PART 1

Administration

Chapter 1

■ **Chapter 1** Scope and Administration

The administration part of the *International Residential Code* (IRC) covers the general scope, purpose, applicability, and other administrative issues related to the regulation of residential buildings by building safety departments. The administrative provisions establish the responsibilities and duties of the various parties involved in residential construction and the applicability of the technical provisions within a legal, regulatory, and code enforcement arena.

Section R101.2 establishes the criteria for buildings that are regulated by the IRC. Buildings beyond the scope of Section R101.2 are regulated by the *International Building Code* (IBC). The IRC governs detached one- and two-family dwellings and townhouses that are not more than three stories above grade plane in height and have their own separate means of egress. Buildings that are accessory to these dwellings and townhouses such as garages and sheds, also are regulated by the IRC. The remaining topics in Part 1 include the establishment of the building safety department, duties of the building official, permits, construction documents, and inspections. ■

R105.2

Fences Exempt from Permit

R105.2

Fences Exempt from Permit

CHANGE TYPE: Modification

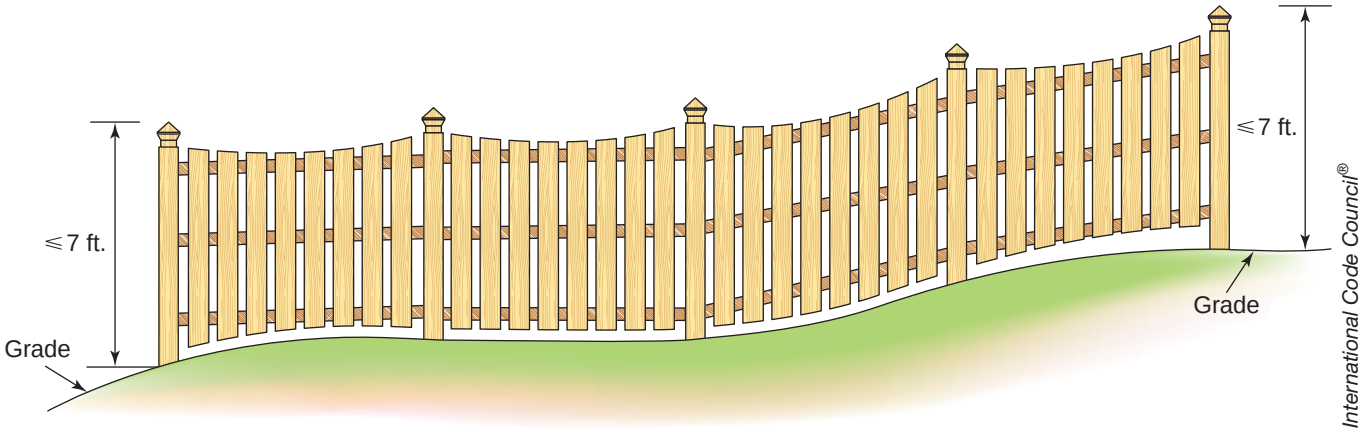
CHANGE SUMMARY: Fences up to 7 feet high are now exempt from permit requirements.

2012 CODE: **R105.2 Work Exempt from Permit.** Permits shall not be required for the following. Exemption from permit requirements of this code shall not be deemed to grant authorization for any work to be done in any manner in violation of the provisions of this code or any other laws or ordinances of this jurisdiction.

Building:

1. One-story detached accessory structures used as tool and storage sheds, playhouses and similar uses, provided the floor area does not exceed 200 square feet (18.58 m^2).
2. Fences not over ~~6~~ 7 feet (~~1829~~ 2134 mm) high.
3. through 10. [no change to text]

CHANGE SIGNIFICANCE: Because vertical fence boards are often precut to 6-foot lengths and the boards are raised off the ground a few inches, the typical wood fence installation exceeds 6 feet and was previously not exempt from the permitting requirement of the code. In addition, some code users have experienced difficulty in accurately measuring fence height because of irregularities in the ground surface. The intent in raising the height from 6 feet to 7 feet for permit exemption is to avoid difficulty in making this determination. The thought is that most fences will be only a few inches higher than 6 feet and well below a height of 7 feet, making the determination of whether a permit is required readily apparent.



Fence exempt from permit.

PART 2

Definitions

Chapter 2

■ **Chapter 2** Definitions

The definitions contained within the IRC are intended to reflect the special meaning of such terms within the scope of the code. As terms can often have multiple meanings within their ordinary day-to-day use or within the various disciplines of the construction industry, it is important that their meaning within the context of the IRC be understood.

Section R201.3 requires that where a term is not defined in the IRC, the meaning for such a term be taken from other codes developed and published by the International Code Council (ICC). The IRC, IBC, and others in this family of ICC codes are often referred to collectively as the I-Codes. Section R201.4 provides that a term not defined by any of the I-Codes must have the ordinarily accepted meaning within the context of the term's use.

Although the definitions of Chapter 2 apply to all chapters of the IRC, terms specifically related to fuel gas and electrical systems are defined in Chapter 24 and Chapter 35, respectively. ■

R202

Structural Composite Lumber

R202

Definitions, Structural Composite Lumber

CHANGE TYPE: Addition

CHANGE SUMMARY: Definitions for structural composite lumber have been added to Chapter 2.

2012 CODE: **Structural Composite Lumber.** Structural members manufactured using wood elements bonded together with exterior adhesives.

Examples of structural composite lumber are:

Laminated veneer lumber (LVL). A composite of wood veneer elements with wood fibers primarily oriented along the length of the member, where the veneer element thicknesses are 0.25 inch (6.4 mm) or less.

Parallel strand lumber (PSL). A composite of wood strand elements with wood fibers primarily oriented along the length of the member, where the least dimension of the wood strand elements is 0.25 inch (6.4 mm) or less and their average lengths are a minimum of 300 times the least dimension of the wood strand elements.

