rating, recessed light fixtures shall be so installed such that the required fire resistance will not be reduced.

Exceptions:

1. Steel electrical boxes that do not exceed 16 square inches ($0.0103 m^2$) in area provided the total area of such openings does not exceed 100 square inches ($0.0645 m^2$) for any 100 square feet ($9.29 m^2$) of wall area. Outlet boxes on opposite sides of the wall shall be separated as shown:

   1.1 By a horizontal distance of not less than 24 inches (610 mm); *or*

   1.2 By a horizontal distance of not less than the depth of the wall cavity when the wall cavity is filled with cellulose loose-fill or mineral fiber insulation; *or*

   1.3 By solid fire blocking in accordance with Section R602.8.; or

   1.4 By other listed materials and methods.

2. Membrane penetrations for listed electrical outlet boxes of any materials are permitted provided such boxes have been tested for use in fire-resistance-rated assemblies and are installed in accordance with the instructions included in the listing.

3. The annular space created by the penetration of a fire sprinkler provided it is covered by a metal escutcheon plate.

R322.1 Moisture control

Delete Exception 3.

R323.1 Location Required

Section R323.1 is amended to read:

R323.1 Location required. The following locations shall require the use of an approved species and grade of lumber, pressure treated in accordance with AWPA C1, C2, C3, C4, C9, C15, C18, C22, C23, C24, C28, C33, P1, P2 and P3, or decay-resistant heartwood of redwood, black locust, or cedars.

1. Wood joists or the bottom of a wood structural floor when closer than 18 inches (457 mm) or wood girders when closer than 12 inches (305 mm) to exposed ground in crawl spaces or unexcavated area located within the periphery of the building foundation.

2. All sills or plates that rest on concrete or masonry exterior walls and are less than 8 inches (203 mm) from exposed ground.

3. Sills and sleepers on a concrete or masonry slab that is in direct contact with the ground unless separated from such slab by an impervious moisture barrier.

4. The ends of wood girders entering exterior masonry or concrete walls having clearances of less than 0.5 inch (12.7 mm) on tops, sides and ends.

5. Wood siding, sheathing and wall framing on the exterior of a building having a clearance of less than 6 inches (152 mm) from the ground.

6. Wood structural members supporting moisture-permeable floors or roofs that are exposed to the weather, such as concrete or masonry slabs, unless separated from such floors or roofs by an impervious moisture barrier.

7. Wood furring strips or other wood framing members attached directly to the interior of exterior masonry walls or concrete walls below grade except where an approved vapor retarder is applied between the wall and the furring strips of framing members.

R323.1.4 Wood Columns

Section R323.1.4 is amended to read:

R323.1.4 Wood columns. Wood columns shall be approved wood of natural decay resistance or approved pressure preservatively treated wood.

Exceptions:

1. Posts or columns which are either exposed to the weather or located in basements or cellars, supported by piers or metal pedestals projecting 1 inch (25.4 mm) above the floor or finished

grade and 6 inches (152 mm) above exposed earth, and are separated therefrom by an approved impervious moisture barrier.

2. Posts or columns in enclosed crawl spaces or unexcavated areas located within the periphery of the building, supported by a concrete pier or metal pedestal at a height greater than 8 inches (203 mm) from exposed ground, are separated therefrom by an impervious moisture barrier.

R324.1.1 Quality mark

Add a new section R324.1.1 to read:

R324.1.1 Quality mark. Lumber and plywood required to be pressure preservatively treated in accordance with Section R324.1 shall bear the quality mark of an approved inspection agency which maintains continuing supervision, testing and inspection over the quality of the product and which has been approved by an accreditation body which complies with the requirements of the American Lumber Standard Committee treated wood program.

R326.1 Scope

Section R326.1 is amended to read:

R326.1 Scope. Where there are four or more dwelling units or sleeping units in a single structure, the provisions of Chapter 11 of the *International Building Code* for Group R-3 shall apply.

R327.1.5 Protection of Mechanical, Plumbing and Electrical Systems

Section R327.1.5 is amended to read:

R327.1.5 Protection of mechanical, plumbing and electrical systems. New and replacement electrical systems, equipment and components, and heating, ventilating, air conditioning, plumbing appliances, plumbing fixtures, duct systems, and other service equipment shall be located at or above the design flood elevation. New and replacement service equipment and components shall not be mounted on or penetrate through walls intended to break away under flood loads.

Exception: New and replacement electrical systems, equipment and components, and heating, ventilating, air conditioning, plumbing appliances, plumbing fixtures, duct systems, and other service equipment are permitted to be located below the design flood elevation provided that they are designed and installed to prevent water from entering or accumulating within the components and to resist hydrostatic and hydrodynamic loads and stresses, including the effects of buoyancy, during the occurrence of flooding to the design flood elevation in compliance with the flood-resistant construction requirements of the *International Building Code.* Electrical wiring systems are permitted to be located below the design flood elevation provided they conform to the provisions of the electrical part of this code for wet locations.

R327.3.1 Elevation Requirements

Section R327.3.1 is renumbered to be R327.3.2.

R327.3.2 Foundations.

Section R327.3.2 is renumbered to be R327.3.3.

R327.3.1 Location and Site Preparation

Add a new section R327.3.1 to read:

R327.3.1 Location and site preparation.

1. Buildings and structures shall be located landward of the reach of mean high tide.

2. For any alteration of sand dunes and mangrove stands the building official shall require submission of an engineering analysis which demonstrates that the proposed alteration will not increase the potential for flood damage.

R327.3.3 Walls Below Design Flood Elevation

R327.3.3 is renumbered to be R327.3.4 and amended to read:

R327.3.4 Walls below design flood elevation.

Walls and partitions are permitted below the elevated floor, provided that such walls and partitions are not part of the structural support of the building or structure, and:

1. Electrical, mechanical, and plumbing system components are not mounted on or penetrate through walls that are designed to break away under flood loads.

2. Are constructed with insect screening or open lattice.

3. Designed to break away or collapse without causing collapse, displacement or other structural damage to the elevated portion of the building or supporting foundation system. Such walls, framing and connections shall have a design safe loading resistance of not less than 10 psf (0.48 kN/m^2) and no more than 20 pounds per square foot (0.96 kN/m^2); or

4. Where wind loading values of this code exceed 20 pounds per square foot (0.96 kN/m^2), a registered design professional shall certify the following:

   4.1 Collapse of walls and partitions below the design flood elevation shall result from a water load less than that which would occur during the design flood.

   4.2 The elevated portion of the building and supporting foundation system shall not be subject to collapse, displacement, or other structural damage due to the effects of wind and flood loads acting simultaneously on all building components (structural and nonstructural). Water loading values used shall be those associated with the design flood. Wind loading values shall be those required by this code.

R327.3.4 Enclosed Areas Below Design Flood Elevation

Section R327.3.4 is renumbered to R327.3.5.

R327.3.5 Design Certificate

R327.3.5 is renumbered to be R327.3.6.

CHAPTER 4

R401.1 Application

Section R401.1 is amended to read:

R401.1 Application. The provisions of this chapter shall control the design and construction of the foundation and foundation spaces for all buildings. Wood foundations shall be designed and installed in accordance with AF&PA Report No. 7.

Exceptions:

1. The provisions of this chapter shall be permitted to be used for wood foundations only in the following situations:

   1.1 In buildings that have no more than two floors and a roof.

   1.2 When interior basement and foundation walls are provided at intervals not exceeding 50 feet (15 240 mm).

2. In addition to the provisions of this chapter, the design and construction of foundations in areas prone to flooding as established by Table R301.2 (1) shall meet the provisions of Section R327.

Wood foundations in Seismic Design Categories D_1, and D_2, shall be designed in accordance with accepted engineering practice.

R402.2 Concrete

Section R402.2 is amended to read:

R402.2 Concrete. Concrete shall have a minimum specified compressive strength as shown in Table R402.2. Concrete subject to 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, or slag 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 cementitious materials specified in ACI 318. Materials used to produce concrete and testing thereof shall comply with the applicable standards listed in ACI 318. In addition to the cements permitted by ACI 318, cement complying with ASTM C1157 is permitted.

R403.1 General

Section R403.1 is amended to read:

R403.1 General. All exterior walls shall be supported on continuous solid or fully grouted masonry or concrete footings, wood foundations, or other approved structural systems which 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 from the character of the soil. Footings shall be supported on undisturbed natural soils or engineered fill.

The design of post tension foundations shall be in accordance with the IBC.

Table R403.1 MINIMUM WIDTH OF CONCRETE OR MASONRY FOOTINGS (inches)[a]

Table R403.1 is amended to read:

Table R403.1
MINIMUM WIDTH OF CONCRETE OR MASONRY FOOTINGS (inches)[a]

	LOAD-BEARING VALUE OF SOIL (psf)			
	1,500	**2,000**	**3,000**	**~~2~~ 4000**
Conventional Light-Frame Construction				
1-story	12	12	12	12
2-story	15	12	12	12
3-story	23	17	12	12
4-Inch Brick Veneer over Light-Frame Construction or 8-inch Hollow Concrete Masonry				
1-story	12	12	12	12
2-story	21	16	12	12
3-story	32	24	16	12
8-Inch Solid Concrete or Masonry, or Fully Grouted Masonry				
1-story	16	12	12	12
2-story	29	21	14	12
3-story	42	32	21	16

For SI: 1 inch = 25.4 mm.

[a] Where minimum footing width is 12 inches a single wythe of solid or fully grouted 12-inch nominal concrete masonry units is permitted to be used.

R403.1.4 Minimum Depth.

Section R403.1.4 is amended to read:

R403.1.4 Minimum depth. All exterior footings shall be placed at least 12 inches (305 mm) below the undisturbed ground. Where applicable, the depth of footings shall also conform to Sections R403.1.4.1 through R403.1.4.2

R403.1.4.1 Frost Protection

Add a new section R403.1.4.1 to read:

R403.1.4.1 Frost protection. Except where otherwise protected from frost, foundation walls, piers and other permanent supports of buildings and structures shall be protected from frost by one or more of the following methods:

1. Extended below the frost line specified in Table R301.2(1);

2. Constructed in accordance with Section R403.3;

3. Constructed in accordance with ASCE 32-01 and

4. Erected on solid rock.

Exception: Freestanding accessory structures with an area of 400 square feet (37 m^2) or less and an eave height of 10 feet (3048 mm) or less shall not be required to be protected.

Footings shall not bear on frozen soil unless such frozen condition is of a permanent character.

R403.1.4.2 Seismic Conditions

Add new a section R403.1.4.2 to read:

R403.1.4.2 Seismic conditions. In Seismic Design Categories D_1, and D_2, interior footings supporting bearing or bracing walls and cast monolithically with a slab on grade shall extend to a depth of not less than 18 inches (457 mm) below the top of slab.

R404.1.5.1 Pier and Curtain Wall Foundations

Section R404.1.5.1 is amended to read:

R404.1.5.1 Pier and curtain wall foundations. Pier and curtain wall foundations shall be permitted to be used to support light-frame construction not more than two stories in height, provided the following requirements are met:

1. All load-bearing walls shall be placed on continuous concrete footings placed integrally with the exterior wall footings.

2. The minimum actual thickness of a load-bearing masonry wall shall be not less than 4 inches (102 mm) nominal or 3-3/8 inches (92 mm) actual thickness, and shall be bonded integrally with piers spaced in accordance with Section R606.8.

3. Piers shall be constructed in accordance with Section R606.5 and Section R606.5.1, and shall be bonded into the load-bearing masonry wall in accordance with Section R608.1.1 or Section R608.1.1.2.

4. The maximum height of a 4-inch (102 mm) load- bearing masonry foundation wall supporting wood framed walls and floors shall not be more than 4 feet (1219 mm) in height.

5. Anchorage shall be in accordance with R403.1.6, Figure R404.1.5(1), or as specified by engineered design accepted by the building official.

6. The unbalanced fill for 4-inch (102 mm) foundation walls shall not exceed 24 inches (610 mm) for solid masonry or 12 inches (305 mm) for hollow masonry.

7. In Seismic Design Categories D_1 and D_2 prescriptive reinforcement shall be provided in the horizontal and vertical directions. Provide minimum horizontal joint reinforcement of two No. 9 gage wires spaced not less than 6 inches (152 mm) or one 1/4-inch-diameter (6.4 mm) wire at 10 inches (254 mm) on center vertically. Provide minimum vertical reinforcement of one #3 bar at 44 inches (1118 mm) on center horizontally grouted in place.

Figure R404.1.5(1) Foundation Wall Clay Masonry Curtain Wall With concrete Masonry Piers

Figure R404.1.5(1) is amended to read:

GALVANIZED OR STAINLESS STEEL STRAPS, MIN. 2.06 IN. WIDE BY 0.105 INCH THICK, MIN. 2 IN. FROM EDGE OF PIER. (TYP.)

R404.2.1 Wood Grade.

The title of Section R404.2.1 is amended to read:

R404.2.1 Identification. (Text of section remains unchanged)

Table R404.4(1) 5.5-Inch-Thick Flat ICF Foundation Walls

Table R404.4(1) is amended to read:

TABLE R404.4(1)
5.5-INCH THICK FLAT ICF FOUNDATION WALLS [a,b,c,d]

HEIGHT OF BASEMENT WALL (feet)	MAXIMUM UNBALANCED BACKFILL HEIGHT [e] (feet)	MINIMUM VERTICAL REINFORCEMENT SIZE AND SPACING [f]		
		Soil group I[f]	Soil group II[f]	Soil group III[f]
8	4	#4@48"	#4@48"	#4@48"
	5	#4@48"	#3@12";#4@22";#5@32"	#3@8";#4@14"; #5@20";#6@26"
	6	#3@12";#4@22";#5@30"	#3@8";#4@14";#5@20"; #6@24"	#3@6";#4@10"; #5@14";#6@20"
	7	#3@8";#4@14";#5@22"; #6@26"	#3@5";#4@10";#5@14"; #6@18"	#3@4";#4@6"; #5@10";#6@14"
9	4	#4@48"	#4@48"	#4@48"
	5	#4@48"	#3@12";#4@20";#5@28"; #6@36"	#3@8";#4@14"; #5@20";#6@22"
	6	#3@10";#4@20";#5@28"; #6@34"	#3@6";#4@12";#5@18"; #6@20"	#4@8"; #5@14";#6@16"
	7	#3@8";#4@14";#5@20"; #6@22"	#4@8";#5@12";#6@16"	#4@6"; #5@10";#6@12"
	8	#3@6";#4@10";#5@14"; #6@16"	#4@6";#5@10";#6@12"	#4@4"; #5@6";#6@8"
10	4	#4@48"	#4@48"	#4@48"
	5	#4@48"	#3@10";#4@18";#5@26"; #6@30"	#3@6";#4@14"; #5@18";#6@20"

	6	#3@10";#4@18";#5@24"; #6@30"	#3@6";#4@12";#5@16"; #6@18"	#3@4";#4@8"; #5@12";#6@14"
	7	#3@6";#4@12";#5@16"; #6@18"	#3@4";#4@8";#5@12"	#4@6"; #5@8";#6@10"
	8	#4@8";#5@12";#6@14"	#4@6";#5@8";#6@12"	#4@4"; #5@6";#6@8"
	9	#4@6";#5@10";#6@12"	#4@4";#5@6";#6@8"	#5@4";#6@6"

For SI: 1 inch = 25.4mm, 1 foot = 304.8 mm, 1 pound per square inch = 6.895 kPa.

a. This table is based on concrete with a minimum specified concrete strength of 2500 psi, reinforcing steel with a minimum yield strength of 40,000 psi. When reinforcing steel with a minimum yield strength of 60,000 psi is used, the spacing of the reinforcement shall be increased to 1.5 times the spacing value in the table but in no case greater than 48 inches on center.

b. This table is not intended to prohibit the use of an ICF manufacturer's tables based on engineering analysis in accordance with ACI 318.

c. Deflection criteria: *L*/240.

d. Interpolation between rebar sizes and spacing is not permitted.

e. Unbalanced backfill height is the difference in height of the exterior and interior finished ground. Where an interior concrete slab is provided, the unbalanced backfill height shall be measured from the exterior finished ground level to the top of the interior concrete slab.

f. Soil classes are in accordance with the Unified Soil Classification System. Refer to Table R405.1.

Table R404.4(2) 7.5-Inch-Thick Flat ICF Foundation Walls [a, b, c, d]

Table R404.4(2) is amended to read:

TABLE R404.4(2)
7.5-INCH THICK FLAT ICF FOUNDATION WALLS [a,b,c,d,e]

HEIGHT OF BASEMENT WALL (feet)	MAXIMUM UNBALANCED BACKFILL HEIGHT [f] (feet)	MINIMUM VERTICAL REINFORCEMENT SIZE AND SPACING [g]		
		Soil group I[g]	Soil group II[g]	Soil group III[g]
8	6	N/R	N/R	N/R
	7	N/R	#3@8";#4@14";#5@20"; #6@28"	#3@6";#4@10";#5@16"; #6@20"
9	6	N/R	N/R	#3@8";#4@14";#5@20"; #6@28"
	7	N/R	#3@6";#4@12";#5@18"; #6@26"	#3@4";#4@8"; #5@14";#6@18"
	8	#3@8";#4@14";#5@22"; #6@28"	#3@4";#4@8";#5@14"; #6@18"	#3@4";#4@6"; #5@10";#6@14"
10	6	N/R	N/R	#3@6";#4@12";#5@18"; #6@26"
	7	N/R	#3@6";#4@12";#5@18"; #6@24"	#3@4";#4@8"; #5@12";#6@18"
	8	#3@6";#4@12";#5@20"; #6@26"	#3@4";#4@8";#5@12"; #6@16"	#3@4";#4@6"; #5@8";#6@12"
	9	#3@6";#4@10";#5@14"; #6@20"	#3@4";#4@6";#5@10"; #6@12"	#4@4"; #5@6";#6@10"

For SI: 1 inch = 25.4mm, 1 foot = 304.8 mm, 1 pound per square inch = 6.895 kPa.

a. This table is based on concrete with a minimum specified concrete strength of 2500 psi, reinforcing steel with a minimum yield strength of 40,000 psi. When reinforcing steel with a minimum yield strength of 60,000 psi is used, the spacing of the reinforcement shall be increased to 1.5 times the spacing value in the table.

b. This table is not intended to prohibit the use of an ICF manufacturer's tables based on engineering analysis in accordance with ACI 318.

c. N/R denotes "not required."

d. Deflection criteria: *L*/240.

e. Interpolation between rebar sizes and spacing is not permitted.

f. Unbalanced backfill height is the difference in height of the exterior and interior finished ground. Where an interior concrete slab is provided, the unbalanced backfill height shall be measured from the exterior finished ground level to the top of the interior concrete slab.

g. Soil classes are in accordance with the Unified Soil Classification System. Refer to Table R405.1.