Laminated strand lumber (LSL). A composite of wood strand elements with wood fibers primarily oriented along the length of the member, where the least dimension of the wood strand elements is 0.10 inch (2.54 mm) or less and their average lengths are a minimum of 150 times the least dimension of the wood strand elements.

Oriented strand lumber (OSL). A composite of wood strand elements with wood fibers primarily oriented along the length of the member, where the least dimension of the wood strand elements is 0.10 inch (2.54 mm) or less and their average lengths are a minimum of 75 times and less than 150 times the least dimension of the wood strand elements.

International Code Council®

Laminated veneer lumber (LVL)

CHANGE SIGNIFICANCE: Structural composite lumber, often referred to as engineered lumber, is manufactured of wood veneers or wood strands bonded together to achieve increased design strength and stability characteristics when compared to conventional dimension lumber. These products are being used as a substitute for solid-sawn lumber for beams, headers, long-length studs, floor and roof framing, and other applications where high strength, long length, and/or dimensional stability are desirable.

New provisions in the floor, wall, and roof framing chapters of the *International Residential Code* (IRC) recognize structural composite lumber and reference a new standard in the code, ASTM D 5456-09, *Standard Specification for Evaluation of Structural Composite Lumber Products*. The new definitions in Section R202 identify the types of structural composite lumber available for use in residential construction. Laminated veneer lumber (LVL) is the most commonly used and recognized structural composite lumber product. Because of its high-strength properties and broad range in product width and length, LVL typically is used for girders, beams, and long-span headers in residential and commercial construction. Parallel strand lumber (PSL) is commonly used for long-span beams, heavily loaded columns, and beam and header applications where high bending strength is needed.

International Code Council®

Parallel strand lumber (PSL)

Laminated strand lumber (LSL) and oriented strand lumber (OSL) generally have lower strength and stiffness properties than LVL and PSL. LSL is used in column, stud, joist, and header applications. OSL generally is used for window and door headers and floor system rim boards.

Structural composite lumber and ASTM D 5456-09, previously recognized in the 2006 and 2009 *International Building Code* (IBC), are now specifically recognized in the 2012 edition of the IRC. Evaluation of structural composite lumber in accordance with ASTM D 5456-09 provides assurance to the code user that the products are being manufactured with the appropriate quality control systems in place and that the design properties are properly derived and maintained during production. Most, if not all, of these structural composite lumber products have an ICC Evaluation Service (ES) report. Evaluation report numbers typically appear in the stamp on the lumber product. For more information on evaluation reports, go to www.icc-es.org.

PART 3

Building Planning and Construction

Chapters 3 through 10

- **Chapter 3** Building Planning
- **Chapter 4** Foundations
- **Chapter 5** Floors
- **Chapter 6** Wall Construction
- **Chapter 7** Wall Covering
- **Chapter 8** Roof-Ceiling Construction
- **Chapter 9** Roof Assemblies
- **Chapter 10** Chimneys and Fireplaces

Part 3 deals with the overall issues of building planning, design, site location, fire safety, egress, structural system, weather resistance, and other such related issues. Chapter 3 includes the bulk of the nonstructural provisions, including the location on the lot, fire-resistant construction, light and ventilation, emergency escape and rescue, fire protection, and many other provisions aimed at protecting the health, safety, and welfare of the public. Section R308 covers approved glazing materials and the locations where safety glazing is required. Sections R311 through R315 address provisions for means of egress, fall protection, automatic fire sprinkler systems, smoke alarms, and carbon monoxide alarms. In addition to such health and life-safety issues, Chapter 3 provides the overall structural design criteria for residential buildings regulated by the IRC. Section R301 addresses live loads, dead loads, and environmental loads such as wind, seismic, and snow.

The other chapters of Part 3 address the prescriptive methods as well as the performance criteria for building foundations, floor construction, wall construction, wall coverings, roof construction, roof assemblies, chimneys, and fireplaces. ■

R301.2.1
Wind Design Criteria

R301.2.1.2
Protection of Openings in Windborne Debris Regions

R301.2.2
Seismic Provisions

TABLE R301.5
Minimum Uniformly Distributed Live Loads

R302.1
Exterior Walls

R302.2.2
Parapet Exception

R302.5.1
Garage Opening Protection

R303
Mechanical Ventilation

R303.5
Ventilation Intake Openings

R308.4
Hazardous Locations for Glazing

R308.4.5
Glazing and Wet Surfaces

R308.4.6

Glazing Adjacent Stairs and Ramps

R308.4.7

Glazing Adjacent to the Bottom Stair Landing

R309.5

Garage Fire Sprinklers

R310.1

Emergency Escape and Rescue Openings

R310.2.2

Window Well Drainage

R311.3.1

Floor Elevations at the Required Egress Door

R311.7.5

Stair Treads and Risers

R311.7.6

Landings for Stairways

R312

Guards and Window Fall Protection

R314

Smoke Alarm Power Source and Interconnection

R315.2

Carbon Monoxide Detection Systems

R316.4

Thermal Barrier

R316.5.13

Thermal Barrier for Floors

R404.1.9

Isolated Masonry Piers

R405.1

Foundation Drainage

R501.3

Fire Protection of Floors

R507

Decks

R602.1.1

End-Jointed Lumber

TABLE R602.3(1)

Fastener Schedule for Structural Members

R602.7

Single Member Headers

R602.10

Wall Bracing

R602.10.1

Braced Wall Lines

R602.10.2

Braced Wall Panels

R602.10.3

Required Length of Bracing

R602.10.4

Construction Methods for Braced Wall Panels

R602.10.5

Minimum Length of a Braced Wall Panel

R602.10.6

Construction of Methods ABW, PFH, PFG, CS-PF, and BV-WSP

R602.10.6.5

Wall Bracing for Dwellings with Stone and Masonry Veneer in Seismic Design Categories D_0, D_1, and D_2