Table R404.4(3) 9.5-Inch-Thick Flat ICF Foundation Walls [a, b, c, d]

Table R404.4(3) is amended to read:

TABLE R404.4(3)

HEIGHT OF BASEMENT WALL (feet)	MAXIMUM UNBALANCED BACKFILL HEIGHT [f] (feet)	MINIMUM VERTICAL REINFORCEMENT SIZE AND SPACING [g]		
		Soil group I[g]	Soil group II[g]	Soil group III[g]
8	7	N/R	N/R	N/R
9	6	N/R	N/R	N/R
	7	N/R	N/R	#3@6";#4@12";#5@18"; #6@26"
	8	N/R	#3@6";#4@12";#5@18"; #6@26"	#3@4";#4@8"; #5@14";#6@18"
10	5	N/R	N/R	N/R
	6	N/R	N/R	#3@10";#4@18";#5@26"; #6@36"
	7	N/R	N/R	#3@6";#4@10";#5@18"; #6@24"
	8	N/R	#3@6";#4@12";#5@16"; #6@24"	#3@4";#4@8"; #5@12";#6@16"
	9	N/R	#3@4";#4@8";#5@12"; #6@18"	#3@4";#4@6"; #5@10";#6@12"

For SI: 1 inch = 25.4mm, 1 foot = 304.8 mm, 1 pound per square inch = 6.895 kPa.

a. This table is based on concrete with a minimum specified concrete strength of 2500 psi, reinforcing steel with a minimum yield strength of 40,000 psi. When reinforcing steel with a minimum yield strength of 60,000 psi is used, the spacing of the reinforcement shall be increased to 1.5 times the spacing value in the table.

b. This table is not intended to prohibit the use of an ICF manufacturer's tables based on engineering analysis in accordance with ACI 318.

c. N/R denotes "not required."

d. Deflection criteria: *L*/240.

e. Interpolation between rebar sizes and spacing is not permitted.

f. Unbalanced backfill height is the difference in height of the exterior and interior finished ground. Where an interior concrete slab is provided, the unbalanced backfill height shall be measured from the exterior finished ground level to the top of the interior concrete slab.

g. Soil classes are in accordance with the Unified Soil Classification System. Refer to Table R405.1.

Table R404.4(4) Waffle Grid ICF Foundation Walls [a, b, c, d]

Table R404.4(4) is amended to read:

TABLE R404.4(4)
WAFFLE GRID ICF FOUNDATION WALLS [a,b,c,d,e]

MINIMUM NOMINAL WALL THICKNESS [f] (inches)	HEIGHT OF BASEMENT WALL (feet)	MAXIMUM UNBALANCED BACKFILL HEIGHT [g] (feet)	MINIMUM VERTICAL REINFORCEMENT SIZE AND SPACING [h]		
			Soil group I[h]	Soil group II[h]	Soil group III[h]
6	8	4	#4@48"	#3@12";#4@24"	#3@12"
		5	#3@12";#5@24"	#4@12"	#7@12"
		6	#4@12"	Design required	Design required
		7	#7@12"	Design required	Design required
	9	4	#4@48"	#3@12";#5@24"	#3@12"
		5	#3@12"	#4@12"	Design required
		6	#5@12"	Design required	Design required
		7	Design required	Design required	Design required
	10	4	#4@48"	#4@12"	#5@12"
		5	#3@12"	Design required	Design required
		6	Design required	Design required	Design required
		7	Design required	Design required	Design required
8	8	4	N/R	N/R	N/R
		5	N/R	#3@12";#4@24"; #5@36"	#3@12";#5@24

		6	#3@12";#4@24"; #5@36"	#4@12";#5@24	#4@12"
		7	#3@12";#6@24"	#4@12"	#5@12"
	9	4	N/R	N/R	N/R
		5	N/R	#3@12";#5@24"	#3@12";#5@24"
		6	#3@12";#4@24"	#4@12"	#4@12"
		7	#4@12";#5@24"	#5@12"	#5@12"
		8	#4@12"	#5@12"	#8@12"
	10	4	N/R	#3@12";#4@24"; #6@36"	#3@12";#5@24"
		5	N/R	#3@12";#4@24"; #6@36"	#4@12";#5@24"
		6	#3@12";#5@24"	#4@12"	#5@12"
		7	#4@12"	#5@12"	#6@12"
		8	#4@12"	#6@12"	Design required
		9	#5@12"	Design required	Design required

For SI: 1 inch = 25.4mm, 1 foot = 304.8, 1 pound per square inch = 0.0479 kN/m ^{2}.

a. This table is based on concrete with a minimum specified concrete strength of 2500 psi, reinforcing steel with a minimum yield strength of 40,000 psi. When reinforcin g steel with a minimum yield strength of 60,000 psi is used, the spacing of the reinforcement shall be increased to 1.5 times the spacing value in the table.
b. This table is not intended to prohibit the use of an ICF manufacturer's tables based on engineering analysis in accordance with ACI 318.
c. N/R denotes "not required."
d. Deflection criteria: *L*/240.
e. Interpolation between rebar sizes and spacing is not permitted.
f. Refer to Table R611.4(2) for wall dimensions.
g. Unbalanced backfill height is the difference in height of the exterior and interior finished ground. Where an interior concrete slab is provided, the unbalanced backfill height shall be measured from the exterior finished ground level to the top of the interior concrete slab.
h. Soil classes are in accordance with the Unified Soil Classification System. Refer to Table R405.1.

Table R404.4(5) Screen-Grid ICF Foundation Walls [a, b, c]

Table R404.4(5) is amended to read:

TABLE R404.4(5)
SCREEN-GRID ICF FOUNDATION WALLS [a,b,c, d, e]

MINIMUM NOMINAL WALL THICKNESS (Inches) [f]	HEIGHT OF BASEMENT WALL (feet)	MAXIMUM UNBALANCED BACKFILL HEIGHT [g] (feet)	MINIMUM VERTICAL REINFORCEMENT SIZE AND SPACING		
			Soil Group I [h]	Soil Group II [h]	Soil Group III [h]
6	8	4	# 4 @ 48"	# 3 @ 12", # 4 @ 24" #5 @ 36"	# 3 @ 12"; # 5 @ 24"
		5	# 3 @ 12", # 4 @ 24"	# 3 @ 12"	# 4 @ 12"
		6	# 4 @ 12"	# 5 @ 12"	Design Required
		7	# 4 @ 12"	Design Required	Design Required
	9	4	# 4 @ 48"	# 3 @ 12", # 4 @ 24"	# 3 @ 12", # 6 @ 24"
		5	# 3 @ 12", # 5 @ 24"	# 4 @ 12"	# 7 @ 12"
		6	# 4 @ 12"	Design Required	Design Required
		7	Design Required	Design Required	Design Required
		8	Design Required	Design Required	Design Required
	10	4	# 4 @ 48"	# 3 @ 12"; # 5 @ 24"	# 3 @ 12"
		5	# 3 @ 12"	# 4 @ 12"	# 7 @ 12"
		6	# 4 @ 12"	Design Required	Design Required
		7	Design Required	Design Required	Design Required
		8	Design Required	Design Required	Design Required

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 pound per square inch = 6.895 kPa.

a. This table is based on concrete with a minimum specified concrete strength of 2500 psi, reinforcing steel with a minimum yield strength of 40,000 psi. When reinforcing steel with a minimum yield strength of 60,000 psi is used, the spacing of the reinforcement in the shaded cells shall be increased 12 inches.

b. This table is not intended to prohibit the use of an ICF manufacturer's tables based on engineering analysis in accordance with ACI 318.
c. N/R denotes "not required."
e. Deflection criteria: *L*/240.
e. Interpolation between rebar sizes and spacing is not permitted.
f. Refer to Table R611.4(2) for wall dimensions.
g. Unbalanced backfill height is the difference in height of the exterior and interior finished ground. Where an interior concrete slab is provided, the unbalanced backfill height shall be measured from the exterior finished ground level to the top of the interior concrete slab.
h. Soil classes are in accordance with the Unified Soil Classification System. Refer to Table R405.1.

R408.2 Openings for under-floor ventilation.

Exception 3 of section R408.2 is amended to read:

R408.2 Openings for under-floor ventilation.

Exceptions:

3. Under-floor spaces used as supply plenums for distribution of heated and cooled air shall comply with the requirements of the *Uniform Mechanical Code*.

R408.3 Access.

Section R408.3 is amended to read:

R408.3 Access. Access shall be provided to all under-floor spaces. Access openings through the floor shall be a minimum of 18 inches by 24 inches (457 mm by 610 mm). Openings through a perimeter wall shall be 16 inches by 24 inches (407 mm by 610 mm). When any portion of the through-wall access is below grade, an access opening of not less than 16 inches by 24 inches (407 mm by 610 mm) shall be provided. The bottom of the access opening shall be below the threshold of the access opening. Through wall access openings shall not be located under a door to the residence. See the *Uniform Mechanical Code* for access requirements where mechanical equipment is located under floors.

CHAPTER 5

R502.1 General.

Section R502.1 is amended to read:

R502.1 Identification. Load-bearing dimension lumber for joists, beams and girders shall be identified by a grade mark of a lumber grading or inspection agency that has been approved by an accreditation body that complies with DOC PS 20. In lieu of a grade mark, a certificate of inspection issued by a lumber grading or inspection agency meeting the requirements of this section shall be accepted.

R502.1.5 Structural Glued Laminated Timbers.

Section R502.1.5 is added to read:

R502.1.5 Structural glued laminated timbers. Glued laminated timbers shall be manufactured and identified as required in AITC A190.1 and ASTM D3737.

R502.3 Allowable Joist Spans.

Section R502.3, encompassing subsections R502.3.1 and R502.3.2 are amended to read:

R502.3 Allowable Joist Spans. Spans for floor foists shall be in accordance with Tables R 502.3.1(1) and R502.3.1(2). For other grades and species and for other loading conditions, refer to the AF&PA Span Tables for Joists and Rafters.

R502.3.1 Attic Joists. Table R502.3.1(1) shall be utilized to determine the maximum allowable span of floor joists that support attics that are accessed by means of a fixed stairway provided that the design live load does not exceed 40 psf (1.92 kN/m^2) and the design dead load does not exceed 10 psf (0.48 kN/m^2). The allowable span of ceiling joists that support attics utilized for limited storage or no storage shall be determined in accordance with Section R802.4.

R502.3.2 Other floor joists. Table R502.3.1(2) shall be utilized to determine the maximum allowable span of floor joists that support all areas of the building, other than attics, provided that the design live load does not exceed 40 psf (1.92 kN/m^2) and the design dead load does not exceed 10 psf (0.48 kN/m^2).

R502.3.3 Floor cantilevers

Add new section R502.3.3 to read:

R502.3.3 Floor cantilevers. Floor cantilever spans shall not exceed the nominal depth of the wood floor joist. Floor cantilevers constructed in accordance with Table R502.3.3 shall be permitted when supporting a light-frame bearing wall and roof only. The ratio of backspan to cantilever span shall be at least 3 to 1.

Table R502.3.1(1) Floor Joist Spans For Common Lumber Species

Table R502.3.1(1) is amended to read:

TABLE R502.3.1(1)
FLOOR JOIST SPANS FOR COMMON LUMBER SPECIES
(Residential attic areas, live load=30 psf, L/? =360)

		DEAD LOAD = 10 psf				DEAD LOAD = 20 PSF			
		2X6	2X8	2X10	2X12	2X6	2X8	2X10	2X12
		Maximum Floor Joist Spans							
JOIST SPACING (inches)	SPECIE AND GRADE	(ft.-in.)	(ft.-in.)	(ft.-in.)	(ft.-in.)	(ft.-in.)	(ft.-in.)	(ft.-in.)	(ft.-in.)
12	Douglas fir-larch SS	12- 6	16- 6	21- 0	25- 7	12- 6	16- 6	21- 0	25- 7
	Douglas fir-larch #1	12- 0	15-10	20- 3	24- 8	12- 0	15- 7	19- 0	22- 0
	Douglas fir-larch #2	11-10	15- 7	19-10	23- 0	11- 6	14- 7	17- 9	20- 7
	Douglas fir-larch #3	9- 8	12- 4	15- 0	17- 5	8- 8	11- 0	13- 5	15- 7
	Hem-fir SS	11-10	15- 7	19-10	24- 2	11-10	15- 7	19-10	24- 2
	Hem-fir #1	11- 7	15- 3	19- 5	23- 7	11- 7	15- 2	18- 6	21- 6
	Hem-fir #2	11- 0	14- 6	18- 6	22- 6	11- 0	14- 4	17- 6	20- 4
	Hem-fir #3	9- 8	12- 4	15- 0	17- 5	8- 8	11- 0	13- 5	15- 7
	Southern pine SS	12- 3	16- 2	20- 8	25- 1	12- 3	16- 2	20- 8	25- 1
	Southern pine #1	12- 0	15-10	20- 3	24- 8	12- 0	15-10	20- 3	24- 8
	Southern pine #2	11-10	15- 7	19-10	18- 8	11-10	15- 7	18- 7	21- 9
	Southern pine #3	10- 5	13- 3	15- 8	18- 8	9- 4	11-11	14- 0	16- 8
	Spruce-pine-fir SS	11- 7	15- 3	19- 5	23- 7	11- 7	15- 3	19- 5	23- 7
	Spruce-pine-fir #1	11- 3	14-11	19- 0	23- 0	11- 3	14- 7	17- 9	20- 7

	Spruce-pine-fir	#2	11- 3	14-11	19- 0	23- 0	11- 3	14- 7	17- 9	20- 7
	Spruce-pine-fir	#3	9- 8	12- 4	15- 0	17- 5	8- 8	11- 0	13- 5	15- 7
16	Douglas fir-larch	SS	11- 4	15- 0	19- 1	23- 3	11- 4	15- 0	19- 1	23- 0
	Douglas fir-larch	#1	10-11	14- 5	18- 5	21- 4	10- 8	13- 6	16- 5	19- 1
	Douglas fir-larch	#2	10- 9	14- 1	17- 2	19-11	9-11	12- 7	15- 5	17-10
	Douglas fir-larch	#3	8- 5	10- 8	13- 0	15- 1	7- 6	9- 6	11- 8	13- 6
	Hem-fir	SS	10- 9	14- 2	18- 0	21-11	10- 9	14- 2	18- 0	21-11
	Hem-fir	#1	10- 6	13-10	17- 8	20- 9	10- 4	13- 1	16- 0	18- 7
	Hem-fir	#2	10- 0	13- 2	16-10	19- 8	9-10	12- 5	15- 2	17- 7
	Hem-fir	#3	8- 5	10- 8	13- 0	15- 1	7- 6	9- 6	11- 8	13- 6
	Southern pine	SS	11- 2	14- 8	18- 9	22-10	11- 2	14- 8	18- 9	22-10
	Southern pine	#1	10-11	14- 5	18- 5	22- 5	10-11	14- 5	17-11	21- 4
	Southern pine	#2	10- 9	14- 2	18- 0	21- 1	10- 5	13- 6	16- 1	18-10
	Southern pine	#3	9- 0	11- 6	13- 7	16- 2	8- 1	10- 3	12- 2	14- 6
	Spruce-pine-fir	SS	10- 6	13-10	17- 8	21- 6	10- 6	13-10	17- 8	21- 4
	Spruce-pine-fir	#1	10- 3	13- 6	17- 2	19-11	9-11	12- 7	15- 5	17-10
	Spruce-pine-fir	#2	10- 3	13- 6	17- 2	19-11	9-11	12- 7	15- 5	17-10
	Spruce-pine-fir	#3	8- 5	10- 8	13- 0	15- 1	7- 6	9- 6	11- 8	13- 6
19.2	Douglas fir-larch	SS	10- 8	14- 1	18- 0	21-10	10- 8	14- 1	18- 0	21- 0
	Douglas fir-larch	#1	10- 4	13- 7	16- 9	19- 6	9- 8	12- 4	15- 0	17- 5
	Douglas fir-larch	#2	10-1	12-10	15- 8	18- 3	9- 1	11- 6	14- 1	16- 3
	Douglas fir-larch	#3	7- 8	9- 9	11-10	13- 9	6-10	8- 8	10- 7	12- 4
	Hem-fir	SS	10- 1	13- 4	17- 0	20- 8	10- 1	13- 4	17- 0	20- 7
	Hem-fir	#1	9-10	13- 0	16- 4	19- 0	9- 6	12- 0	14- 8	17- 0
	Hem-fir	#2	9- 5	12- 5	15- 6	17-1	8-11	11- 4	13-10	16- 1
	Hem-fir	#3	7- 8	9- 9	11- 10	13- 9	6-10	8- 8	10- 7	12- 4
	Southern pine	SS	10- 6	13-10	17- 8	21- 6	10- 6	13-10	17- 8	21- 6
	Southern pine	#1	10- 4	13- 7	17- 4	21- 1	10- 4	13- 7	16- 4	19- 6
	Southern pine	#2	10- 1	13- 4	16- 5	19- 3	9- 6	12- 4	14- 8	17- 2
	Southern pine	#3	8- 3	10- 6	12- 5	14- 9	7- 4	9- 5	11- 1	13- 2
	Spruce-pine-fir	SS	9- 10	13- 0	16- 7	20- 2	9-10	13- 0	16- 7	19- 6
	Spruce-pine-fir	#1	9- 8	12- 9	15- 8	18- 3	9- 1	11- 6	14- 1	16- 3
	Spruce-pine-fir	#2	9- 8	12- 9	15- 8	18- 3	9- 1	11- 6	14- 1	16- 3
	Spruce-pine-fir	#3	7- 8	9- 9	11-10	13- 9	6-10	8- 8	10- 7	12- 4
24	Douglas fir-larch	SS	9-11	13- 1	16- 8	20- 3	9-11	13- 1	16- 2	18- 9
	Douglas fir-larch	#1	9- 7	12- 4	15- 0	17- 5	8- 8	11- 0	13- 5	15- 7
	Douglas fir-larch	#2	9- 1	11- 6	14- 1	16- 3	8- 1	10- 3	12- 7	14- 7
	Douglas fir-larch	#3	6-10	8- 8	10- 7	12- 4	6- 2	7- 9	9- 6	11- 0
	Hem-fir	SS	9- 4	12- 4	15- 9	19- 2	9- 4	12- 4	15- 9	18- 5
	Hem-fir	#1	9- 2	12- 0	14- 8	17- 0	8- 6	10- 9	13- 1	15- 2
	Hem-fir	#2	8- 9	11- 4	13-10	16- 1	8- 0	10- 2	12- 5	14- 4
	Hem-fir	#3	6-10	8- 8	10- 7	12- 4	6- 2	7- 9	9- 6	11- 0
	Southern pine	SS	9- 9	12-10	16- 5	19-11	9- 9	12-10	16- 5	19-11
	Southern pine	#1	9- 7	12- 7	16- 1	19- 6	9- 7	12- 4	14- 7	17- 5
	Southern pine	#2	9- 4	12- 4	14- 8	17- 2	8- 6	11- 0	13- 1	15- 5
	Southern pine	#3	7- 4	9- 5	11- 1	13- 2	6- 7	8- 5	9-11	11-10
	Spruce-pine-fir	SS	9- 2	12- 1	15- 5	18- 9	9- 2	12- 1	15- 0	17- 5
	Spruce-pine-fir	#1	8-11	11- 6	14- 1	16- 3	8- 1	10- 3	12- 7	14- 7
	Spruce-pine-fir	#2	8-11	11- 6	14- 1	16- 3	8- 1	10- 3	12- 7	14- 7
	Spruce-pine-fir	#3	6-10	8- 8	10- 7	12- 4	6- 2	7- 9	9- 6	11- 0

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 pound per square foot = 0.0479 kN/m^2.