R602.10.7

Ends of Braced Wall Lines with Continuous Sheathing

R602.10.9

Braced Wall Panel Support

R602.12

Simplified Wall Bracing

R602.12.6

Narrow Panels for Simplified Wall Bracing

R607.3

Installation of Wall Ties

R703.7.3.2

Masonry Veneer Lintel

R703.7.4

Masonry Veneer Anchorage

continues

R703.7.4.3
Grout Fill behind Masonry Veneer

R703.8
Flashing

R703.12
Adhered Masonry Veneer

R802.7
Cutting, Drilling, and Notching of Roof Members

R802.11
Roof Uplift Resistance

R806
Roof Ventilation

R806.5
Unvented Attic Assemblies

R903.2.1
Roof Flashing Locations

R903.2.2
Crickets and Saddles

R905.2.7.2
Underlayment and High Wind

R905.2.8.3
Sidewall Flashing

R905.2.8.5
Roof Drip Edge

R907.3
Recovering versus Replacement of Roofing

R1003.9.1, R1003.9.3
Masonry Chimney Caps and Rain Caps

R1005.7
Factory-Built Chimney Offsets

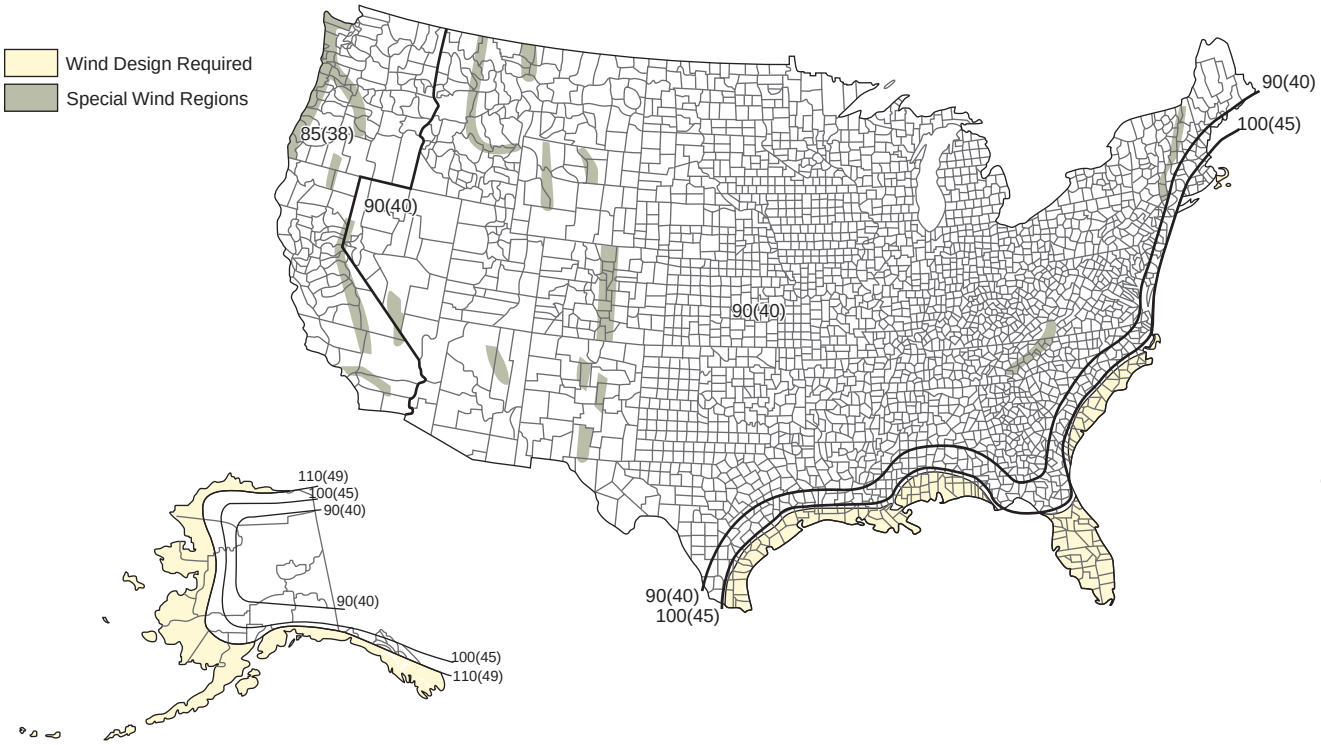
R301.2.1
Wind Design Criteria

CHANGE TYPE: Modification

CHANGE SUMMARY: Revisions to the section titles and text clarify the intent and application of the wind provisions. New maps update the nominal wind speeds for the United States to correlate with the 2010 edition of ASCE 7 and define the high-wind regions that require structural design in accordance with one of the referenced standards. The threshold of 100-mph wind speed in hurricane-prone regions has been deleted to provide for consistent application of the wind provisions and to correspond to the new wind maps. The prescriptive provisions related to wind loads apply to buildings in regions with a wind speed of less than 110 mph.

2012 CODE: **R301.2.1 Wind ~~Design Criteria~~ ~~Limitations~~.** Buildings and portions thereof, shall be ~~limited~~ constructed in accordance with the wind provisions of this code using the basic wind speed~~, as defined~~ in Table R301.2(1) ~~and construction methods in accordance with this code. Basic wind speeds shall be~~ as determined from Figure R301.2(4)A. The structural provisions of this code for wind loads are not permitted where wind design is required as specified in Section R301.2.1.1. Where different construction methods and structural materials are used for various portions of a building, the applicable requirements of this section for each portion shall apply. Where ~~loads for wall coverings, curtain walls, roof coverings, exterior windows, skylights, garage doors and exterior doors are~~ not otherwise specified, the wind loads listed in Table R301.2(2) adjusted for height and exposure using Table R301.2(3) shall be used to determine design load performance requirements for wall coverings,

R301.2.1 continues



Regions where wind design is required.

R301.2.1 continued

curtain walls, roof coverings, exterior windows, skylights, garage doors, and exterior doors. Asphalt shingles shall be designed for wind speeds in accordance with Section R905.2.4. A continuous load path shall be provided to transmit the applicable uplift forces in Section R802.11.1 from the roof assembly to the foundation.

R301.2.1.1 ~~Design Criteria~~ Wind Limitations and Wind Design Required. ~~In regions~~ The wind provisions of this code shall not apply to the design of buildings where wind design is required in accordance with Figure R301.2(4)B or where the basic wind speed~~s~~ from Figure R301.2(4)A equal~~s~~ or exceeds ~~100 miles per hour (45 m/s) in hurricane-prone regions, or~~ 110 miles per hour (49 m/s) ~~elsewhere, the design of buildings shall be in accordance with one of the following methods. The elements of design not addressed by those documents in Items 1 through 4 shall be in accordance with this code~~.

Exceptions:

1. For concrete construction, the wind provisions of this code shall apply in accordance with the limitations of Sections R404 and R611.
2. For structural insulated panels, the wind provisions of this code shall apply in accordance with the limitations of Section R613.

In regions where wind design is required in accordance with Figure R301.2(4)B or where the basic wind speed shown on Figure R301.2(4)A equals or exceeds 110 miles per hour (49 m/s), the design of buildings for wind loads shall be in accordance with one or more of the following methods:

1. American Forest and Paper Association (AF&PA) *Wood Frame Construction Manual for One- and Two-Family Dwellings* (WFCM); or
2. International Code Council (ICC) *Standard for Residential Construction in High Wind Regions* (ICC-600); or
3. *Minimum Design Loads for Buildings and Other Structures* (ASCE-7); or
4. American Iron and Steel Institute (AISI), *Standard for Cold-Formed Steel Framing-Prescriptive Method For One- and Two-Family Dwellings* (AISI S230).
5. *International Building Code.*
5. ~~Concrete construction shall be designed in accordance with the provisions of this code.~~
6. ~~Structural insulated panel (SIP) walls shall be designed in accordance with the provisions of this code.~~

The elements of design not addressed by the methods in Items 1 through 5 shall be in accordance with the provisions of this code. When ASCE 7 or the *International Building Code* is used for the design of the building, the wind speed map and exposure category requirements as specified in ASCE 7 and the *International Building Code* shall be used.

CHANGE SIGNIFICANCE: The IRC contains prescriptive provisions for the construction of residential buildings to adequately resist wind loads. In regions where wind speeds exceed the limitations of the code or portions of the building are otherwise outside the scope of the prescriptive provisions, design to resist wind loads must be in accordance with one of the referenced standards, such as the IBC, ICC-600, WFCM, or ASCE 7. The revised language clarifies that in high-wind regions, only the structural design of the dwelling and exterior components (such as siding, windows, or roof assemblies) that are prone to wind damage must comply with the IBC or one of the other referenced standards. The remaining architectural, fire- and life-safety, environmental, mechanical, electrical, and plumbing provisions of the IRC still apply to the dwelling. The changes address concerns by some code users that the previous language was confusing and implied that when exceeding the wind limitations, all elements of the dwelling were considered outside the scope of the IRC. To some, this meant that the building had to comply with the IBC, including provisions for means of egress, fire resistance, interior environment, and provisions referencing requirements for mechanical and plumbing systems. That has never been the intent, and revisions to this section make it clear that the wind limitations only apply to elements of the building that resist wind loads. The exceptions are asphalt shingles, concrete construction, and structural insulated panels, all of which must comply with the specific wind limitations and requirements of the corresponding IRC code section. For example, asphalt shingles must be tested and labeled for a maximum basic wind speed in accordance with Section R905.2.4.

For most parts of the country, the IRC has required wind design in accordance with one of the referenced standards where the design wind speed equals or exceeds 110 mph. However, in the hurricane-prone areas of the Atlantic and Gulf coasts, the threshold design wind speed has been 100 mph. Justification of the lower wind speed in these hurricane-prone regions was based on concerns that the prescriptive provisions of the code were not adequate to address roof sheathing attachment, wind bracing requirements, uplift connections, and wall-to-wall connections at the floor line to limit damage during Category 4 and 5 hurricanes. Subsequent editions of the code have addressed these concerns and post-hurricane studies have concluded that dwellings built in accordance with the IRC provisions perform well in resisting damage from high-wind events. Therefore, the lower wind speed threshold of less than 100 mph in hurricane-prone regions has been removed from the code. The prescriptive provisions related to resisting wind loads now have the same limitation in all areas of the country: less than 110 mph.

Based on new data and research performed over the past 10 years, and improvements in modeling of coastal high-wind events, hurricane wind speeds have been adjusted downwards. To update and coordinate the provisions of the 2012 IRC with the 2010 edition of ASCE 7, the results of this data are reflected in the new map for nominal basic wind speed in Figure R301.2(4)A (previously Figure R301.2[4]).

Another new map, Figure R301.2(4)B, has been introduced to specifically indicate the geographic locations that require wind design. In this context, wind design means an engineered design in accordance with the IBC or ASCE 7, or a design in accordance with the applicable provisions of ICC-600, WFCM, or AISI S230. The areas indicated as requiring wind design on the map generally correspond to areas with a nominal wind speed of 110 mph or greater. This is consistent with the text revisions that limit the prescriptive provisions to areas with wind speeds of less than 110 mph.