NOTE: Check sources for availability of lumber in lengths greater than 20 feet.

Table R502.3.1(2) Floor Joist spans For common Lumber Species

Table R502.3.1(2) is amended to read:

TABLE R502.3.1(2)
FLOOR JOIST SPANS FOR COMMON LUMBER SPECIES (Residential living areas, live load=40 psf, L/? =360)

			DEAD LOAD = 10 psf				DEAD LOAD = 20 PSF			
			2X6	2X8	2X10	2X12	2X6	2X8	2X10	2X12
			Maximum Floor Joist Spans							
JOIST SPACING (inches)	SPECIE AND GRADE		(ft.-in.)	(ft.-in.)	(ft.-in.)	(ft.-in.)	(ft.-in.)	(ft.-in.)	(ft.-in.)	(ft.-in.)
	Douglas fir-larch	SS	11- 4	15- 0	19- 1	23- 3	11- 4	15- 0	19- 1	23- 3
	Douglas fir-larch	#1	10-11	14- 5	18- 5	22- 0	10-11	14- 2	17- 4	20- 1
	Douglas fir-larch	#2	10- 9	14- 2	17- 9	20- 7	10- 6	13- 3	16- 3	18-10

12	Douglas fir-larch	#3	8- 8	11- 0	13- 5	15- 7	7-11	10- 0	12- 3	14- 3
	Hem-fir	SS	10- 9	14- 2	18- 0	21-11	10- 9	14- 2	18- 0	21-11
	Hem-fir	#1	10- 6	13-10	17- 8	21- 6	10- 6	13-10	16-11	19- 7
	Hem-fir	#2	10- 0	13- 2	16-10	20- 4	10- 0	13- 1	16- 0	18- 6
	Hem-fir	#3	8- 8	11- 0	13- 5	15- 7	7-11	10- 0	12- 3	14- 3
	Southern pine	SS	11- 2	14- 8	18- 9	22-10	11- 2	14- 8	18- 9	22-10
	Southern pine	#1	10-11	14- 5	18- 5	22- 5	10-11	14- 5	18- 5	22- 5
	Southern pine	#2	10- 9	14- 2	18- 0	21- 9	10- 9	14- 2	16-11	19-10
	Southern pine	#3	9- 4	11-11	14- 0	16- 8	8- 6	10-10	12-10	15- 3
	Spruce-pine-fir	SS	10- 6	13-10	17- 8	21- 6	10- 6	13-10	17- 8	21- 6
	Spruce-pine-fir	#1	10- 3	13- 6	17- 3	20- 7	10- 3	13- 3	16- 3	18-10
	Spruce-pine-fir	#2	10- 3	13- 6	17- 3	20- 7	10- 3	13- 3	16- 3	18-10
	Spruce-pine-fir	#3	8- 8	11- 0	13- 5	15- 7	7-11	10- 0	12- 3	14- 3
16	Douglas fir-larch	SS	10- 4	13- 7	17- 4	21- 1	10- 4	13- 7	17- 4	21- 0
	Douglas fir-larch	#1	9-11	13- 1	16- 5	19- 1	9- 8	12- 4	15- 0	17- 5
	Douglas fir-larch	#2	9- 9	12- 7	15- 5	17-10	9- 1	11- 6	14- 1	16- 3
	Douglas fir-larch	#3	7- 6	9- 6	11- 8	13- 6	6-10	8- 8	10- 7	12- 4
	Hem-fir	SS	9- 9	12-10	16- 5	19-11	9- 9	12-10	16- 5	19-11
	Hem-fir	#1	9- 6	12- 7	16- 0	18- 7	9- 6	12- 0	14- 8	17- 0
	Hem-fir	#2	9- 1	12- 0	15- 2	17- 7	8-11	11- 4	13-10	16- 1
	Hem-fir	#3	7- 6	9- 6	11- 8	13- 6	6-10	8- 8	10- 7	12- 4
	Southern pine	SS	10- 2	13- 4	17- 0	20- 9	10- 2	13- 4	17- 0	20- 9
	Southern pine	#1	9-11	13- 1	16- 9	20- 4	9-11	13- 1	16- 4	19- 6
	Southern pine	#2	9- 9	12-10	16- 1	18-10	9- 6	12- 4	14- 8	17- 2
	Southern pine	#3	8- 1	10- 3	12- 2	14- 6	7- 4	9- 5	11- 1	13- 2
	Spruce-pine-fir	SS	9- 6	12- 7	16- 0	19- 6	9- 6	12- 7	16- 0	19- 6
	Spruce-pine-fir	#1	9- 4	12- 3	15- 5	17-10	9- 1	11- 6	14- 1	16- 3
	Spruce-pine-fir	#2	9- 4	12- 3	15- 5	17-10	9- 1	11- 6	14- 1	16- 3
	Spruce-pine-fir	#3	7- 6	9- 6	11- 8	13- 6	6-10	8- 8	10- 7	12- 4
19.2	Douglas fir-larch	SS	9- 8	12-10	16- 4	19-10	9- 8	12-10	16- 4	19- 2
	Douglas fir-larch	#1	9- 4	12- 4	15- 0	17- 5	8-10	11- 3	13- 8	15-11
	Douglas fir-larch	#2	9- 1	11- 6	14- 1	16- 3	8- 3	10- 6	12-10	14-10
	Douglas fir-larch	#3	6-10	8- 8	10- 7	12- 4	6- 3	7-11	9- 8	11- 3
	Hem-fir	SS	9- 2	12- 1	15- 5	18- 9	9- 2	12- 1	15- 5	18- 9
	Hem-fir	#1	9- 0	11-10	14- 8	17- 0	8- 8	10-11	13- 4	15- 6
	Hem-fir	#2	8- 7	11- 3	13-10	16- 1	8- 2	10- 4	12- 8	14- 8
	Hem-fir	#3	6-10	8- 8	10- 7	12- 4	6- 3	7-11	9- 8	11- 3
	Southern pine	SS	9- 6	12- 7	16- 0	19- 6	9- 6	12- 7	16- 0	19- 6
	Southern pine	#1	9- 4	12- 4	15- 9	19- 2	9- 4	12- 4	14-11	17- 9
	Southern pine	#2	9- 2	12- 1	14- 8	17- 2	8- 8	11- 3	13- 5	15- 8
	Southern pine	#3	7- 4	9- 5	11- 1	13- 2	6- 9	8- 7	10- 1	12- 1
	Spruce-pine-fir	SS	9- 0	11-10	15- 1	18- 4	9- 0	11-10	15- 1	17- 9
	Spruce-pine-fir	#1	8- 9	11- 6	14- 1	16- 3	8- 3	10- 6	12-10	14-10
	Spruce-pine-fir	#2	8- 9	11- 6	14- 1	16- 3	8- 3	10- 6	12-10	14-10
	Spruce-pine-fir	#3	6-10	8- 8	10- 7	12- 4	6- 3	7-11	9- 8	11- 3
24	Douglas fir-larch	SS	9- 0	11-11	15- 2	18- 5	9- 0	11-11	14- 9	17- 1
	Douglas fir-larch	#1	8- 8	11- 0	13- 5	15- 7	7-11	10- 0	12- 3	14- 3
	Douglas fir-larch	#2	8- 1	10- 3	12- 7	14- 7	7- 5	9- 5	11- 6	13- 4
	Douglas fir-larch	#3	6- 2	7- 9	9- 6	11- 0	5- 7	7- 1	8- 8	10- 1
	Hem-fir	SS	8- 6	11- 3	14- 4	17- 5	8- 6	11- 3	14- 4	16-10 [a]
	Hem-fir	#1	8- 4	10- 9	13- 1	15- 2	7- 9	9- 9	11-11	13-10
	Hem-fir	#2	7-11	10- 2	12- 5	14- 4	7- 4	9- 3	11- 4	13- 1
	Hem-fir	#3	6- 2	7- 9	9- 6	11- 0	5- 7	7- 1	8- 8	10- 1
	Southern pine	SS	8-10	11- 8	14-11	18- 1	8-10	11- 8	14-11	18- 1
	Southern pine	#1	8- 8	11- 5	14- 7	17- 5	8- 8	11- 3	13- 4	15-11
	Southern pine	#2	8- 6	11- 0	13- 1	15- 5	7- 9	10- 0	12- 0	14- 0
	Southern pine	#3	6- 7	8- 5	9-11	11-10	6- 0	7- 8	9- 1	10- 9
	Spruce-pine-fir	SS	8- 4	11- 0	14- 0	17- 0	8- 4	11- 0	13- 8	15-11
	Spruce-pine-fir	#1	8- 1	10- 3	12- 7	14- 7	7- 5	9- 5	11- 6	13- 4
	Spruce-pine-fir	#2	8- 1	10- 3	12- 7	14- 7	7- 5	9- 5	11- 6	13- 4
	Spruce-pine-fir	#3	6- 2	7- 9	9- 6	11- 0	5- 7	7- 1	8- 8	10- 1

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 pound per square foot = 0.0479 kN/m^2.
a. Check sources for availability of lumber in lengths greater than 20 feet.
b. End bearing length shall be increased to 2 inches.

Table R502.3.3 Cantilever Spans For Floor Joists Supporting Light-Frame Exterior Bearing Wall and Roof Only [a, b, c, f, g, h]

Add Table R502.3.3 to read:

TABLE R502.3.*3*
CANTILEVER SPANS FOR FLOOR JOISTS
SUPPORTING LIGHT-FRAME EXTERIOR BEARING WALL AND ROOF ONLY[a, b, c, f, g, h]
(Floor Live Load = 40 psf, Roof Live Load = 20 psf)

MEMBER & SPACING	MAXIMUM CANTILEVER SPAN (Uplift Force at Backspan Support in Lbs.)[d, e]											
	Ground Snow Load											
	? 20 psf			30 psf			50 psf			70 psf		
	Roof Width			Roof Width			Roof Width			Roof Width		
	24 ft.	32 ft.	40 ft.	24 ft.	32 ft.	40 ft.	24 ft.	32 ft.	40 ft.	24 ft.	32 ft.	40 ft.
2 x 8 @ 12"	20" (177)	15" (227)		18" (209)								
2 x 10 @ 16"	29" (228)	21" (297)	16" (364)	26" (271)	18" (354)		20" (375)					
2 x 10 @ 12"	36" (166)	26" (219)	20" (270)	34" (198)	22" (263)	16" (324)	26" (277)			19" (356)		
2 x 12 @ 16"		32" (287)	25" (356)	36" (263)	29" (345)	21" (428)	29" (367)	20" (484)		23" (471)		
2 x 12 @ 12"		42" (209)	31" (263)		37" (253)	27" (317)	36" (271)	27" (358)	17" (447)	31" (348)	19" (462)	
2 x 12 @ 8"		48" (136)	45" (169)		48" (164)	38" (206)		40" (233)	26" (294)	36" (230)	29" (304)	18" (379)

For SI: 1 inch = 25.4 mm, 1 pound per square foot = 0.0479 kN/m^2

Notes:
a. Tabulated values are for clear-span roof supported solely by exterior bearing walls.
b. Spans are based on No. 2 Grade lumber of Douglas fir-larch, hem-fir, southern pine, and spruce-pine-fir for repetitive (3 or more) members.
c. Ratio of backspan to cantilever span shall be at least 3:1.
d. Connections capable of resisting the indicated uplift force shall be provided at the backspan support.
e. Uplift force is for a backspan to cantilever span ratio of 3:1. Tabulated uplift values are permitted to be reduced by multiplying by a factor equal to 3 divided by the actual backspan ratio provided (3/backspan ratio).
f. See Section R301.2.2.7.1 for additional limitations on cantilevered floor joists for detached one- and two-family dwellings in Seismic Design Categories D_1 and D_2 and townhouses in Seismic Design Categories C, D_1, and D_2.
g. A full-depth rim joist shall be provided at the cantilevered end of the joists. Solid blocking shall be provided at the cantilever support.
h. Linear interpolation shall be permitted for building widths and ground snow loads other than shown.

R502.4 Joists Under Bearing Partitions

Section R502.4 is amended to read:

R502.4 Joists under bearing partitions. Joists under parallel bearing partitions shall be of adequate size to support the load. Double joists, sized to adequately support the load, that are separated to permit the installation of piping or vents shall be full-depth solid blocked lumber not less than 2 inches (51 mm) in nominal thickness spaced not more than 4 feet (1219 mm) on center.

Table R502.5(1) Girder Spans[a], and Header Spans[a] For Exterior Bearing Walls

The heading of the first column of Table R502.5(1) is amended to read:

"GIRDERS AND HEADERS SUPPORTING"

R502.11.1 Design.

Section R502.11.1 is amended to read:

Wood trusses shall be designed in accordance with approved engineering practice. The design and manufacture of the metal plate connected wood trusses shall comply with ANSI/TPI 1. The truss design drawings shall be prepared by a registered professional where required by the statutes of the jurisdiction in which the project is to be constructed.

R502.12 Draftstopping Required.

Section R502.12 is amended to read:.

R502.12 Draftstopping required. When there is usable space both above and below the concealed space of a floor/ceiling assembly, draftstops shall be installed so that the area of the concealed space does not exceed 1,000 square feet (92.9 m^2). Draftstopping shall divide the concealed space into approximately equal areas. Where the assembly is enclosed by a floor membrane above and a ceiling membrane below draftstopping shall be provided in floor/ceiling assemblies under the following circumstances:

1. Ceiling is suspended under the floor framing.
2. Floor framing is constructed of truss-type open web or perforated members.

In building containing more than one dwelling unit, draftstops shall be installed between the dwelling units in:

1. floor-ceiling assemblies, and
2. attics, mansards, overhangs, and similar concealed spaces.

Such draft stops shall be in line with the walls separating the dwelling units from each other. Construction plans for new, addition, and alteration construction shall include details that clearly identify the location of all draftstops.

CHAPTER 6

R602.1.2 Structural Glued Laminated Timbers.

A new section R602.1.2 is added to read:

R602.1.2 Structural glued laminated timbers. Glued laminated timbers shall be manufactured and identified as required in AITC A190.1 and ASTM D3737.

R602.3 Design and Construction.

Section R602.3 is amended to read:

R602.3 Design and construction. Exterior walls of wood-frame construction shall be designed and constructed in accordance with the provisions of this chapter and Figures R602.3(1) and R602.3(2) or in accordance with AF&PA's National Design Specification. Components of exterior walls shall be fastened in accordance with Tables R602.3(1) through R602.3(4). Exterior walls covered with foam plastic sheathing shall be braced in accordance with Section R602.10. Structural sheathing shall be fastened directly to structural framing members.

R602.3.2 Top Plate.

Section R602.3.2 is amended to read:

R602.3.2 Top plate. Wood stud walls shall be capped with a double top plate installed to provide overlapping at corners and intersections with bearing partitions. End joints in top plates shall be offset at least 48 inches (1219mm). Plates shall be a nominal 2 inches in depth (51 mm) and have a width at least equal to the width of the studs.

Table R602.3(1) Fastener Schedule For Structural Members

Table R602.3(1) "note a" is amended to read:

TABLE R602.3(1)
FASTENER SCHEDULE FOR
STRUCTURAL MEMBERS

[a.] All nails are smooth-common, box or deformed shanks except where otherwise stated. Nails used for framing and sheathing connections shall have minimum average bending yield strengths as shown: 80 ksi (551 Mpa) for shank diameter of 0.192" (20d common nail), 90 ksi (620 Mpa) for shank diameters larger than 0.142" but not larger than 0.177", and 100 ksi (689 Mpa) for shank diameters of 0.142" or less.

Figure 602.6.1 TOP PLATE FRAMING TO ACCOMMODATE PIPING

Figure 602.6.1 is amended to read:

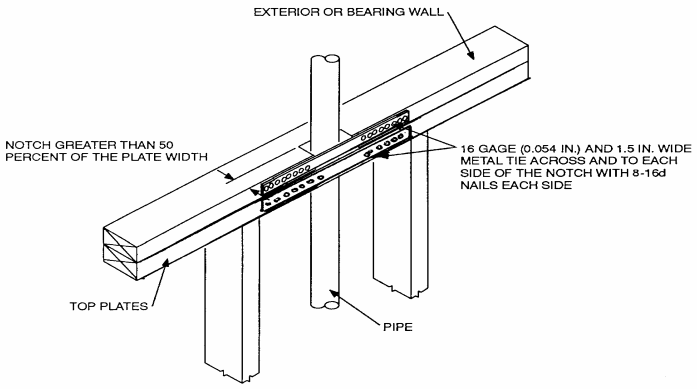


FIGURE 602.6.1
TOP PLATE FRAMING TO ACCOMMODATE PIPING

R602.6.1 Drilling and Notching of Top Plate.

Section R602.6.1 is amended to read:

R602.6.1 Drilling and notching of top plate. When piping or ductwork is placed in or partly in an exterior or interior load-bearing wall, necessitating cutting, drilling or notching of the top plate by more than 50 percent of its width, a galvanized metal tie of not less than 0.054 inches thick (1.37 mm) (16 ga) and 1-1/2 inches (38 mm) wide shall be fastened to each plate across and to each side of the opening with not less than eight 16d nails at each side or equivalent. See Figure R602.6.1.

Exception: When the entire side of the wall with the notch or cut is covered by wood structural panel sheathing.

R602.8 Fireblocking Required

Section 602.8 is amended to read:

R602.8 Fireblocking required. Fireblocking shall be provided to cut off all concealed draft openings (both vertical and horizontal) and to form an effective fire barrier between stories, and between a top story and the roof space. Fireblocking shall be provided in wood-frame construction in the following locations.

1. In concealed spaces of stud walls and partitions, including furred spaces, at the ceiling and floor levels. Concealed horizontal furred spaces shall also be fireblocked at intervals not exceeding 10 feet (3048). Batts or blankets of mineral or glass fiber or other approved nonrigid materials shall be allowed as fireblocking in walls constructed using parallel rows of studs or staggered studs.

2. At all interconnections between concealed, vertical and horizontal spaces such as occur at soffits, drop ceilings and cove ceilings.

3. In concealed spaces between stair stringers at the top and bottom of the run. Enclosed spaces under stairs shall comply with Section R311.2.2.

4. At openings around vents, pipes, and ducts at ceiling and floor level, with an approved material to resist the free passage of flame and products of combustion.

5. For the fireblocking of chimneys and fireplaces, see Section R1001.16.

6. Fireblocking of cornices of a two-family dwelling is required at the line of dwelling unit separation.

R602.10.1.1 Spacing

A new section R602.10.1.1 is added to read:

R602.10.1.1 Spacing. Spacing of braced wall lines shall not exceed 35 feet (10668 mm) on center in both the longitudinal and transverse directions in each story.

R602.10.1.2 Height.

A new section R602.10.1.2 is added to read:

R602.10.1.2 Height. The height of braced wall panels shall not exceed 10 feet.

R602.10.3 Braced Wall Panel Construction Methods.

Section R602.10.3, Item 5 is amended to read:

5. Gypsum board with minimum 1/2-inch (12.7 mm) thickness placed on studs spaced a maximum of 24 inches (610 mm) on center and fastened at 7 inches (178 mm) on center with the size nails specified in Table R602.3(1) for sheathing and Table R702.3.5 for interior gypsum board.

Section R606.11, R606.11.2, R606.11.3, R606.11.3.1, and R606.11.4 Change to read as shown:

R606.11 Seismic Requirements.

Section R606.11 is amended to read:

R606.11 Seismic requirements. The seismic requirements of this section shall apply to the design of masonry and the construction of masonry building elements located in Seismic Design Category D_1 or D_2. Townhouses in Seismic Design Category C shall comply with the requirements in Section R606.11.2. These requirements shall not apply to glass unit masonry conforming to Section R610 or masonry veneer conforming to Section R703.7.

R606.11.2 Seismic Design Category C.

Section R606.11.2 is amended to read:

R606.11.2 Seismic Design Category C. Townhouses located in Seismic Design Category C shall comply with the requirements of this section.

R606.11.3 Seismic Design Category D_1.

R606.11.3 is amended to read:

R606.11.3 Seismic Design Category D_1. All structures in Seismic Design Category D_1 shall comply with the requirements of Seismic Design Category C and to the additional requirements of this section.

R606.11.3.1 Design Requirements.

R606.11.3.1 is amended to read:

R606.11.3.1 Design requirements. Masonry elements other than those covered by Section R606.11.2.1.2 shall be designed in accordance with the requirements of Chapter 1 and Sections 2.1 and 2.3 of ACI 530/ASCE 5/TMS 402 and shall meet the minimum reinforcement requirements contained in Sections R606.11.3.2 and R606.11.3.2.1.

Exception: Masonry walls limited to one story in height and 9 feet (2743 mm) between lateral supports need not be designed provided they comply with the minimum reinforcement requirements of Sections R606.11.3.2 and R606.11.3.2.1.

R606.11.4 Seismic Design Category D_2.

R606.11.4 is amended to read:

R606.11.4 Seismic Design Category D_2. All structures in Seismic Design Category D_2 shall comply with the requirements of Seismic Design Category D_1 and to the additional requirements of this section.

Table R607.1 Mortar Proportions [a, b]

Table R607.1 is amended to read:

TABLE R607.1
MORTAR PROPORTIONS [a, b]

PROPORTIONS BY VOLUME (CEMENTITIOUS MATERIALS)										
MORTAR	TYPE	Portland cement or Blended cement	Mortar cement			Masonry cement			HYDRATED LIME[C] OR LIME PUTTY	AGGREGATE RATIO (MEASURED IN DAMP, LOOSE CONDITIONS)
			M	S	N	M	S	N		
Cement-lime	M	1	-	-	-	-	-	-	1/4	Not less than 2 1/4 and not more than 3 times the sum of separate volumes of lime, if used, and cement
	S	1	-	-	-	-	-	-	over 1/4 to ½	
	N	1	-	-	-	-	-	-	over ½ to 1 1/4	
	O	1	-	-	-	-	-	-	over 1 1/4 to 2 ½	
Mortar cement	M	1	-	-	1	-	-	-	—	
	M	-	1	-	-	-	-	-		
	S	½	-	-	1	-	-	-		
	S	-	-	1	-	-	-	-		
	N	-	-	-	1	-	-	-		
	O	-	-	-	1	-	-	-		
Masonry cement	M	1				-	-	1	—	
	M	-				1	-	-		
	S	½				-	-	1		
	S	-				-	1	-		
	N	-				-	-	1		
	O	-				-	-	1		

For SI: 1 cubic foot = 0.0283 m^3, 1 pound = 0.454 kg.

[a] For the purpose of these specifications, the weight of 1 cubic foot of the respective materials shall be considered to be as follows:

Portland Cement	94 pounds
Masonry Cement	Weight printed on bag
Mortar Cement	Weight printed on bag
Hydrated Lime	40 pounds
Lime Putty (Quicklime)	80 pounds
Sand, damp and loose	80 pounds of dry sand

[b] Two air-entraining materials shall not be combined in mortar.
[c] Hydrated lime conforming to the requirements of ASTM C 207.

Table 611.3 Minimum Vertical Wall Reinforcement For Flat ICF Above-Grade Walls [a, b, c, d]

Footnote d. of Table 611.3 is amended to read:

TABLE 611.3
MINIMUM VERTICAL WALL REINFORCEMENT
FOR FLAT ICF ABOVE-GRADE WALLS [a,b,c,d]

d. See Section R611.7.1.4 for additional reinforcement requirements for townhouses in Seismic Design Category C.

Table 611.4(1) Minimum Vertical Wall Reinforcement For Waffle-Grid ICF Above-Grade Walls [a, b, c, d, e]

Footnote e. of Table 811.4(1) is amended to read:

TABLE 611.4(1)
MINIMUM VERTICAL WALL REINFORCEMENT
FOR WAFFLE-GRID ICF
ABOVE-GRADE WALLS [a,b,c,d,e]

e. See Section R611.7.1.4 for additional reinforcement requirements for townhouses in Seismic Design Category C.

Table R611.5 Minimun Vertical Wall Reinforcement for Screen-Grid ICF Above-Grade Wall [a, b, c, d, e]

Footnote e. of Table R611.5 is amended to read:

TABLE R611.5
MINIMUM VERTICAL WALL REINFORCEMENT
FOR SCREEN-GRID ICF ABOVE-GRADE WALLS [a,b,c,d,e]

e. See Section R611.7.1.4 for additional reinforcement requirements for townhouses in Seismic Design Category C.

R611.7.1.4 Dwellings in Seismic Design Category C

Section R611.7.1.4 is amended to read:

R611.7.1.4 Dwellings in Seismic Design Category C. Townhouses in Seismic Design Category C shall have horizontal and vertical reinforcement in accordance with the following:

1. Vertical reinforcement consisting of at least one No. 4 reinforcing bar, extending continuously from support to support, shall be provided at each corner, at each side of each opening and at the ends of walls.

2. Horizontal reinforcement consisting of at least one No. 4 reinforcing bar, continuously at structurally connected roof and floor levels and at the top of the wall, at the bottom of load-bearing walls or in the top of foundations where doweled to the wall and at a maximum spacing of 10 feet (3048 mm.)

Vertical reinforcement provided in accordance with Sections R611.7.1.2 and R611.7.2 and horizontal reinforcement provided in accordance with Section R611.7.1.3 and R611.7.3, shall be permitted to be used to meet the requirements of this section.

R611.7.2 Wall Openings.

Section R611.7.2 is amended to read:

R611.7.2 Wall openings. Wall openings shall have a minimum of 8 inches (203 mm) of depth of concrete for flat and waffle-grid ICF walls and 12 inches (305 mm) for screen-grid walls over the length of the opening. When the depth of concrete above the opening is less than 12 inches (305 mm) for flat or waffle-grid walls, lintels in accordance with Section R611.7.3 shall be provided. Reinforcement around openings shall be provided in accordance with Table R611.7(1) and Figure R611.7(2). All reinforcement placed horizontally above or below an opening shall extend a minimum of 24 inches (610 mm) beyond the limits of the opening. Wall opening reinforcement shall be provided in addition to the reinforcement required by Sections R611.3, R611.4, R611.5 and R611.7.1. The perimeter of all wall openings shall be framed with a minimum 2-inch by 4-inch plate, anchored to the wall with 1/2-inch-diameter (12.7 mm) anchor bolts spaced a maximum of 24 inches (610 mm) on center. The bolts shall be embedded into the concrete a minimum of 4 inches (102 mm) and have a minimum of 1-1/2 (38 mm) inches of concrete cover to the face of the wall.

Exception: The 2-inch by 4-inch plate is not required where the wall is formed to provide solid concrete around the perimeter of the opening with a minimum depth of 4 inches (102 mm) for the full thickness of the wall.

Figure R611.7(2) Reinforcement of Openings.

Figure R611.7(2) is amended as follows:

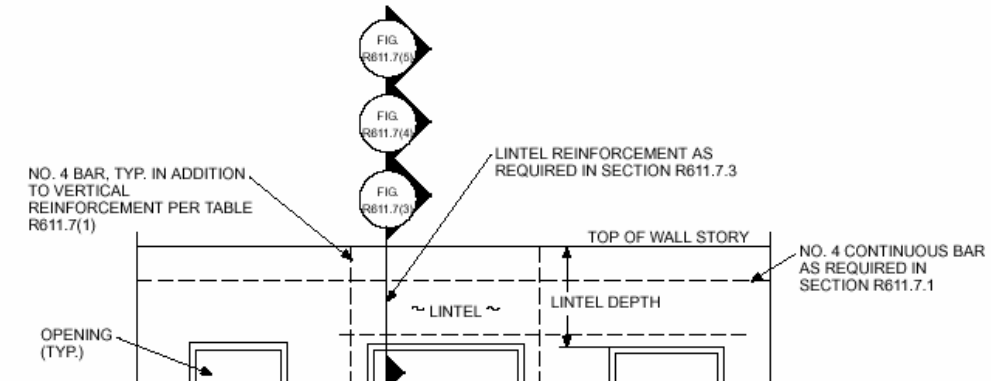


Table R611.7(2) Maximum Allowable Clear Spans For ICF Lintels For Flat And Screen-Grid Load-Bearing Walls [a, b, c, d, e, f] No. 4 Bottom Bar Size

Table R611.7(2) is amended to read:

TABLE R611.7(2)
MAXIMUM ALLOWABLE CLEAR SPANS FOR ICF LINTELS FOR FLAT AND SCREEN-GRID LOAD-BEARING WALLS[a,b,c,d, e, f]
NO. 4 BOTTOM BAR SIZE

MINIMUM LINTEL WIDTH, W (inches)	LINTEL DEPTH, D (inches)	MAXIMUM CLEAR SPAN (feet-inches)					
		Supporting Light-Framed Roof		Supporting Light-Framed 2nd Story and Roof		Supporting ICF Second Story and Light-Framed Roof	
		Ground Snow Load					
		30 psf	70 psf	30 psf	70 psf	30 psf	70 psf
4	8	4-9	4-2	3-10	3-4	3-5	3-1
	12	6-8	5-5	5-0	4-5	4-6	4-0
	16	7-11	6-5	6-0	5-3	5-4	4-10
	20	8-11	7-4	6-9	6-0	6-1	5-6
	24	9-10	8-1	7-6	6-7	6-9	6-1
6	8	5-2	4-2	3-10	3-5	3-5	3-1
	12	6-8	5-5	5-0	4-5	4-6	4-1
	16	7-10	6-5	6-0	5-3	5-4	4-10
	20	8-10	7-3	6-9	6-0	6-1	5-6
	24	9-8	8-0	7-5	6-7	6-8	6-0
8	8	5-2	4-2	3-11	3-5	3-6	3-2
	12	6-7	5-5	5-0	4-5	4-6	4-1
	16	7-9	6-5	5-11	5-3	5-4	4-10
	20	8-8	7-2	6-8	5-11	6-0	5-5
	24	9-6	7-11	7-4	6-6	6-7	6-0
10	8	5-2	4-2	3-11	3-5	3-6	3-2
	12	6-7	5-5	5-0	4-5	4-6	4-1
	16	7-8	6-4	5-11	5-3	5-4	4-10

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 pound per square inch = 6.895 kN/m^2, 1 pound per square foot= 0.0479 kN/m^2.

a. This table is based on concrete with a minimum specified compressive strength of 2,500 psi, reinforcing steel with a minimum yield strength of 40,000 psi and an assumed equivalent rectangular cross section. When reinforcement with a minimum yield strength of 60,000 psi is used, the span lengths in the shaded cells shall be increased by 1.2 times the table values.

b. This table is not intended to prohibit the use of ICF manufacturer's tables based on engineering analysis in accordance with ACI 318.

c. Deflection criteria: L/240.

d. Design load assumptions:

Floor dead load is 10 psf
Floor live load is 30 psf
Building width is 32 feet
Light-framed wall dead load is 10 psf
Attic live load is 20 psf
Roof dead load is 15 psf
ICF wall dead load is 69 psf

e. No. 3 stirrups are required at d/2 spacing.

f. Interpolation is permitted between ground snow loads and between lintel depths.

Table R611.7(3) Maximum Allowabel Clear Spans For ICF Lintels For Flat and Screen-Grid Load-Bearing Walls [a, b, c, d, e, f] #5 Bottom Bar Size

Table R611.7(3) is amended to read:

TABLE R611.7(3)
MAXIMUM ALLOWABLE CLEAR SPANS FOR ICF LINTELS
FOR FLAT AND SCREEN-GRID LOAD-BEARING WALLS[a, b, c, d, e, f]
#5 Bottom Bar Size

MINIMUM LINTEL WIDTH, W (inches)	LINTEL DEPTH, D (inches)	MAXIMUM CLEAR SPAN (feet-inches)					
		Supporting Light-Framed Roof		Supporting Light-Framed 2nd Story and Roof		Supporting ICF Second Story and Light-Framed Roof	
		Ground Snow Load					
		30 psf	70 psf	30 psf	70 psf	30 psf	70 psf
4	8	4-9	4-2	3-11	3-7	3-7	3-5
	12	7-2	6-3	5-11	5-5	5-5	5-0
	16	9-6	8-0	7-4	6-6	6-7	5-11
	20	11-1	9-1	8-4	7-5	7-6	6-9
	24	12-2	10-0	9-3	8-2	8-4	7-6
5.5	8	5-6	4-10	4-7	4-2	4-2	3-10
	12	8-3	6-9	6-3	5-6	5-7	5-0
	16	9-9	8-0	7-5	6-6	6-7	6-0
	20	10-11	9-0	8-4	7-5	7-6	6-9
	24	12-0	9-11	9-3	8-2	8-3	7-6
7.5	8	6-1	5-2	4-9	4-3	4-3	3-10
	12	8-2	6-9	6-3	5-6	5-7	5-0
	16	9-7	7-11	7-4	6-6	6-7	6-0
	20	10-10	8-11	8-4	7-4	7-6	6-9
	24	11-10	9-10	9-2	8-1	8-3	7-5
9.5	8	6-4	5-2	4-10	4-3	4-4	3-11
	12	8-2	6-8	6-2	5-6	5-7	5-0
	16	9-6	7-11	7-4	6-6	6-7	5-11
	20	10-8	8-10	8-3	7-4	7-5	6-9
	24	11-7	9-9	9-0	8-1	8-2	7-5

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 pound per square inch = 6.895 kN/m^2, 1 pound per square foot = 0.0479 kN/m^2.

a. This table is based on concrete with a minimum specified compressive strength of 2,500 psi, reinforcing steel with a minimum yield strength of 40,000 psi and an assumed equivalent rectangular cross section. When reinforcement with a minimum yield strength of 60,000 psi is used, the span lengths in the shaded cells shall be increased by 1.2 times the table values.

b. This table is not intended to prohibit the use of ICF manufacturer's tables based on engineering analysis in accordance with ACI 318.

c. Deflection criterion: L/240.

d. Design load assumptions:

Floor dead load is 10 psf	Attic live load is 20 psf
Floor live load is 30 psf	Roof dead load is 15 psf
Building width is 32 ft	ICF wall dead load is 69 psf
Light-frame wall dead load is 10 psf	

e. No. 3 stirrups are required at d/2 spacing.

f. Interpolation is permitted between ground snow loads and between lintel depths.

TABLE R611.7(4) MAXIMUM ALLOWABLE CLEAR SPANS FOR WAFFLE-GRID ICF WALL LINTELS[a, b, c, d, e, f]
#4 Bottom Bar Size

Table R611.7(4) is amended to read:

TABLE R611.7(4)
MAXIMUM ALLOWABLE CLEAR SPANS FOR WAFFLE-GRID ICF WALL LINTELS[a, b, c, d, e, f]
#4 Bottom Bar Size

NOMINAL LINTEL WIDTH, W[g,h] (inches)	LINTEL DEPTH D (inches)	MAXIMUM CLEAR SPAN (feet-inches)					
		Supporting Light-Framed Roof		Supporting Light-Framed 2nd Story and Roof		Supporting ICF Second Story and Light-Framed Roof	
		Ground Snow Load					
		30 psf	70 psf	30 psf	70 psf	30 psf	70 psf
6	8	5-2	4-2	3-10	3-5	3-6	3-2
	12	6-8	5-5	5-0	4-5	4-7	4-2
	16	7-11	6-6	6-0	5-3	5-6	4-11
	20	8-11	7-4	6-9	6-0	6-3	5-7
	24	9-10	8-1	7-6	6-7	6-10	6-2
8	8	5-2	4-3	3-11	3-5	3-7	3-2
	12	6-8	5-5	5-1	4-5	4-8	4-2
	16	7-10	6-5	6-0	5-3	5-6	4-11
	20	8-10	7-3	6-9	6-0	6-2	5-7
	24	9-8	8-0	7-5	6-7	6-10	6-2

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 pound per square inch = 6.895 kN/m^2, 1 pound per square foot = 0.0479 kN/m^2.

a. This table is based on concrete with a minimum specified compressive strength of 2,500 psi, reinforcing steel with a minimum yield strength of 40,000 psi and an assumed equivalent rectangular cross section. When reinforcement with a minimum yield strength of 60,000 psi is used the span lengths in the shaded cells shall be increased by 1.2 times the table values.

b. This table is not intended to prohibit the use of ICF manufacturer's tables based on engineering analysis in accordance with ACI 318.

c. Deflection criterion: L/240.

d. Design load assumptions:

Floor dead load is 10 psf	Attic live load is 20 psf
Floor live load is 30 psf	Roof dead load is 15 psf
Building width is 32 ft	ICF wall dead load is 55 psf
Light-frame wall dead load is 10 psf	

e. No. 3 stirrups are required at d/2 spacing.

f. Interpolation is permitted between ground snow loads and between lintel depths.

g. For actual wall lintel width, refer to Table R611.4(2).

h. Lintel width corresponds to the nominal waffle-grid ICF wall thickness with a minimum thickness of 2 inches.