R301.2.1.2

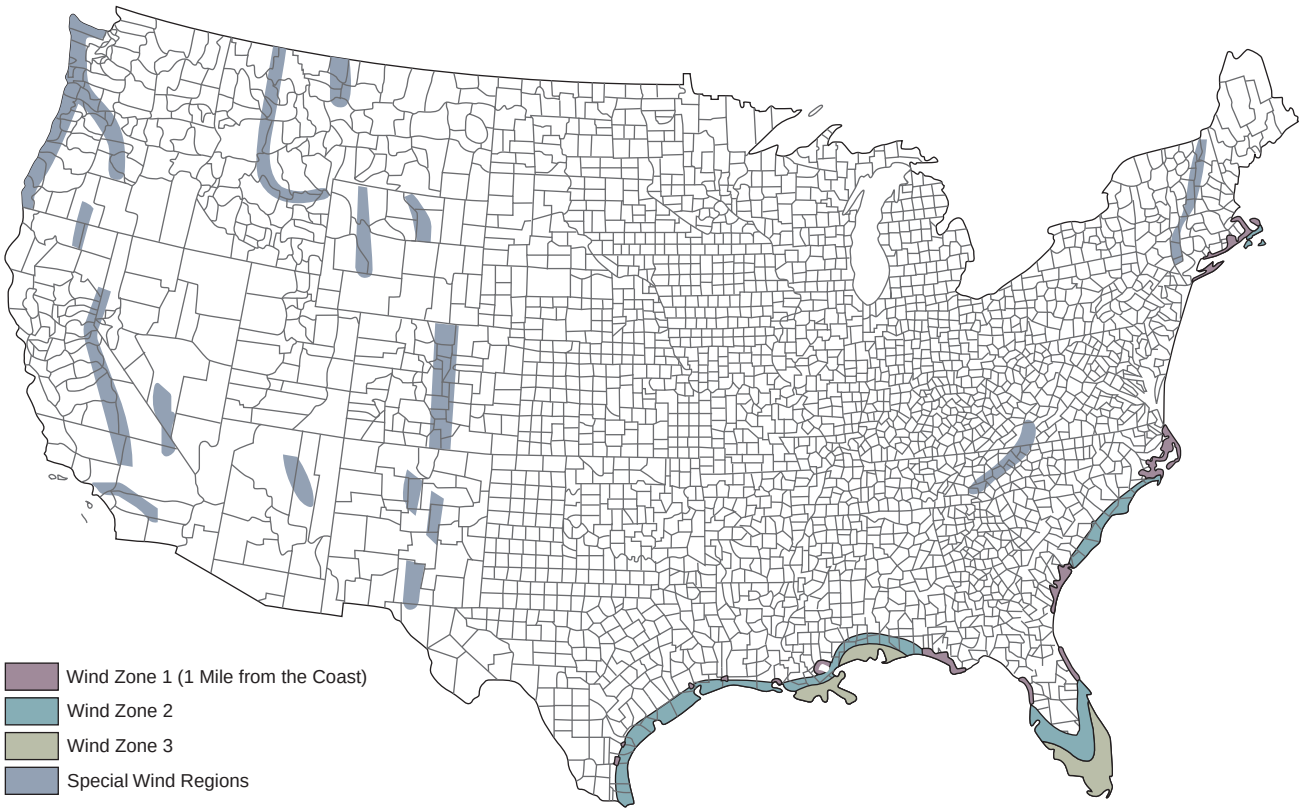
Protection of Openings in Windborne Debris Regions

CHANGE TYPE: Modification

CHANGE SUMMARY: Windborne debris regions are now defined in a new map. Revisions to the text clarify that protection from windborne debris is required for all exterior glazing in a building, not just windows.

2012 CODE: **R301.2.1.2 Protection of Openings.** Exterior glazing ~~Windows~~ in buildings located in windborne debris regions shall be ~~have glazed openings~~ protected from windborne debris. Glazed opening protection for windborne debris shall meet the requirements of the Large Missile Test of ASTM E 1996 and ASTM E 1886 referenced therein. The applicable wind zones for establishing missile types in ASTM E 1996 are shown on Figure R301.2(4)C. Garage door glazed opening protection for windborne debris shall meet the requirements of an approved impact resisting standard or ANSI/DASMA 115.

Exception: Wood structural panels with a minimum thickness of 7/16 inch (11 mm) and a maximum span of 8 feet (2438 mm) shall be permitted for opening protection in one- and two-story buildings. Panels shall be precut and attached to the framing surrounding the opening containing the product with the glazed opening. Panels shall be predrilled as required for the anchorage method and shall be secured with the attachment hardware provided. Attachments shall be designed to resist the component and cladding loads determined in accordance with either Table R301.2(2) or ASCE 7, with the permanent



Windborne debris regions

corrosion-resistant attachment hardware provided and anchors permanently installed on the building. Attachment in accordance with Table R301.2.1.2 is permitted for buildings with a mean roof height of 33 feet (10 058 mm) or less where located in Wind Zones 1 and 2 in accordance with Figure R301.2(4)C ~~wind speeds do not exceed 130 miles per hour (58 m/s)~~.

R202 Definition

Windborne Debris Region. Areas within hurricane-prone regions as designated in accordance with Figure R302.1(4)C ~~within one mile of the coastal mean high water line where the basic wind speed is 110 miles per hour (49 m/s) or greater; or where the basic wind speed is equal to or greater than 120 miles per hour (54 m/s); or Hawaii~~.