Table R611.7(5) maximum Allowable Clark Spans for Waffle-Grid ICF Wall Lintels[a, b, c, d,]
#5 Bottom Bar Size

Table R611.7(5) is amended to read:

TABLE R611.7(5)
MAXIMUM ALLOWABLE CLEAR SPANS FOR WAFFLE-GRID ICF WALL LINTELS [a, b, c, d, e, f]
No. 5 Bottom Bar Size

NOMINAL LINTEL WIDTH, W [g, h] (inches)	LINTEL DEPTH D (inches)	MAXIMUM CLEAR SPAN (feet-inches)					
		Supporting Light-Framed Roof		Supporting Light-Framed 2nd Story and Roof		Supporting ICF Second Story and Light-Framed Roof	
		Ground Snow Load					
		30 psf	70 psf	30 psf	70 psf	30 psf	70 psf
6	8	5-4	4-8	4-5	4-1	4-5	3-10
	12	8-0	6-9	6-3	5-6	6-3	5-1
	16	9-9	8-0	7-5	6-6	7-5	6-1
	20	11-0	9-1	8-5	7-5	8-5	6-11
	24	12-2	10-0	9-3	8-2	9-3	7-8
8	8	6-0	5-2	4-9	4-3	4-9	3-11
	12	8-3	6-9	6-3	5-6	6-3	5-2
	16	9-9	8-0	7-5	6-6	7-5	6-1
	20	10-11	9-0	8-4	7-5	8-4	6-11
	24	12-0	9-11	9-2	8-2	9-2	7-8

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 pound per square inch = 6.895 kN/m^2, 1 pound per square foot = 0.0479 kN/m^2.

a. This table is based on concrete with a minimum specified compressive strength of 2,500 psi, reinforcing steel with a minimum yield strength of 40,000 psi and an assumed equivalent rectangular cross section. When reinforcement with a minimum yield strength of 60,000 psi is used, the span lengths in the shaded cells shall be increased by 1.2 times the table values.

b. This table is not intended to prohibit the use of ICF manufacturer's tables based on engineering analysis in accordance with ACI 318.

c. Deflection criterion: L/240.

d. Design load assumptions:

Floor dead load is 10 psf	Attic live load is 20 psf
Floor live load is 30 psf	Roof dead load is 15 psf
Building width is 32 ft	ICF wall dead load is 55 psf
Light-frame wall dead load is 10 psf	

e. No. 3 stirrups are required at d/2 spacing.

f. Interpolation is permitted between ground snow loads and between lintel depths.

g. For actual wall lintel width, refer to Table R611.4(2).

h. Lintel width corresponds to the nominal waffle-grid ICF wall thickness with a minimum thickness of 2 inches.

Table R611.7(6) Minimum Bottom Bar ICF Lintel Reinforcement for Large Clear Spans in Load-Bearing Walls [a,b,c,d]

Table R611.7(6) is amended to read:

TABLE R611.7(6)
MINIMUM BOTTOM BAR ICF LINTEL REINFORCEMENT FOR LARGE CLEAR SPANS IN LOAD-BEARING WALLS[a,b,c,d,e,f]

MINIMUM LINTEL THICKNESS, T_{eg} (inches)	MINIMUM LINTEL DEPTH, D (inches)	MINIMUM BOTTOM LINTEL REINFORCEMENT					
		Supporting Light-Framed Roof Only		Supporting Light-Framed Second Story and Roof		Supporting ICF Second Story and Light-Framed Roof[g,h]	
		Maximum Ground Snow Load (psf)					
		30	70	30	70	30	70
Flat ICF Lintel, 12 Feet-3 inches Maximum Clear Span							
3.5	24	1 #5	1 #7	D/R	D/R	D/R	D/R
5.5	20	1 #6	1 #7	D/R	D/R	D/R	D/R
	24	1 #5	1 #7	1 #7	1 #8	1 #8	D/R
7.5	16	1 #7; 2 #5	D/R	D/R	D/R	D/R	D/R
	20	1 #6; 2 #4	1#7; 2 #5	1 #8; 2 #6	D/R	D/R	D/R
	24	1 #6; 2 #4	1 #7; 2 #5	1 #7; 2 #5	1 #8; 2 #6	1 #8; 2 #6	1 #8; 2 #6
9.5	16	1 #7; 2 #5	D/R	D/R	D/R	D/R	D/R
	20	1 #6; 2 #4	1 #7; 2 #5	1 #8; 2 #6	1 #8; 2 #6	1 #8; 2 #6	1 #9; 2 #6
	24	1 #6; 2 #4	1 #7; 2 #5	1 #7; 2 #5	1 #7; 2 #6	1 #8; 2 #6	1 #9; 2 #6
Flat ICF Lintel, 16 Feet-3 inches Maximum Clear Span							
5.5	24	1 #7	D/R	D/R	D/R	D/R	D/R
7.5	24	1 #7; 2 #5	D/R	D/R	D/R	D/R	D/R
9.5	24	1 #7; 2 #5	1 #9; 2 #6	1 #9; 2 #6	D/R	D/R	D/R
Waffle-Grid ICF Lintel, 12 Feet-3 inches Maximum Clear Span							
6	20	1 #6	D/R	D/R	D/R	D/R	D/R
	24	1 #5	1 #7; 2 #5	1 #7; 2 #5	1 #8; 2 #6	1 #8; 2 #6	D/R
8	16	1 #7; 2 #5	D/R	D/R	D/R	D/R	D/R
	20	1 #6; 2 #4	1 #7; 2 #5	1 #8; 2 #6	D/R	D/R	D/R
	24	1 #5	1 #7; 2 #5	1 #7; 2 #5	1 #8; 2 #6	1 #8; 2 #6	1 #8; 2 #6

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 pound per square inch = 6.895 kN/m^2, 1 pound per square foot = 0.0479 kN/m^2

a. This table is based on concrete with a minimum specified compressive strength of 2,500 psi, reinforcing steel with a minimum yield strength of 40,000 psi and an assumed equivalent rectangular cross section. When reinforcement with a minimum yield strength of 60,000 psi is used, the bar sizes in the shaded cells shall be decreased by one bar diameter.

b. This table is not intended to prohibit the use of ICF manufacturer's tables based on engineering analysis in accordance with ACI 318.

c. D/R indicates design is required.

d. Deflection criterion is L/240, where *L* is the clear span of the lintel in inches.

e. Interpolation is permitted between ground snow loads and between lintel depths.

f. No. 3 stirrups are required at maximum d/2 spacing for spans greater than 4 feet.

g. Actual thickness is shown for flat lintels while nominal thickness is given for waffle-grid lintels. Lintel thickness corresponds to the nominal waffle-grid ICF wall thickness with a minimum web thickness of 2 inches (51 mm). Refer to Table 608.4b for actual wall lintel

width.

h. ICF wall dead load is maximum 55 psf.

Table R611.7(7) Maximum Allowable Clear Spans for ICF Lintels in Nonload-Bearing Walls [a, b,c] #4 Bottom Bar Size.

Table R611.7(7) is amended to read:

TABLE R611.7(7)
MAXIMUM ALLOWABLE CLEAR SPANS FOR
ICF LINTELS IN NONLOAD-BEARING WALLS [a, b, c, d, e, f]
No. 4 BOTTOM BAR SIZE

MINIMUM LINTEL DEPTH, D (inches)	MAXIMUM CLEAR SPAN	
	Supporting Light-Frame NonLoad-bearing Wall (feet)	Supporting ICF Second Story NonLoad-bearing Wall [f] (feet)
8	12	6
12	16	8
16	16	10
20	16	12
24	16	16

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 pound per square inch = 6.895 kN/m^2, 1 pound per square foot = 0.0479 kN/m^2.

a. This table is based on concrete with a minimum specified compressive strength of 2,500 psi, reinforcing steel with a minimum yield strength of 40,000 psi and an assumed equivalent rectangular cross section.
b. This table is not intended to prohibit the use of ICF manufacturer's tables based on engineering analysis in accordance with ACI 318.
c. Deflection criterion is L/240, where *L* is the clear span of the lintel in inches.
d. Linear interpolation is permitted between lintel depths.
e. No. 3 stirrups are required at maximum d/2 spacing for spans greater than 4 feet.
f. ICF wall dead load is maximum 69 psf.

611.7.3.1 General Requirements.

Section R611.7.3.1 is amended to read:

R611.7.3.1 General requirements. Lintels shall be provided over all openings greater than or equal to 4 feet (1219 mm) in width. Lintels for flat ICF walls and screen-grid ICF walls shall be constructed in accordance with Figure R611.7(3) and Table R611.7(2) or R611.7(3). Lintels for waffle-grid ICF walls shall be constructed in accordance with Figure R611.7(4) or Figure R611.7(5) and Table R611.7(4) or R611.7(5). Lintel depths are permitted to be increased by the height of ICF wall located directly above the lintels, provided that the lintel depth spans the entire length of the opening.

R611.8.2 Ledger Bearing.

Section R611.8.2 is amended to read:

R611.8.2 Ledger bearing. Wood ledger boards supporting bearing ends of joists or trusses shall be anchored to flat ICF walls with minimum thickness of 5.5 inches (140 mm) and to waffle- or screen-grid ICF walls with minimum nominal thickness of 6 inches (152 mm) in accordance with Figures R611.8(2), R611.8(3), R611.8(4) or R611.8(5) and Table R611.8. Wood ledger boards supporting bearing ends of joists or trusses shall be anchored to flat ICF walls with minimum thickness of 3.5 inches (140 mm) in accordance with Figure R611.8(4) or R611.8(5) and Table R611.8. The ledger shall be a minimum 2 by 8, No. 2 Southern Pine or No. 2 Douglas Fir. Ledgers anchored to nonload-bearing walls to support floor or roof sheathing shall be attached with 1/2-inch-diameter (12.7 mm) or headed anchor bolts spaced a maximum of 6 feet (1829 mm) on center. Anchor bolts shall be embedded a minimum of 4 inches (102 mm) into the concrete.

CHAPTER 7

R702.3.1 Materials.

Section R702.3.1 is amended to read:

R702.3.1 Materials. All gypsum board materials and accessories shall conform to ASTM C36, C79, C475, C514, C630, C931, C960, C1002, C 1047, C1177, C1178, C1278, C1395 or C1396 and shall be installed in accordance with the provisions of this section. Adhesives for the installation of gypsum board shall conform to ASTM C557.

R702.3.5 Application.

Section R702.3.5 is amended to read:

R702.3.5 Application. Maximum spacing of supports and the size and spacing of fasteners used to attach gypsum board shall comply with Table R702.3.5. Gypsum sheathing shall be attached to exterior walls in accordance with Table R602.3(1). Gypsum board shall be applied at right angles or parallel to framing members. All edges and ends of gypsum board shall occur on the framing members, except those edges and ends that are perpendicular to the framing members. Interior gypsum board shall not be installed where it is directly exposed to the weather or to water.

Table R702.3.5 Minimum Thickness And Application Of Gypsum Board

Add new "footnote e" to table as shown:

TABLE R702.3.5
MINIMUM THICKNESS AND APPLICATION OF GYPSUM BOARD

THICKNESS OF GYPSUM BOARD (inches)	APPLICATION	ORIENTATION OF GYPSUM BOARD TO FRAMING	MAXIMUM SPACING OF FRAMING MEMBERS (inches o.c.)	MAXIMUM SPACING OF FASTENERS (inches)		SIZE OF NAILS FOR APPLICATION TO WOOD FRAMING[c]
				Nails[a]	Screws[b]	
Application without adhesive						

3/8	Ceiling[d]	Perpendicular	16	7	12	13 gage, 1 ¼" long, 19/64" head; 0.098 diameter, 1 ¼" long, annular-ringed; or 4d cooler nail, 0.080" diameter, 1 3/8" long, 7/32" head.
	Wall	Either direction	16	8	16	
½	Ceiling	Either direction	16	7	12	13 gage, 1 3/8" long, 19/64" head; 0.098 diameter, 1 ¼" long, annular-ringed; 5d cooler nail, 0.086 diameter, 1 5/8" long, 15/64" head; or gypsum board nail, 0.086 diameter, 1 5/8" long, 9/32" head.
	Ceiling[d]	Perpendicular	24	7	12	
	Wall	Either direction	24	8	12	
	Wall	Either direction	16	8	16	
5/8	Ceiling	Either direction	16	7	12	13 gage, 1 5/8" long, 19/64" head; 0.098 diameter, 1 3/8" long, annular-ringed; 6d cooler nail, 0.092 diameter, 1 7/8" long, ¼" head; or gypsum board nail, 0.0915 diameter, 1 7/8" long, 19/64" head.
	Ceiling[e]	Perpendicular	24	7	12	
	Wall	Either direction	24	8	12	
	Wall	Either direction	16	8	16	
Application with adhesive						
3/8	Ceiling[d]	Perpendicular	16	16	16	Same as above for 3/8" gypsum board
	Wall	Either direction	16	16	24	
½ or 5/8	Ceiling	Either direction	16	16	16	Same as above for ½" and 5/8" gypsum board, respectively
	Ceiling[d]	Perpendicular	24	12	16	
	Wall	Either direction	24	16	24	
Two 3/8 layers	Ceiling	Perpendicular	16	16	16	Base ply nailed as above for ½" gypsum board; face ply installed with adhesive
	Wall	Either direction	24	24	24	

For SI: 1 inch = 25.4 mm.

a. For application without adhesive, a pair of nails spaced not less than 2 inches apart or more than 2½ inches apart may be used with the pair of nails spaced 12 inches on center.
b. Screws shall be Type S or W per ASTM C 1002 and shall be sufficiently long to penetrate wood framing not less than 5/8 inch and metal framing not less than 3/8 inch.
c. Where metal framing is used with a clinching design to receive nails by two edges of metal, the nails shall be not less than 5/8 inch longer than the gypsum board thickness and shall have ringed shanks. Where the metal framing has a nailing groove formed to receive the nails, the nails shall have barbed shanks or be 5d, 13 ½ gage, 1 5/8 inches long, 1 5/64-inch head for ½-inch gypsum board; and 6d, 13 gage, 1 7/8 inches long, 15/64-inch head for 5/8-inch gypsum board.
d. Three-eighths-inch-thick single-ply gypsum board shall not be used on a ceiling where a water-based textured finish is to be applied, or where it will be required to support insulation above a ceiling. On ceiling applications to receive a water-based texture material, either hand or spray applied, the gypsum board shall be applied perpendicular to framing. When applying a water-based texture material, the minimum gypsum board thickness shall be increased from 3/8 inch to ½ inch for 16-inch on center framing, and from ½ inch to 5/8 inch for 24-inch on center framing of ½-inch sag-resistant gypsum ceiling board shall be used.
e. Type X gypsum board for garage ceilings beneath habitable rooms shall be installed perpendicular to the ceiling framing and shall be fastened at maximum 6 inches o.c. by minimum 1-7/8-inch 6d coated nails or equivalent drywall screws.

R702.4.2 Gypsum backer.

Section R702.4.2 is amended to read:

R702.4.2 Gypsum backer. Gypsum board utilized as the base or backer for adhesive application of ceramic tile or other nonabsorbent finish material shall conform to ASTM C630 or C1178. Water-resistant gypsum backing board shall be permitted to be used on ceilings where framing spacing does not exceed 12 inches (305 mm) on center for 1/2-inch-thick (12.7 mm) or 16 inches (406 mm) for 5/8-inch-thick (15.9 mm) gypsum board. Water-resistant gypsum board shall not be installed over a vapor retarder in a shower or tub compartment. All cut or exposed edges, including those at wall intersections, shall be sealed as recommended by the manufacturer.

R702.4.3. Limitations.

Section R702.4.3 is added to read:

R702.4.3. Limitations. Water-resistant gypsum backing board shall not be used in the following locations:

1. Over a vapor retarder in a shower or bathtub compartment.

2. Where there will be direct exposure to water, or in areas subject to continuous high humidity.

Table R703.4 Weather-Resistant Siding Attachment and minimum Thickness

Table R703.4 is amended to read:

TABLE R703.4
WEATHER-RESISTANT SIDING ATTACHMENT AND MINIMUM THICKNESS

SIDING MATERIAL		NOMINAL THICKNESS[a] (INCHES)	JOINT TREATMENT	SHEATHING PAPER REQUIRED	TYPE OF SUPPORTS FOR THE SIDING MATERIAL AND FASTENERS[b,c,d]					
					Wood or wood structural panel sheathing	Fiberboard sheathing into stud	Gypsum sheathing into stud	Foam plastic sheathing into stud	Direct to studs	Number or spacing of fasteners
Horizontal Aluminum[c]	Without insulation	0.019[r]	Lap	No	0.120 nail 1 1/2" long	0.120 nail 2" long	0.120 nail 2" long	0.120 nail[z]	Not allowed	Same as stud spacing
	Without insulation	0.024	Lap	No	0.120 nail 1 1/2" long	0.120 nail 2" long	0.120 nail 2" long	0.120 nail[z]	Not allowed	
	With insulation	0.019	Lap	No	0.120 nail 1 1/2" long	0.120 nail 2 ½" long	0.120 nail 2 ½" long	0.120 nail[z]	0.120 nail 1 1/2" long	
Brick veneer/ Concrete masonry veneer		2 2	Section R703	Yes (Note m)	See Section R703 and Figure R703.7[n]					
Hardboard[l] Panel siding-vertical		7/16	Note[g]	See R703.2	Note [o]	Note [o]	Note [o]	Note[o]	Note o	6" panel edges 12" inter. sup.[p]
Hardboard[l] Lap-siding-horizontal		7/16	Note [r]	Yes	Note [q]	Note [q]	Note [q]	Note[q]	Note q	Same as stud spacing 2 per bearing
Steel[t]		29 ga.	Lap	No	0.113 nail 1 3/4" Staple-1 3/4"	0.113 nail 2 3/4" Staple-2 ½"	0.113 nail 2 ½" Staple-2 1/4"	0.113 nail[z] Staple[z]	Not allowed	Same as stud spacing
Stone veneer		2	Section R703	Yes (Note m)	See Section R703 and Figure R703.7[n]					
Particleboard panels		3/8 - ½	Note g	Note g	6d box nail	6d box nail	6d box nail	box nail[z]	6d box nail, 3/8 not allowed	6" panel edge 12" inter. sup.
		5/8	Note g	Note g	6d box nail	8d box nail	8d box nail	box nail[z]	6d box nail	
Plywood panel[j] (exterior grade)		3/8	Note g	Note g	0.099 nail-2"	0.113 nail-2 ½"	0.099 nail-2"	0.113 nail[z]	0.099 nail-2"	6" on edges
Vinyl siding[h]		0.035	Lap	No	0.120 nail 1 ½" Staple-1 3/4"	0.120 nail 2" Staple-2 ½"	0.120 nail 2" Staple-2 ½"	0.120 nail[z] Staple[z]	Not allowed	Same as stud spacing
Wood[k] Rustic, drop		3/8 Min	Lap	No	Fastener penetration into stud-1"				0.113 nail-2 ½" Staple-2"	Face nailing up to 6" widths, 1 nail per bearing; 8" widths and over, 2 nails per bearing
Shiplap		19/32 Average	Lap	No						
Bevel		7/16								
Butt tip		3/16	Lap	No						
Fiber cement panel siding[s]		5/16	Note t	Yes Note y	6d corrosion resistant nail[u]	6d corrosion resistant nail[u]	6d corrosion resistant nail[u]	----	4d corrosion resistant nail[v]	6" oc on edges, 12" oc on intermed. studs

Fiber cement lap siding[s]	5/16	Note w	Yes Note y	6d corrosion resistant nail[u]	6d corrosion resistant nail[u]	6d corrosion resistant nail[u]	----	6d corrosion resistant nail[x]	Note x

For SI: 1 inch = 25.4 mm.

a. Based on stud spacing of 16 inches on center where studs are spaced 24 inches, siding shall be applied to sheathing approved for that spacing.
b. Nail is a general description and shall be T-head, modified round head, or round head with smooth or deformed shanks.
c. Staples shall have a minimum crown width of 7/16-inch outside diameter and be manufactured of minimum No. 16 gage wire.
d. Nails or staples shall be aluminum, galvanized, or rust-preventive coated and shall be driven into the studs for fiberboard or gypsum backing.
e. Aluminum nails shall be used to attach aluminum siding.
f. Aluminum (0.019 inch) shall be unbacked only when the maximum panel width is 10 inches and the maximum flat area is 8 inches. The tolerance for aluminum siding shall be +0.002 inch of the nominal dimension.
g. If boards or panels are applied over sheathing or over a weather-resistant membrane, joints need not be treated. Otherwise, vertical joints shall occur at studs and be covered with battens or be lapped.
h. All attachments shall be coated with a corrosion-resistive coating.
i. Shall be of approved type.
j. Three-eighths-inch plywood shall not be applied directly to studs spaced greater than 16 inches on center when long dimension is parallel to studs. One-half-inch plywood shall not be applied directly to studs spaced greater than 24 inches on center. The stud spacing shall not exceed the panel span rating provided by the manufacturer unless the panels are installed with the face grain perpendicular to studs or over sheathing approved for that stud spacing.
k. Woodboard sidings applied vertically shall be nailed to horizontal nailing strips or blocking set 24 inches on center. Nails shall penetrate 1.5 inches into studs, studs and wood sheathing combined, or blocking. A weather-resistant membrane shall be installed weatherboard fashion under the vertical siding unless the siding boards are lapped or battens are used.
l. Hardboard siding shall comply with AHA A135.6.
m. For masonry veneer, a weather-resistant membrane or building paper is not required over water-repellent sheathing materials when a 1-inch airspace is provided between the veneer and the sheathing. When the 1-inch space is filled with mortar, a weather-resistant membrane or building paper is required over studs or sheathing.
n. Vinyl siding shall comply with ASTM D 3679.
o. Minimum shank diameter of 0.092 inch, minimum head diameter of 0.225 inch, and nail length must accommodate sheathing and penetrate framing 1.5 inches.
p. When used to resist shear forces, the spacing must be 4 inches at panel edges and 8 inches on interior supports.
q. Minimum shank diameter of 0.099 inch, minimum head diameter of 0.240 inch, and nail length must accommodate sheathing and penetrate framing 1.5 inches.
r. Vertical end joints shall occur at studs and shall be covered with a joint cover or shall be caulked.
s. Fiber cement siding shall comply with the requirements of ASTM C 1186.
t. See Section R703.10.1.
u. Minimum 0.102" smooth shank, 0.255" round head.
v. Minimum 0.099" smooth shank, 0.250" round head.
w See R703.10.2.
x. Face nailing: 2 nails at each stud. Concealed nailing: one 11 gage 1-1/2 galv. roofing nail (0.371" head diameter, 0.120" shank) or 6d galv. box nail at each stud.
y. See Exceptions, Section R703.2.
z. Minimum nail length must accommodate sheathing and penetrate framing 1.5 inches.