CHANGE SIGNIFICANCE: A new map, Figure R301.2(4)C, has been introduced to delineate the various windborne debris regions in the hurricane-prone areas of the Atlantic and Gulf coasts. The definition for windborne debris region also has been revised to delete references to wind speed and proximity to the coast in favor of referencing the new map. Protection of glazing to resist impact from windborne debris must be designed in accordance with the Large Missile Test of ASTM E1996 based on the wind zone shown in Figure R301.2(4)C. The exception allowing the use of 7/16-inch wood structural panels to protect glazed openings remains in place but now references Wind Zones 1 and 2 in the new map and deletes mention of wind speed. Previously, the IRC limited use of this exception to windborne debris regions with wind speeds not greater than 130 mph.

R301.2.2

Seismic Provisions

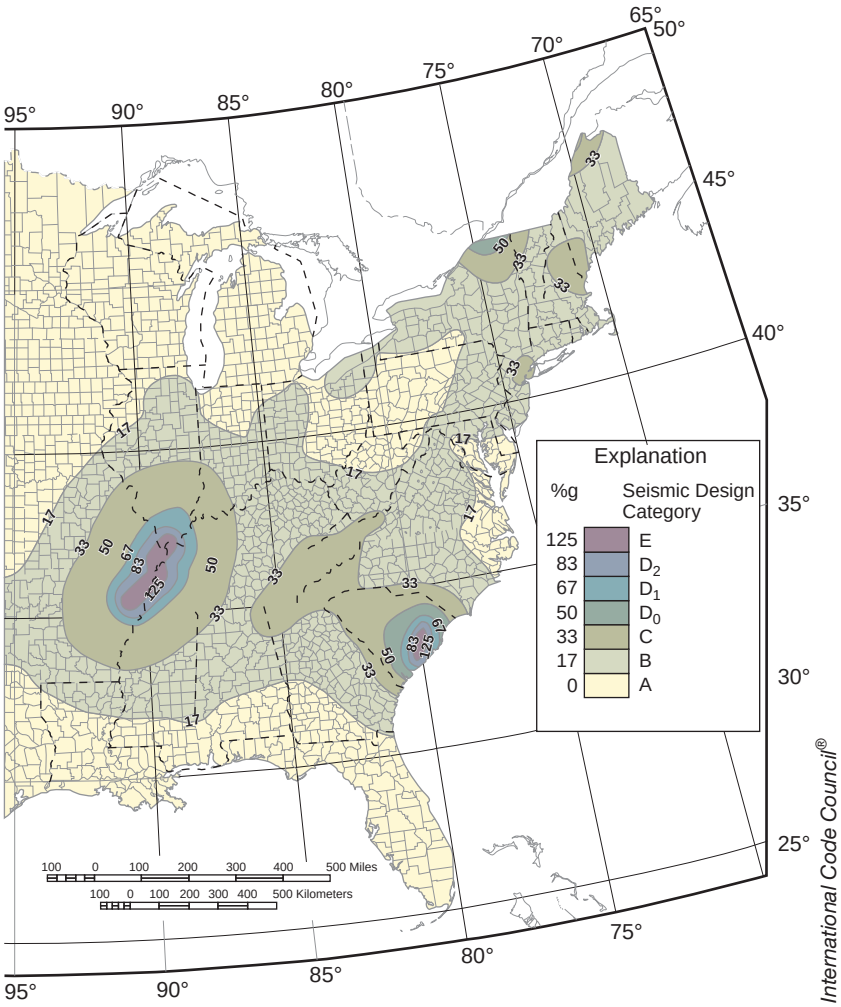
CHANGE TYPE: Clarification

CHANGE SUMMARY: The general rule and exception for application of the seismic provisions to buildings regulated by the IRC have been replaced by separate rules for one- and two-family dwellings and townhouses to clarify the intent.

2012 CODE: **R301.2.2 Seismic Provisions.** The seismic provisions of this code shall apply ~~to buildings constructed in Seismic Design Categories C, D_0, D_1 and D_2, as determined in accordance with this section~~ as follows:

1. Townhouses in Seismic Design Categories C, D_0, D_1 and D_2.
2. Detached one- and two- family dwellings in Seismic Design Categories, D_0, D_1 and D_2.

Exception: ~~Detached one- and two-family dwellings located in Seismic Design Category C are exempt from the seismic requirements of this code.~~



Seismic design categories—site Class D

CHANGE SIGNIFICANCE: Because one- and two-family dwellings located in Seismic Design Category (SDC) C are exempt from the seismic provisions, and townhouses are not exempt, there has been uncertainty by some as to the correct application of the seismic provisions of the IRC. Previously, the rule stated that the seismic provisions of the code applied to all buildings in SDC C, D_0, D_1, and D_2. An exception to the general rule exempted one- and two-family dwellings located in SDC C. The revision intends to clarify the application by removing the exception and creating separate rules for one- and two-family dwellings and townhouses. This change in language does not intend to remove the seismic requirements from all accessory buildings, which previously were captured under the general rule applying the seismic provisions to all buildings in SDC C, D_0, D_1, and D_2. The intent is to apply the same seismic requirements to the accessory structure as apply to the dwelling or townhouse it serves.

Table R301.5

Minimum Uniformly Distributed Live Loads

CHANGE TYPE: Modification

CHANGE SUMMARY: The terminology related to live loads has been updated for consistency with ASCE 7-10. Footnotes b and g pertaining to attic live loads have been revised to clarify the application.

2012 CODE:

TABLE R301.5 Minimum Uniformly Distributed Live Loads (in pounds per square foot)

Use	Live Load
Uninhabitable attics without storage[b]	10
Uninhabitable attics with limited storage[b,g]	20
Habitable attics and attics served with fixed stairs	30

[No change to portions of table not shown]

a. [No change to text]

b. Uninhabitable attics without storage are those where the maximum clear height between joists and rafters is less than 42 inches, or where there are not two or more adjacent trusses with ~~the same~~ web configurations capable of ~~containing a~~ accommodating an assumed rectangle 42 inches ~~high~~ in height by ~~2 feet wide~~ 24 inches in width, or greater, ~~located~~ within the plane of the trusses. ~~For attics without storage,~~ This live load need not be assumed to act concurrently with any other live load requirements.

c. through f. [No change to text]

g. ~~For~~ Uninhabitable attics with limited storage ~~and constructed with trusses, this live load need be applied only to those portions of the bottom chord~~ are those where the maximum clear height between joists and rafters is 42 inches or greater, or where there are two or more adjacent trusses with ~~the same~~ web configurations capable of ~~containing~~ accommodating ~~a~~ an assumed rectangle 42 inches ~~high~~ in height ~~or greater~~ by ~~2 feet wide~~ 24 inches in width, or greater, ~~located~~ within the plane of the trusses. ~~The rectangle shall fit between the top of the bottom chord and the bottom of any other truss member, provided that each of the following criteria is met.~~

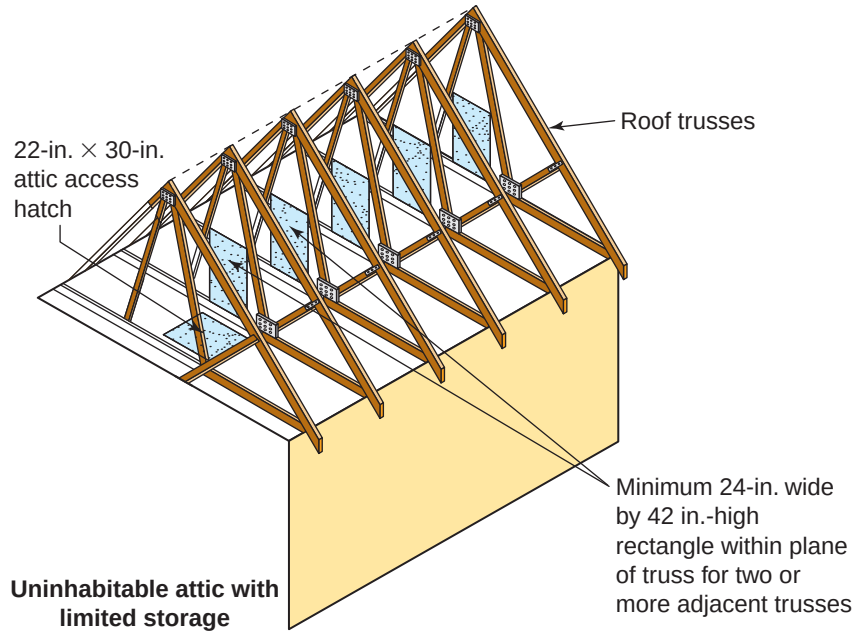
The live load need only be applied to those portions of the joists or truss bottom chords where all of the following conditions are met:

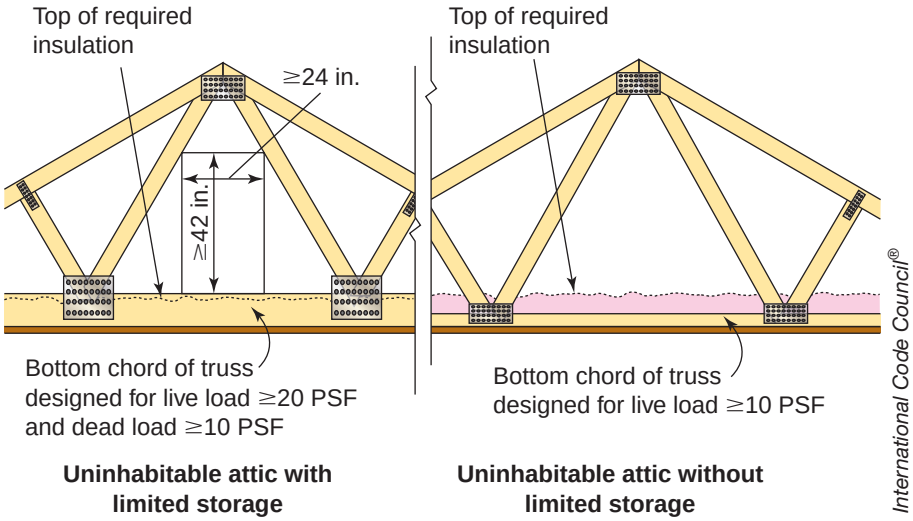
1. The attic area is accessible ~~by a pull-down stairway or framed in accordance with Section R807.1~~ from an opening not less than 20 inches in width by 30 inches in length that is located where the clear height in the attic is a minimum of 30 inches.
2. The slopes of the joists or truss ~~has a~~ bottom chords ~~pitch less than 2:12~~ are no greater than 2 units vertical to 12 units horizontal.
3. Required insulation depth is less than the joist or truss bottom chord member depth.

The remaining portions of the joists or truss bottom chords ~~of trusses meeting the above criteria for limited storage~~ shall be designed for ~~the greater of the actual imposed dead load or 10 psf,~~ a uniformly distributed ~~over the entire span~~ concurrent live load of not less than 10 lb/ft^2.

h. [No change to text]

CHANGE SIGNIFICANCE: Attics other than habitable attics are now labeled uninhabitable attics for consistency with the 2010 edition of the ASCE 7 standard. An extensive rewrite of footnotes b and g, though mostly editorial, clarifies the intent of provisions for determining when an uninhabitable attic must be designed for a minimum live load of 20 psf for limited storage. For trusses, the determination is still based on a 24-inch-by-42-inch rectangle, but the text is changed to describe an assumed condition rather than an actual one, which is considered more appropriate for a building code requirement. The addition of joists and





Minimum uniformly distributed live loads for attic trusses.

Table R301.5 continues

Table R301.5 continued

International Code Council®

Uninhabitable attic with limited storage.

rafters to the footnotes recognizes that a determination for minimum loading is required for attics constructed of conventional wood framing as well as those constructed with trusses.