R703.6.3 Weep screed.

Section R703.6.3 is added to read:

R703.6.3 Weep screed. A minimum 0.019-inch (0.48 mm) (No 26 galvanized sheet gage) corrosion-resistant weep screed with a minimum vertical attachment flange of 3-1/2 inches (89 mm) shall be provided at or below the foundation plate line on all exterior stud walls in accordance with ASTM C 926. The screed shall be placed a minimum of 4 inches (102 mm) above the earth or 2 inches (51 mm) above paved areas and shall be of a type that will allow trapped water to drain to the exterior of the building. The weather-resistive barrier shall lap the attachment flange. The exterior lath shall cover and terminate on the attachment flange of the weep screed.

R703.7 Stone and Masonry Veneer, General.

Section R703.7 is amended to read:

R703.7 Stone and masonry veneer, general. All stone and masonry veneer shall be installed in accordance with this chapter, Table RR703.4 and Figure RR703.7. Such veneers installed over a backing of wood or cold-formed steel shall be limited to the first story above grade and shall not exceed 5 inches (127 mm) in thickness.

Exceptions:

1. In Seismic Design Categories A and B, exterior masonry veneer with a backing of wood or cold-formed steel framing shall not exceed 30 feet (9144 mm) in height above the noncombustible foundation, with an additional 8 feet (2348mm) permitted for ends.

2. In Seismic Design Category C, exterior masonry veneer with a backing of wood or cold-formed steel framing shall not exceed 30 feet (9144 mm) in height above the noncombustible foundation, with an additional 8 feet (234 mm) permitted for gabled ends. In other than the topmost story, the length of bracing shall be 1.5 times the length otherwise required in Chapter 6.

3. For detached one- or two-family dwellings with a maximum nominal thickness of 4 inches (102 mm) of exterior masonry veneer with a backing of wood frame located in Seismic Design Category D_1, the masonry veneer shall not exceed 20 feet (6096 mm) in height above a noncombustible foundation, with an additional 8 feet (2438 mm) permitted for gabled ends, or 30 feet (9144 mm) in height with an additional 8 feet (2438 mm) permitted for gabled ends where the lower 10 feet (3048 mm) has a backing of concrete or masonry wall, provided the following criteria are met:

3.1 Braced wall panels shall be constructed with a minimum of 7/16-inch-thick (11.1 mm) sheathing fastened with 8d common nails at 4 inches (102 mm) on center on panel edges and at 12 inches (305 mm) on center on intermediate supports.

3.2 The bracing of the top story shall be located at each end and at least every 25 feet (7620 mm) on center but not less than 45 percent of the braced wall line. The bracing of the first story shall be as provided in Table R602.10.3.

3.3 Hold-down connectors shall be provided at the ends of braced walls for the second floor to first floor wall assembly with an allowable design of 2100 pounds (952.5 kg). Hold-down connectors shall be provided at the ends of each wall segment of the braced walls for the first floor to foundation assembly with an allowable design of 3700 pounds (1678 kg). In all cases, the hold-down connector force shall be transferred to the foundation.

3.4 Cripple walls shall not be permitted.

4 For detached one- and two-family dwellings with a maximum actual thickness of 3 inches (76 mm) of exterior masonry veneer with a backing of wood frame located in Seismic Design Category D^2, the masonry veneer shall not exceed 20 feet (6096 mm) in height above a noncombustible foundation, with an additional 8 feet (2438 mm) permitted for gabled ends, or 30 feet (9144 mm) in height with an additional 8 feet (2438 mm) permitted for gabled ends where the lower 10 feet (3048 mm) has a backing of concrete or masonry wall, provided the following criteria are met:

4.1 Braced wall panels shall be constructed with a minimum of 7/16-inch-thick sheathing fastened with 8d common nails at 4 inches (102 mm) on center on panel edges and at 12 inches (305 mm) on center on intermediate supports.

4.2 The bracing of the top story shall be located at each end and at least every 25 feet (7620 mm) on center but not less than 55 percent of the braced wall line. The bracing of the first story shall be as provided in Table R602.10.3.

4.3 Hold-down connectors shall be provided at the ends of braced walls for the second floor to first floor wall assembly with an allowable design of 2300 pounds (1043 kg). Hold-down connectors shall be provided at the ends of each wall segment of the braced walls for the first floor to foundation assembly with an allowable design of 3900 pounds (1769 kg). In all cases, the hold-down connector force shall be transferred to the foundation.

4.4 Cripple walls shall not be permitted.

Figure R703.7 Masonry Veneer Wall Details.

Figure R703.7 is amended to read:

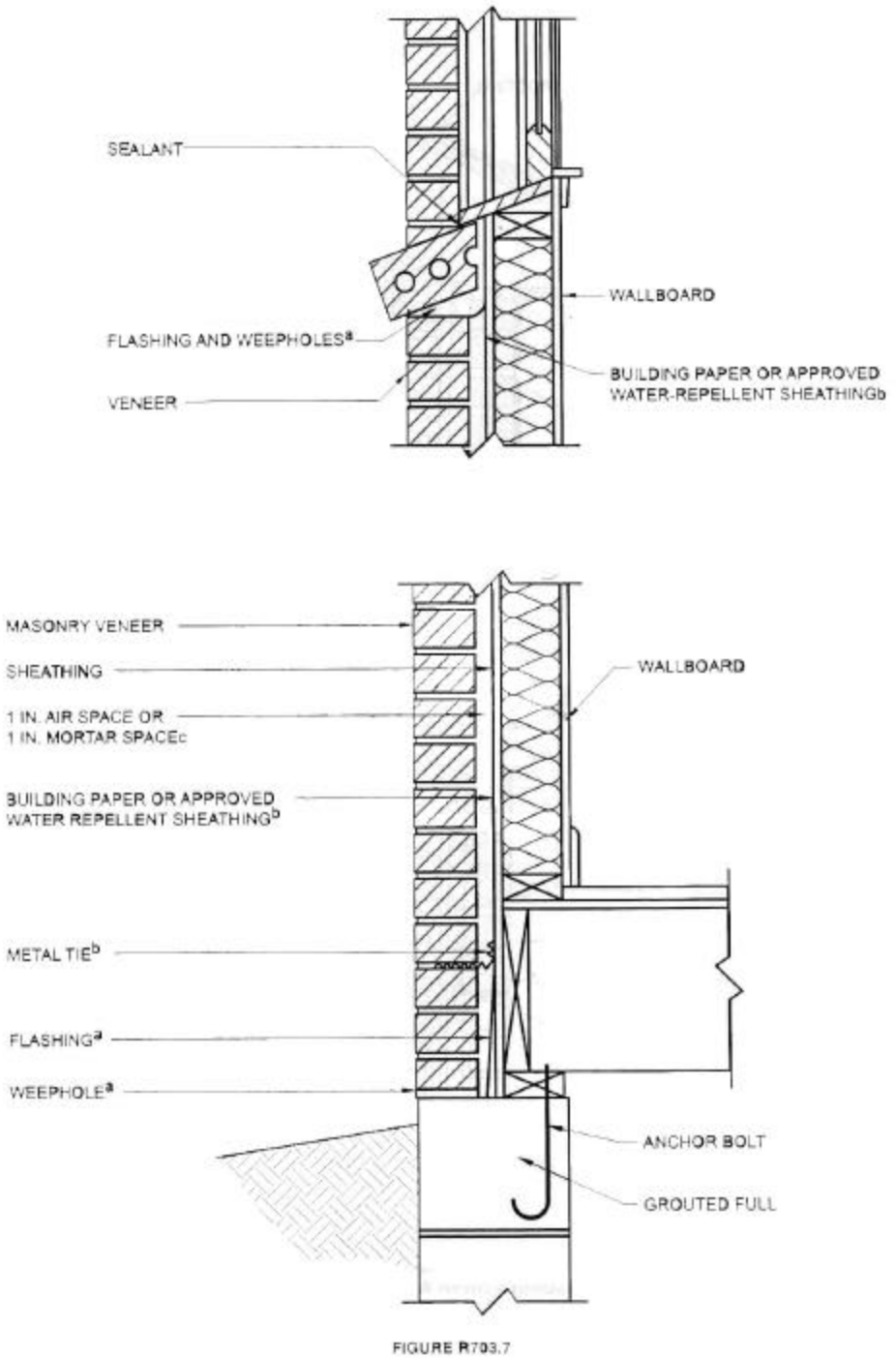
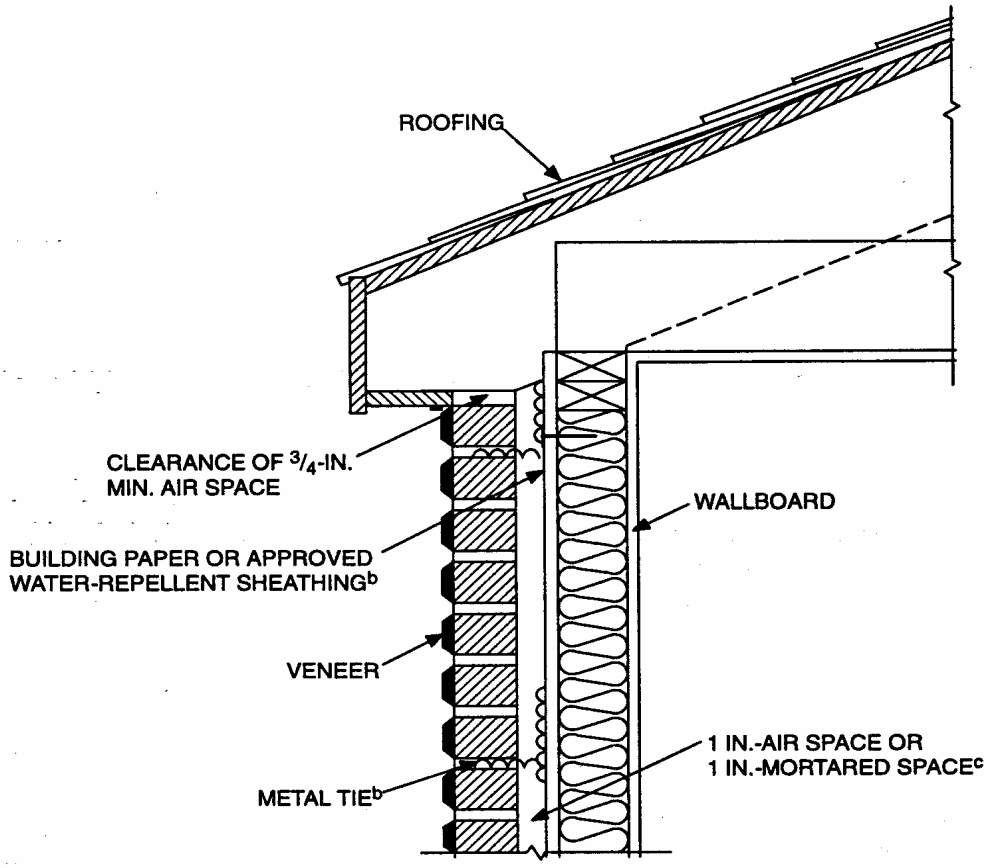
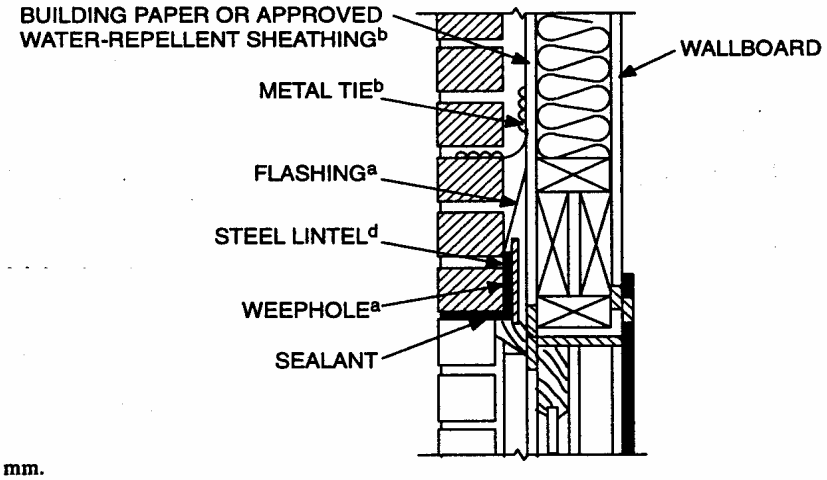


FIGURE R703.7
MASONRY VENEER WALL DETAILS





For SI: 1 inch = 25.4 mm.

a. See Sections R703.7.5 and R703.7.6.
b. See Sections R703.2 and R703.7.4.
c. See Section R703.7.4.2 and R703.7.4.3.
d. See Section R703.7.2.1.

FIGURE R703.7 continued
MASONRY VENEER WALL DETAILS

R703.7.2 Exterior Veneer Support.

Section R703.7.2 is amended to read:

R703.7.2 Exterior veneer support. Except in Seismic Design Categories D_1 and D^2, exterior masonry veneers having an installed weight of 40 pounds per square foot (195 kg/m^2) or less shall be permitted to be supported on wood or cold-formed steel construction. When masonry veneer supported by wood or cold-formed steel construction adjoins masonry veneer supported by the foundation, there shall be a movement joint between the veneer supported by the wood or cold-formed steel construction and the veneer supported by the foundation. The wood or cold-formed steel construction supporting the masonry veneer shall be designed to limit the deflection to 1/600 of the span for the supporting members. The design of the wood or cold-formed steel construction shall consider the weight of the veneer and any other loads.

R703.7.2.1 Support by Steel Angle.

Section R703.7.2.1 is amended to read:

R703.7.2.1 Support by steel angle. A minimum 6-inch by 4-inch by 5/16-inch (152 mm by 102 mm by 8 mm) steel angle, with the long leg placed vertically, shall be anchored to double 2-inch by 4-inch (51 mm by 102 mm) wood studs at a maximum on center spacing of 16 inches (406 mm). Anchorage of the steel angle at every double stud spacing shall be a minimum of two 7/16-inch-diameter (11.1 mm) by 4-inch (102 mm) lag screws. The steel angle shall have a minimum clearance to underlying construction of 1/16 inch (1.6 mm). A minimum of two-thirds the width of the masonry veneer thickness shall bear on the steel angle. Flashing and weep holes shall be located in the masonry veneer wythe in accordance with Figure R703.7.1. The maximum height of masonry veneer above the steel angle support shall be 12 feet, 8 inches (3861 mm). The maximum slope of the roof construction shall be not more than seven units vertical in 12 units horizontal (58-percent slope). The airspace separating the masonry veneer from the wood backing shall be in accordance with R703.7.4 and R703.7.4.2. The method of support for the masonry veneer on wood construction shall be constructed in accordance with Figure R703.7.2.1.

R703.7.2.2 Support by Roof Construction.

Section R703.7.2.2 is amended to read:

R703.7.2.2 Support by roof construction. A steel angle shall be placed directly on top of the roof construction. The roof supporting construction for the steel angle shall consist of a minimum of three 2-inch by 6-inch (51 mm by 152 mm) wood members. The wood member abutting the vertical wall stud construction shall be anchored with a minimum of three 5/8-inch (15.9 mm) diameter by 5-inch (127 mm) lag screws to every wood stud spacing. Each additional roof member shall be anchored by the use of two 10d nails at every wood stud spacing. A minimum of two-thirds the width of the masonry veneer thickness shall bear on the steel angle. Flashing and weep holes shall be located in the masonry veneer wythe in accordance with Figure R703.7.1. The maximum height of the masonry veneer above the steel angle support shall be 12 feet, 8 inches (3861 mm). The maximum slope of the roof construction shall be not more than seven units vertical in 12 units horizontal (58-pereent slope). The airspace separating the masonry veneer from the wood backing shall be in accordance with Sections R703.7.4 and R703.7.4.2.

The method of support for the masonry veneer on wood construction shall be constructed in accordance with Figure R703.7.2.2.

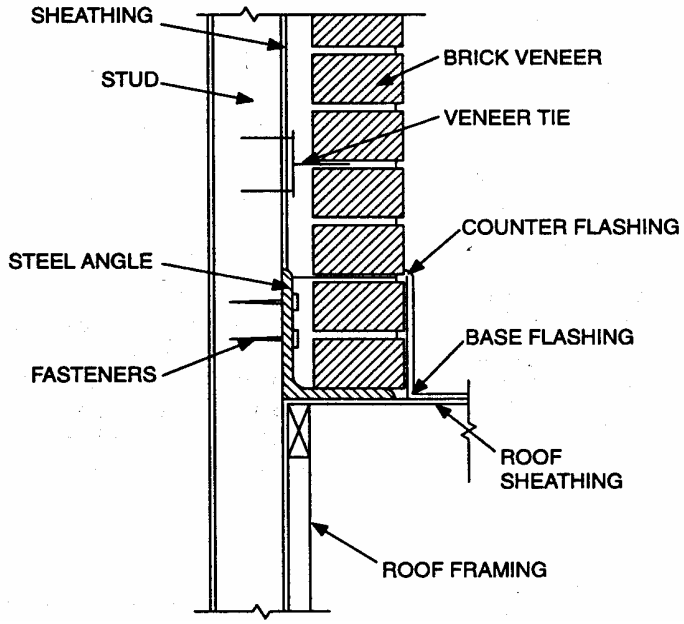


FIGURE 703.7.2.1
EXTERIOR MASONRY VENEER SUPPORTED BY STEEL ANGLE

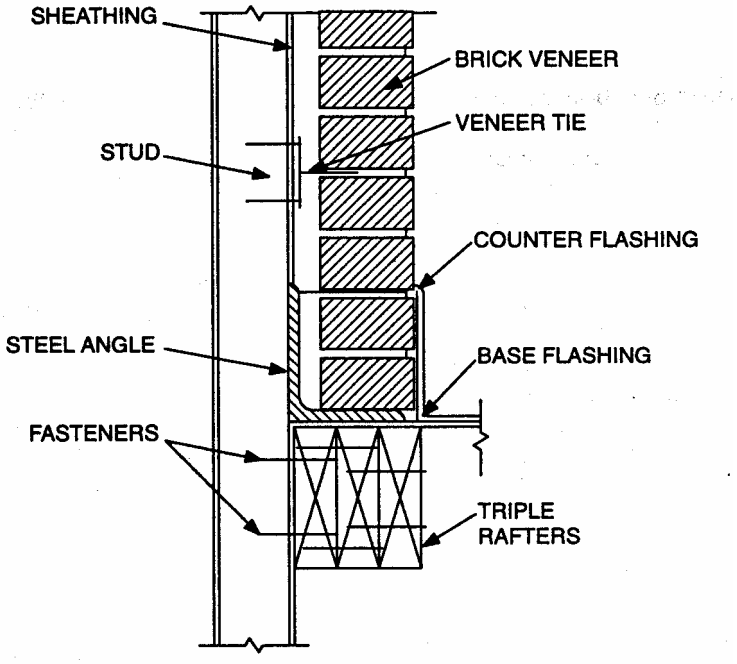


FIGURE R703.7.2.2
EXTERIOR MASONRY VENEER SUPPORTED BY ROOF MEMBERS

R703.7.4.1.2 Seismic Design Categories D_1 and D_2.

Section R703.7.4.1.2 is amended to read:

R703.7.4.1.2 Seismic Design Categories D_1 and D_2. In Seismic Design Categories D_1 and D_2, single-wire joint reinforcement, a minimum of No. 9 gage, shall be provided at a spacing of 18 inches (457 mm) on center vertically. The joint reinforcement shall be continuous in the veneer bed joint, with lap splices permitted between the veneer ties.

Sections R703.10, R703.10.1, and R703.10.2

Sections R703.10, R703.10.1, and R703.10.2 are added to read:

R703.10 Fiber cement siding.

R703.10.1 Panel siding. Panels shall be installed with the long dimension parallel to framing. Vertical joints shall occur over framing members and shall be sealed with caulking or covered with battens. Horizontal joints shall be flashed with Z-flashing and blocked with solid wood framing.

R703.10.2 Horizontal lap siding. Lap siding shall be lapped a minimum of 1-1/4" (32 mm) and shall have the ends sealed with caulking, covered with an H-section joint cover, or located over a strip of flashing. Lap siding courses may be installed with the fastener heads exposed or concealed, according to approved manufacturers' installation instructions.

CHAPTER 8

R802.1 Identification and Grade.

The heading of section R802.1 is amended to read:

R802.1 Identification.

R802.1.3 Fire-Retardant-Treated Wood.

Section R802.1.3 is amended to read:

R802.1.3 Fire-retardant-treated wood. Fire-retardant-treated wood is any wood product which, when impregnated with chemicals by a pressure processor or other means during manufacture, shall have, when tested in accordance with ASTM E84, a listed flame spread index of 25 or less and show no evidence of significant progressive combustion when the test is continued for an additional 20-minute period. In addition, the flame front shall not progress more than 10.5 feet (3200 mm) beyond the centerline of the burners at any time during the test.

R802.1.3.1 Labeling and grade marking.

Section R802.1.3.1 is amended to read:

R802.1.3.1 Labeling. Fire-retardant-treated lumber and wood structural panels shall bear the identification mark of an approved agency. Such identification marks shall indicate conformance to appropriate standards in accordance with Sections R802.1.3.2 through R802.1.3.5.

R802.1.3.2 Moisture content.

Section 802.1.3.2 is amended to read:

R802.1.3.2 Strength adjustments. Design values for untreated lumber and wood structural panels as specified in Section R802.1, shall be adjusted for fire- retardant- treated wood. Adjustments to design values shall be based on an approved method of investigation which takes into consideration the effects of the anticipated temperature and humidity to which the fire-retardant-treated wood will be subjected, the types of treatment and the redrying procedures.

R802.1.3.3 Exposure to Weather.

Section R802.1.3.3 is added to read:

R802.1.3.3 Exposure to weather. Where fire- retardant-treated wood is exposed to weather, it shall be identified as "Exterior" to indicate there is no increase in the listed flame spread index as defined in Section R802.1.3 when subjected to ASTM D2898.

R802.1.3.4 Interior Applications.

Section R802.1.3.4 is added to read:

R802.1.3.4 Interior applications. Where fire-retardant treated wood is exposed to humid interior conditions it shall be identified as "Interior Type A" to indicate the treated wood has a moisture content of not more than 28 percent when tested in accordance with ASTM D3201 procedures at 92-percent relative humidity.

R802.1.3.5 Moisture content.

Section R802.1.3.5 is added to read:

R802.1.3.5 Moisture content. Fire-retardant-treated wood shall be dried to a moisture content of 19 percent or less for lumber and 15 percent or less for wood structural panels before use.

R802.1.4 Structural Glued Laminated Timbers.

Section R802.1.4 is added to read:

R802.1.4 Structural glued laminated timbers. Glued laminated timbers shall be manufactured and identified as required in AITC A190.1 and ASTM D3737.

Table R802.5.1(1) Rafter Spans for Common Lumber Species

Change Table R802.5.1(1) to read as shown:

TABLE R802.5.1(1)—continued
RAFTER SPANS FOR COMMON LUMBER SPECIES
(Roof live load=20 psf, ceiling not attached to rafters, L/?=180)

RAFTER SPACING (inches)	SPECIES AND GRADE		DEAD LOAD = 10 psf					DEAD LOAD = 20 psf				
			2x4	2x6	2x8	2x10	2x12	2x4	2x6	2x8	2x10	2x12
			Maximum rafter spans [a]									
			(feet-inches)	(feet-inches)	(feet-inches)	(feet-inches)	(feet-inches)	(feet-inches)	(feet-inches)	(feet-inches)	(feet-inches)	(feet-inches)
24	Douglas fir-larch	SS	9-1	14-4	18-10	23-4	Note b	8-11	13-1	16-7	20-3	23-5
	Douglas fir-larch	#1	8-7	12-6	15-10	19-5	22-6	7-5	10-10	13-9	16-9	19-6
	Douglas fir-larch	#2	8-0	11-9	14-10	18-2	21-0	6-11	10-2	12-10	15-8	18-3
	Douglas fir-larch	#3	6-1	8-10	11-3	13-8	15-11	5-3	7-8	9-9	11-10	13-9
	Hem-fir	SS	8-7	13-6	17-10	22-9	Note b	8-7	12-10	16-3	19-10	23-0
	Hem fir	#1	8-4	12-3	15-6	18-11	21-11	7-3	10-7	13-5	16-4	19-0
	Hem-fir	#2	7-11	11-7	14-8	17-10	20-9	6-10	10-0	12-8	15-6	17-11
	Hem-fir	#3	6-1	8-10	11-3	13-8	15-11	5-3	7-8	9-9	11-10	13-9
	Southern pine	SS	8-11	14-1	18-6	23-8	Note b	8-11	14-1	18-6	22-11	Note b
	Southern pine	#1	8-9	13-9	17-9	21-1	25-2	8-3	12-3	15-4	18-3	21-9
	Southern pine	#2	8-7	12-3	15-10	18-11	22-2	7-5	10-8	13-9	16-5	19-3
	Southern pine	#3	6-5	9-6	12-1	14-4	17-1	5-7	8-3	10-6	12-5	14-9
	Spruce-pine-fir	SS	8-5	13-3	17-5	21-8	25-2	8-4	12-2	15-4	18-9	21-9
	Spruce-pine-fir	#1	8-0	11-9	14-10	18-2	21-0	6-11	10-2	12-10	15-8	18-3
	Spruce-pine-fir	#2	8-0	11-9	14-10	18-2	21-0	6-11	10-2	12-10	15-8	18-3
	Spruce-pine-fir	#3	6-1	8-10	11-3	13-8	15-11	5-3	7-8	9-9	11-10	13-9

(No change to footnotes)

Table R802.11 Required Strength of Truss or Rafter Tie Down Connections to Resist Wind Uplift Forces [a, b, c, e, f]

Table R802.11 is amended to read:

TABLE R802.11
REQUIRED STRENGTH OF TRUSS OR RAFTER TIE-DOWN CONNECTIONS TO RESIST WIND UPLIFT FORCES [a, b, c, e, f]
(POUNDS PER TIE-DOWN CONNECTION)

BASIC WIND SPEED (3-second gust)	ROOF SPAN (feet)							OVERHANGS[d] (pounds/feet)
	12	20	24	28	32	36	40	
85	-72	-120	-145	-169	-193	-217	-241	-38.55
90	-91	-151	-181	-212	-242	-272	-302	-43.22
100	-131	-218	-262	-305	-349	-393	-436	-53.36
110	-175	-292	-351	-409	-467	-526	-584	-64.56

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 mile per hour = 1.61 km/hr, 1 pound/foot = 14.5939 N/m, 1 pound = 0.454 kg.

a. The uplift connection requirements are based on a 30-foot mean roof height located in Exposure B. For Exposures C and D and for other mean roof heights, multiply the above loads by the Adjustment Coefficients in Table R-301.2(3)
b. The uplift connection requirements are based on the framing being spaced 24 inches on center. Multiply by 0.67 for framing spaced 16 inches on center and multiply by 0.5 for framing spaced 12 inches on center.
c. The uplift connection requirements include an allowance for 10 pounds of dead load.
d. The uplift connection requirements do not account for the effects of overhangs. The magnitude of the above loads shall be increased by adding the overhang loads found in the table. The overhang loads are also based on framing spaced 24 inches on center. The overhang loads given shall be multiplied by the overhang projection and added to the roof uplift value in the table.
e. The uplift connection requirements are based upon wind loading on end zones as defined in Section 1609.6.3 of the *International Building Code*. Connection loads for connections located a distance of 20 percent of the least horizontal dimension of the building from the corner of the building are permitted to be reduced by multiplying the table connection value by 0.7 and multiplying the overhang load by 0.8.
f. For wall-to-wall and wall-to-foundation connections, the capacity of the uplift connector is permitted to be reduced by 100 pounds for each full wall above. (For example, if a 600-pound-rated connector is used on the roof framing, a 500-pound-rated connector is permitted at the next floor level down.

Section R802.11 Roof Tie-Down

Section R802.11 is amended to read:

R802.11. Roof tie-down. Roof assemblies subject to wind uplift pressures of 20 pounds per square foot (0.958 kN/m^2) or greater shall have rafter or truss ties provided at bearing locations in accordance with Table R802.11. Wind uplift pressures shall be determined using an effective wind area of 100 square feet (9.3 m^2) and Zone 1 in Table R301.2(2), as adjusted for height and exposure per Table R301.2(3).

A continuous load path shall be provided to transmit the uplift forces from the rafter or truss ties to the foundation.

R807.1 Attic Access

Section R807.1 is amended to read:

R807.1 Attic Access. In buildings with combustible ceiling or roof construction which have electrical, plumbing or mechanical fixtures or equipment installed within the attic space, an attic access opening shall be provided to attic areas that exceed 30 square feet (2.8 m^2) and have a vertical height of 30 inches (762 mm) or greater

The rough-framed opening shall not be less than 22 inches by 30 inches (559 mm by 762 mm) and shall be located in a hallway or other readily accessible location. A 30-inch (762 mm) minimum

unobstructed headroom in the attic space shall be provided at some point above the access opening. See *Uniform Mechanical Code* for access requirements where mechanical equipment is located in attics.

CHAPTER 9

Section R902.2. Wood Shingles and Shakes

Section R902.2 is amended to read:

R902.2 Fire-retardant-treated shingles and shakes. Fire-retardant-treated wood shakes and shingles shall be treated by impregnation with chemicals by the full-cell vacuum-pressure process, in accordance with AWPA C1. Each bundle shall be marked to identify the manufactured unit and the manufacturer, and shall also be labeled to identify the classification of the material in accordance with the testing required in Section R902.1, the treating company and the quality control agency.

R902.2.1 Fire-Retardant-Treated Shingles and Shakes.

Section R902.2.1 is deleted.

Section R903.2 Flashing

Section R903.2 is amended to read:

R903.2 Flashing. Flashings shall be installed in such a manner so as to prevent moisture entering the wall and roof through joints in copings, through moisture-permeable materials, and at intersections with parapet walls and other penetrations through the roof plane.

Section R903.4.1 Overflow Drains and Scuppers

Section R903.4.1 is amended to read:

R903.4.1 Overflow drains and scuppers. Where roof drains are required, overflow drains having the same size as the roof drains shall be installed with the inlet flow line located 2 inches (51 mm) above the low point of the roof, or overflow scuppers having three times the size of the roof drains and having a minimum opening height of 4 inches (102 mm) shall be installed in the adjacent parapet walls with the inlet flow located 2 inches (51 mm) above the low point of the roof served. The installation and sizing of overflow drains, leaders and conductors shall comply with the *Uniform Plumbing Code.*

Overflow drains shall discharge to an approved location and shall not be connected to roof drain lines.

Section R905.2.6 Attachment

Section R905.2.6 is amended to read:

R905.2.6 Attachment. Asphalt shingles shall have the minimum number of fasteners required by the manufacturer. For normal application, asphalt shingles shall be secured to the roof with not less than four fasteners per strip shingle or two fasteners per individual shingle. Where the roof slope exceeds 20 units vertical in 12 units horizontal (167% slope), special methods of fastening are required. For roofs located where the basic wind speed per Figure R301.2(4) is 110 mph (177 km/h) or greater, special methods of fastening are required. Special fastening methods shall be tested in accordance with ASTM D3161, modified to use a wind speed of 110 mph (177 km/h).

Section 905.2.7.1 Ice Protection

Section R905.2.7.1 is amended to read:

R905.2.7.1 Ice protection. In areas where the average daily temperature in January is 25°F (-4° C) or less or when Table R301.2(1) criteria so designate, an ice barrier that consists of a least two layers of underlayment cemented together or of a self-adhering polymer modified bitumen sheet, shall be used in lieu of normal underlayment and extend from the eave's edge to a point at least 24 inches (610 mm) inside the exterior wall line of the building.

Table R905.2.8.2 Valley Lining Material

Table R905.2.8.2 is amended to read:

TABLE R905.2.8.2
VALLEY LINING MATERIAL

MATERIAL	MINIMUM THICKNESS (inches)	GAGE	WEIGHT (pounds)
Cold rolled copper	0.0216 nominal	--------	ASTM B 370, 16 oz. per square foot
Lead coated copper	0.0216 nominal	--------	ASTM B 101, 16 oz. per square foot
High yield copper	0.0162 nominal	--------	ASTM B 370, 12 oz. per square foot
Lead coated high yield copper	0.0162 nominal	--------	ASTM B 101, 12 oz. per square foot
Aluminum	0.024	--------	--------
Stainless steel	--------	28	--------

Galvanized steel	0.0179	26 (zinc coated G90)	--------
Zinc alloy	0.027	--------	--------
Lead	--------	--------	2 ½
Painted terne	--------	--------	20

For SI: 1 inch = 25.4 mm, 1 pound = 0.454 kg.

R905.3.8 Flashing

Section R905.3.8 is amended to read:

R905.3.8 Flashing. At the juncture of roof vertical surfaces, flashing and counter flashing shall be provided in accordance with this chapter and the manufacturer's installation instructions and, where of metal, shall not be less than 0.019-inch (0.48 mm) (No. 26 galvanized sheet gage) corrosion-resistant metal. The valley flashing shall extend at least 11 inches (279 mm) from the centerline each way and have a splash diverter rib not less than 1 inch (25 mm) high at the flow line formed as part of the flashing. Sections of flashing shall have an end lap of not less than 4 inches (102 mm). For roof slopes of three units vertical in 12 units horizontal (25-percent slope) and greater, valley flashing shall have a 36-inch-wide (914 mm) underlayment of one layer of Type I underlayment running the full length of the valley, in addition to other required underlayment. In areas where the average daily temperature in January is 25°F (-4°C) or less, metal valley flashing underlayment shall be solid cemented to the roofing underlayment for slopes less than seven units vertical in 12 units horizontal (58-percent slope) or be of self-adhering polymer modified bitumen sheet.

R905.4.3 Underlayment

Section R905.4.3 is amended to read:

R905.4.3 Underlayment. In areas where the average daily temperature in January is 25° F (-4° C) or less, or when Table R301.2(1) criteria so designate, an ice barrier that consists of at least two layers of underlayment cemented together or of a self-adhering polymer modified bitumen sheet, shall be used in lieu of normal underlayment and extend from the eave's edge to a point at least 24 inches (610 mm) inside the exterior wall line of the building. Underlayment shall comply with ASTM D226, Type I.

R905.5.3 Underlayment

Section 905.5.3 is amended to read:

R905.5.3 Underlayment. In areas where the average daily temperature in January is 25° F (-4° C) or less, or when Table R301.2(1) criteria so designate, an ice barrier that consists of at least two layers of underlayment cemented together or of a self-adhering polymer modified bitumen sheet, shall extend

from the eave's edge to a point at least 24 inches (610 mm) inside the exterior wall line of the building. Underlayment shall comply with ASTM D226, Type I.

R905.6.3 Underlayment

Section 905.6.3 is amended to read:

R905.6.3 Underlayment. In areas where the average daily temperature in January is 25° F (-4° C) or less, or when Table R301.2(l) criteria so designate, an ice barrier that consists of a least two layers of underlayment cemented together or of a self-adhering polymer modified bitumen sheet, shall extend from the eave's edge to a point at least 24 inches (610 mm) inside the exterior wall line of the building. Underlayment shall comply with ASTM D226, Type I.

R905.7.3 Underlayment

Section 905.7.3 is amended to read:

R905.7.3 Underlayment. In areas where the average daily temperature in January is 25° F (-4° C) or less, or when Table R301.2(l) criteria so designate, an ice barrier that consists of at least two layers of underlayment cemented together or of a self-adhering polymer modified bitumen sheet, shall extend from the eave's edge to a point at least 24 inches (610 mm) inside the exterior wall line of the building. Underlayment shall comply with ASTM D226, Type I.

R905.8.3 Underlayment

Section 905.8.3 is amended to read:

R905.8.3 Underlayment. In areas where the average daily temperature in January is 25° F (-4°C) or less, or when Table R301.2(1) criteria so designate, an ice barrier that consists of at least two layers of underlayment cemented together or a self-adhering polymer modified bitumen sheet, shall extend from the edge of the eave to a point at least 24 inches (610 mm) inside the exterior wall line of the building. Underlayment shall comply with ASTM D226, Type I.

Table R905.10.3 Metal Roof Coverings Standards and Installation

Table R905.10.3 is amended to read:

TABLE 905.10.3
METAL ROOF COVERINGS STANDARDS AND INSTALLATION

ROOF COVERING TYPE	STANDARD APPLICATION RATE/THICKNESS
Galvanized steel	ASTM A 653 G-90 zinc coated, 0.013 inch minimum
Prepainted steel	ASTM A 755
Aluminum zinc alloy coated steel	ASTM A 792 AZ 50

Lead-coated copper	ASTM B 101
Copper	ASTM B 370, 16 oz per sq. ft. for metal sheet roof covering systems; 12 oz. Per sq. ft. for preformed metal shingle systems. CDA 4115
Hard lead	2 lbs. Per sq. ft.
Soft lead	3 lbs. Per sq. ft.
Aluminum	ASTM B 209, 0.024-inch minimum thickness for roll-formed panels and 0.019-inch minimum thickness for press-formed shingles.
Terne (tin) and terne coated stainless	Terne coating of 40 lb. Per double base box, field painted where applicable in accordance with manufacturer's installation instructions.

For SI: 1 ounce per square foot = 0.0026 kg/m^2,
1 pound per square foot = 4.882 kg/m^2,
1 inch = 25.4 mm, 1 pound = 0.454 kg.

R905.10.4 Attachment

Section R905.10.4 is amended to read:

R905.10.4 Attachment. Metal roofing shall be installed in accordance with this chapter and the manufacturer's installation instructions. Metal roofing fastened directly to steel framing shall be attached by approved fasteners. The following fasteners shall be used:

1. Galvanized fasteners shall be used for galvanized roofs.

2. Series 300 stainless steel fasteners shall be used for copper roofs.

3. Stainless steel fasteners are acceptable for metal roofs.

Table R905.11.2 Modified Bitumen Roofing Material Standards

Table R905.11.2 is amended to read:

TABLE R905.11.2
MODIFIED BITUMEN ROOFING MATERIAL STANDARDS

MATERIAL	STANDARD
Modified bitumen roof membrane	ASTM D 6162; D 6163; D 6164; D 6222; D 6223; D 6298; CGSB 37-56M
Asphalt primer	ASTM D 41
Asphalt cement	ASTM D 3019

Asphalt adhesive	ASTM D 3747
Asphalt coating	ASTM D 1227; D 2824
Acrylic coating	ASTM D 6083

R905.12.2 Material standards

Section R905.12.2 is amended to read:

R905.12.2 Material standards. Thermoset single-ply roof coverings shall comply with RMA RP-1, RP-2 or RP-3, or ASTM D4637, ASTM D5019 or CGSB 37- 52M.

Section R907.1 is amended to read:

R907.1 General. Materials and methods of application used for recovering or replacing an existing roof covering shall comply with the requirements of Chapter 9.

Exception: Re-roofing shall not be required to meet the minimum design slope requirement of one-quarter unit vertical in 12 units horizontal (2-percent slope) in Section 905 for roofs that provide positive roof drainage.

R907.3 Recovering Versus Replacement

Section 907.3 is amended to read:

R907.3 Recovering versus replacement. New roof coverings shall not be installed without first removing all existing layers of roof coverings 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 wood shake, slate, clay, cement or asbestos-cement tile.

3. Where the existing roof has two or more applications of any type of roof covering.

Exceptions:

1. 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 that do not rely on existing roofs and roof coverings for support shall not require the removal of existing roof coverings.
2. Metal panel, metal shingle, and concrete and clay tile roof coverings shall be permitted to be installed over existing wood shake roofs when applied in accordance with Section R907.4.

Figure R907.3 Hail Risk Map [a, b]

Figure R907.3 is deleted.

CHAPTER 10

R1001.6 Termination

Section R1001.6 is amended to read:

R1001.6 Termination. Chimneys shall extend at least 2 feet (610 mm) higher than any portion of a building within 10 feet (1048 mm), but shall not be less than 3 feet (914 mm) above the highest point where the chimney passes through the roof.

R1001.6.1 Spark Arrestors

A new section R1001.6.1 is added to read:

R1001.6.1 Spark arrestors. Where a spark arrestor is installed on a masonry chimney, the spark arrestor shall meet all of the following requirements:

1. The net free area of the arrestor shall not be less than four times the net free area of the outlet of the chimney flue it serves.

2. The arrestor screen shall have heat and corrosion resistance equivalent to 19-gage galvanized steel or 24-gage stainless steel.

3. Openings shall not permit the passage of spheres having a diameter greater than 1/2 inch (12.7 mm) nor block the passage of spheres having a diameter less than 3/8 inch (9.5 mm).

4. The spark arrestor shall be accessible for cleaning and the screen or chimney cap shall be removable to allow for cleaning of the chimney flue.

R1001.8.1 Residential-Type Appliances (General)

Section R1001.8.1 is amended to read:

R1001.8.1 Residential-type appliances (general). Flue lining systems shall comply with one of the following:

1. Clay flue lining complying with the requirements of ASTM C315 or equivalent.

2. Listed chimney lining systems complying with UL 1777.

3. Factory-built chimneys or chimney units listed for installation within masonry chimneys.

4. Other approved materials that will resist corrosion, erosion, softening, or cracking from flue gases and condensate at temperatures up to 1,800° F (982°C).

Table R1001.1.11(1) net Cross-Sectional Area of Round Flue Sizes[a]

Table R1001.11(1) is amended to read:

TABLE R1001.11(1)
NET CROSS-SECTIONAL AREA OF ROUND FLUE SIZES[a]

FLUE SIZE, INSIDE DIAMETER (inches)	CROSS-SECTIONAL AREA (square inches)
6	28
7	38
8	50
10	78
10 ¾	90
12	113
15	176
18	254

For SI: 1 inch = 25.4 mm, 1 square inch =645.16 mm^2.
[a.] Flue sizes are based on ASTM C 315.

Section R1003 Masonry Fireplaces

Section R1003, encompassing sections R1003.1 through R1003.13 is amended to read:

SECTION R1003
MASONRY FIREPLACES

R1003.1 General. Masonry fireplaces shall be constructed in accordance with this section and the applicable provisions of Chapters 3 and 4.

R1003.2 Footings and foundations. Footings for masonry fireplaces and their chimneys shall be constructed of concrete or solid masonry at least 12 inches (305 mm) thick and shall extend at least 6 inches (152 mm) beyond the face of the fireplace or foundation wall on all sides. Footings shall be founded on natural, undisturbed earth or engineered fill below frost depth. In areas not subjected to freezing, footings shall be at least 12 inches (305 mm) below finished grade.

R1003.2.1 Ash dump cleanout. Cleanout openings located within foundation walls below fireboxes, when provided, shall be equipped with ferrous metal or masonry doors and frames constructed to remain

tightly closed except when in use. Cleanouts shall be accessible and located so that ash removal will not create a hazard to combustible materials.

R1003.3 Seismic reinforcing. Masonry or concrete chimneys in Seismic Design Categories D_1 and D_2 shall be reinforced. Reinforcement shall conform to the requirements set forth in Table R1003.1 and Section R609.

R1003.3.1 Vertical reinforcing. For chimneys up to 40 inches (1016 mm) wide, four No. 4 continuous vertical bars shall be placed between wythes of solid masonry or within the cells of hollow unit masonry and grouted in accordance with Section R609. Grout shall be prevented from bonding with the flue liner so that the flue liner is free to move with thermal expansion. For chimneys greater than 40 inches (1016 mm) wide, two additional No. 4 vertical bars shall be provided for each additional flue incorporated in the chimney or for each additional 40 inches (1016 mm) in width or fraction thereof.

R1003.3.2 Horizontal reinforcing. Vertical reinforcement shall be placed within 1/4-inch (6.4 mm) ties, or other reinforcing of equivalent net cross-sectional area, placed in the bed joints in accordance with Section R607 at a minimum of every 18 inches (457 mm) of vertical height. Two such ties shall be provided at each bend in the vertical bars.

R1003.4 Seismic anchorage. Masonry and concrete chimneys in Seismic Design Categories D_1 and D_2 shall be anchored at each floor, ceiling or roof line more than 6 feet (1829 mm) above grade, except where constructed completely within the exterior walls. Anchorage shall conform to the requirements of Section R1003.4.1.

RI 003.4.1 Anchorage. Two 3/16-inch by 1-inch (4.8 mm by 25.4 mm) straps shall be embedded a minimum of 12 inches (305 mm) into the chimney. Straps shall be hooked around the outer bars and extend 6 inches (152 mm) beyond the bend. Each strap shall be fastened to a minimum of four floor ceiling or floor joists or rafters with two 1/2-inch (12.7 mm) bolts.

R1003.5 Firebox walls. Masonry fireboxes shall be constructed of solid masonry units, hollow masonry units grouted solid, stone or concrete. When a lining of firebrick at least 2 inches (51 mm) in thickness or other approved lining is provided, the minimum thickness of back and side walls shall each be 8 inches (203 mm) of solid masonry, including the lining. The width of joints between firebricks shall not be greater than 1/4-inch (6.4 mm). When no lining is provided, the total minimum thickness of back and side walls shall be 10 inches (254 mm) of solid masonry. Firebrick shall conform to ASTM C27 or C1261 and shall be laid with medium-duty refractory mortar conforming to ASTM C199.

R1003.5.1 Steel fireplace units. Steel fireplace units are permitted to be installed with solid masonry to form a masonry fireplace when installed either according to the requirements of their listing or according to the requirements of this section. Steel fireplace units incorporating a steel firebox lining, shall be constructed with steel not less than 1/4-inch (6.4 mm) in thickness, and an air circulating chamber which is ducted to the interior of the building. The firebox lining shall be encased with solid masonry to provide a total thickness at the back and sides of not less than 8 inches (203 mm), of which not less than 4 inches (102 mm) shall be of solid masonry or concrete. Circulating air ducts employed with steel fireplace units shall be constructed of metal or masonry.

R1003.6 Firebox dimensions. The firebox of a concrete or masonry fireplace shall have a minimum depth of 20 inches (508 mm). The throat shall not be less than 8 inches (203 mm) above the fireplace opening. The throat opening shall not be less than 4 inches (102 mm) in depth. The cross-sectional area of the passageway above the firebox, including the throat, damper and smoke chamber, shall not be less than the cross-sectional area of the flue.

> **Exception:** Rumford fireplaces shall be permitted provided that the depth of the fireplace is at least 12 inches (305 mm) and at least one-third of the width of the fireplace opening, that the throat is at least 12 inches (305 mm) above the lintel and is at least 1/20 the cross-sectional area of the fireplace opening.

R1003.7 Lintel and throat. Masonry over a fireplace opening shall be supported by a lintel of noncombustible material. The minimum required bearing length on each end of the fireplace opening shall be 4 inches (102 mm). The fireplace throat or damper shall be located a minimum of 8 inches (203 mm) above the lintel.

R1003.7.1 Damper. Masonry fireplaces shall be equipped with a ferrous metal damper located at least 8 inches (203 mm) above the top of the fireplace opening. Dampers shall be installed in the fireplace or the chimney venting the fireplace, and shall be operable from the room containing the fireplace.

R1003.8 Smoke chamber. Smoke chamber walls shall be constructed of solid masonry units, hollow masonry units grouted solid, stone or reinforced concrete. Corbeling of masonry units shall not leave unit cores exposed to the inside of the smoke chamber. When a lining of firebrick at least 2 inches (51 mm) thick, or a lining of vitrified clay at least 5/8 inch (15.9 mm) thick, is provided, the total minimum thickness of front, back and sidewalis shall be 6 inches (152 mm) of solid masonry, including the lining. Firebrick shall conform to ASTM C27 or C1261 and shall be laid with medium-duty refractory mortar conforming to ASTM C199. Where no lining is provided, the total minimum thickness of front, back and sidewalls shall be 8 inches (203 mm) of solid masonry. When the inside surface of the smoke chamber is formed by corbeled masonry, the inside surface shall be parged smooth.

R1003.8.1 Smoke chamber dimensions. The inside height of the smoke chamber from the fireplace throat to the beginning of the flue shall not be greater than the inside width of the fireplace opening. The inside surface of the smoke chamber shall not be inclined more than 45°(0.39 rad) from vertical when prefabricated smoke chamber linings are used or when the smoke chamber walls are rolled or sloped rather than corbeled. When the inside surface of the smoke chamber is formed by corbeled masonry, the walls shall not be corbeled more than 30° (0.26 rad) from vertical.

R1003.9 Hearth and hearth extension. Masonry fireplace hearths and hearth extensions shall be constructed of concrete or masonry, supported by noncombustible materials, and reinforced to carry their own weight and all imposed loads. No combustible material shall remain against the underside of hearths and hearth extensions after construction.

R1003.9.1 Hearth thickness. The minimum thickness of fireplace hearths shall be 4 inches (102 mm).

R1003.9.2 Hearth extension thickness. The minimum thickness of hearth extensions shall be 2 inches (51 mm).

Exception: When the bottom of the firebox opening is raised at least 8 inches (203 mm) above the top of the hearth extension, a hearth extension of not less than 3/8-inch-thick (9.5 mm) brick, concrete, stone, tile or other approved noncombustible material is permitted.

R1003.10 Hearth extension dimensions. Hearth extensions shall extend at least 16 inches (406 mm) in front of and at least 8 inches (203 mm) beyond each side of the fireplace opening. Where the fireplace opening is 6 square feet (0.557 m2) or larger, the hearth extension shall extend at least 20 inches (508 mm) in front of and at least 12 inches (305 mm) beyond each side of the fireplace opening.

R1003.11 Fireplace clearance. All wood beams, joists, studs and other combustible material shall have a clearance of not less than 2 inches (51 mm) from the front faces and sides of masonry fireplaces and not less than 4 inches (102 mm) from the back faces of masonry fireplaces. The airspace shall not be filled, except to provide fire blocking in accordance with Section R1003.13.

Exceptions:

1. Masonry fireplaces listed and labeled for use in contact with combustibles in accordance with UL127 and installed in accordance with the manufacturer's installation instructions are permitted to have combustible material in contact with their exterior surfaces.

2. When masonry fireplaces are part of masonry or concrete walls, combustible materials shall not be in contact with the masonry or concrete walls less than 12 inches (305 mm) from the inside surface of the nearest firebox lining.

3. Exposed combustible trim and the edges of sheathing materials such as wood siding, flooring and drywall shall be permitted to abut the masonry fireplace side walls and hearth extension in accordance with Figure R1003.12, provided such combustible trim or sheathing is a minimum of 12 inches (305 mm) from the inside surface of the nearest firebox lining.

4. Exposed combustible mantels or trim may be placed directly on the masonry fireplace front surrounding the fireplace opening providing such combustible materials shall not be placed within 6 inches (152 mm) of a fireplace opening. Combustible material within 12 inches (306 mm) of the fireplace opening shall not project more than 1/8-inch (3.2 mm) for each 1-inch (25 mm) distance from such an opening.

R1003.12 Mantel and trim. Woodwork or other combustible materials shall not be placed within 6 inches (152 mm) of a fireplace opening. Combustible material within 12 inches (305 mm) of the fireplace opening shall not project more than 1/8-inch (3.2 mm) for each 1-inch (25 mm) distance from such opening.

R1003.13 Fireplace fireblocking. Fireplace fireblocking shall comply with the provisions of Section R602.8.

Delete Subsection R1003.14

Section R1006 Masonry Heaters

A new section R1006, encompassing sections R1006.1 through R1006.2 is added to read:

SECTION R1006
MASONRY HEATERS

R1006.1 Installation. A masonry heater shall be installed in accordance with one of the following:

1. The terms of its listing; or

2. ASTM E1602.

R1006.2 Seismic reinforcing. Masonry heaters shall be anchored and reinforced as required in this chapter. All masonry heaters shall maintain a minimum clearance of 4 inches (102 mm) to adjacent framing from the body of the masonry heater. In Seismic Design Categories A, B and C, reinforcement and seismic anchorage shall not be required. In Seismic Design Categories D_1, and D_2, masonry heaters shall be anchored to the foundation. Where the masonry chimney shares a common wall with the facing of the masonry heater, the chimney portion of the structure shall be reinforced in accordance with Section R1003.3.

Section R1007 Fireplaces-New Construction

A new section R1007 is added to read:

SECTION R1007
FIREPLACES - NEW CONSTRUCTION

R1007 New fireplaces in construction. No fireplace shall be constructed in any residential dwelling in Boulder City or the Las Vegas Valley Hydrographic Basin at an elevation of less than 4000 feet (1220 m) above see level unless it is one of the following:

a) A fireplace equipped with gas logs with a nationally recognized listing approved by the Building Official.
b) Jurisdiction: To comply with County Health Department regulations and EPA guidelines in an attempt to A dedicated natural gas burning factory-built fireplace with a nationally recognized listing approved by the Building Official.
c) A dedicated wood-burning factory-built enclosed fireplace or heater that conforms to the "Phase II Environmental Protection Agency, Standards of Performance for New Stationary Sources, New Residential Wood Heaters" as prescribed in 40 CFR Part 60, Subpart AAA, as verified by a nationally recognized listing approved by the Building Official.
d) A masonry fireplace that includes the installation of a wood-burning insert which meets the standards described in Paragraph c of this Subsection and which is installed in accordance with the insert manufacturer's instructions, or
e) A decorative electrical appliance with a nationally recognized listing approved by the Building Official.

R1008 Fireplace Within a Dwelling Unit

A new section R1008 is added to read:

R1008 Fireplace within a dwelling unit. A gas or wood-burning fireplace installed within a dwelling unit shall comply with the following requirements:

a) The fireplace opening shall be provided with solid doors such as glass, solid steel or cast iron.
b) If the fireplace is located in a sleeping room or an adjacent bathroom, then a permanent, unobstructed fresh air supply shall be provided directly from the exterior of the structure to the fire box.
c) When gas is piped to the fireplace, a caution sign shall be installed that states "Caution: Damper must be permanently blocked open if gas is supplied to this fireplace." The letters on the sign shall be a minimum of 3/8 inches in height.

Delete Chapters 11-42 in their entirety.

Delete Appendix A-G, I and J.