The references to a pull-down stairway and Section R807.1 in item 1 of footnote g are replaced with minimum attic access opening dimensions of 20 inches by 30 inches. However, Section R807.1 requires a minimum attic access opening of 22 inches by 30 inches for attics of combustible construction that have a minimum vertical dimension of 30 inches. Only habitable attics and attics served by fixed stairs require a live load of 30 psf. If fixed stairs are not provided, uninhabitable attics meeting the criteria for limited storage, including access through a 22-inch by 30-inch opening, must support a minimum live load of 20 psf, whether or not a pull-down stairway is provided.

R302.1

Exterior Walls

CHANGE TYPE: Modification

CHANGE SUMMARY: The minimum clearances to lot lines have been reduced from 5 feet to 3 feet for unrated exterior walls when the dwelling is protected with a fire sprinkler system. The code now permits construction of unrated exterior walls on the lot line when all dwellings in the subdivision are protected with automatic fire sprinkler systems and the opposing lot maintains a minimum 6-foot clearance from the common lot line.

2012 CODE: **R302.1 Exterior Walls.** Construction, projections, openings and penetrations of exterior walls of dwellings and accessory buildings shall comply with Table R302.1(1); or for dwellings equipped throughout with an automatic sprinkler system installed in accordance with Section P2904 shall comply with Table R302.1(2).

Exception: [no change to text]

R302.1 continues

TABLE R302.1(1) Exterior Walls

Exterior Wall Element		Minimum Fire-Resistance Rating	Minimum Fire Separation Distance
Walls	(Fire-resistance rated)	1-hour tested in accordance with ASTM E 119 or UL 263 with exposure from both sides	< 5 feet
	(Not fire-resistance rated)	0 hours	⩾ 5 feet
Projections	(Fire-resistance rated)	1 hour on the underside	⩾ 2 feet to < 5 feet
	(Not fire-resistance rated)	0 hours	⩾ 5 feet
Openings in walls	Not allowed	N/A	< 3 feet
	25% Maximum of Wall Area	0 hours	3 feet
	Unlimited	0 hours	5 feet
Penetrations	All	Comply with Section R302.4	< 5 feet
		None required	5 feet

International Code Council®

Exterior walls adjacent to lot line.

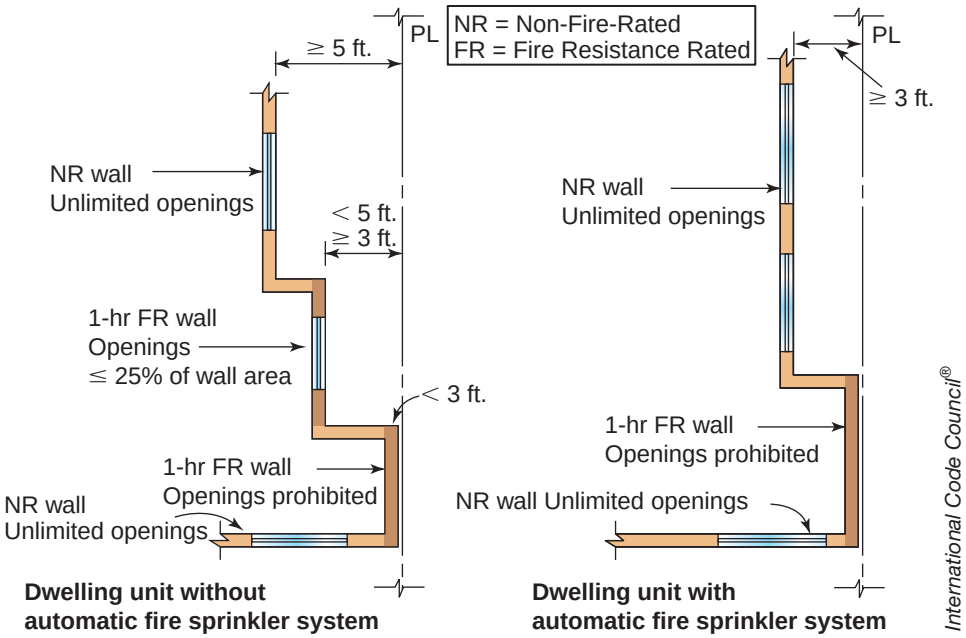
R302.1 continued

TABLE R302.1(2) Exterior Walls—Dwellings with Fire Sprinklers

Exterior Wall Element		Minimum Fire-Resistance Rating	Minimum Fire Separation Distance
Walls	(Fire-resistance rated)	1-hour tested in accordance with ASTM E 119 or UL 263 with exposure from the outside	0 feet
	(Not fire-resistance rated)	0 hours	3 feet[a]
Projections	(Fire-resistance rated)	1 hour on the underside	2 feet[a]
	(Not fire-resistance rated)	0 hours	3 feet
Openings in walls	Not allowed	N/A	< 3 feet
	Unlimited	0 hours	3 feet[a]
Penetrations	All	Comply with Section R302.4	< 3 feet
		None required	3 feet[a]

For SI: 1 foot = 304.8 mm.
N/A = Not Applicable
a. For residential subdivisions where all dwellings are equipped throughout with an automatic sprinkler system installed in accordance with Section P2904, the fire separation distance for non-rated exterior walls and rated projections shall be permitted to be reduced to zero feet, and unlimited unprotected openings and penetrations shall be permitted, where the adjoining lot provides an open setback yard that is 6 feet or more in width on the opposite side of the property line.

CHANGE SIGNIFICANCE: Provisions that regulate the construction of exterior walls in proximity to lot lines have long been recognized as effective in preventing the spread of fire from a building on one property to a building on another property. Unless the exterior wall is constructed to provide a fire-resistance rating of 1 hour with exposure from both sides in accordance with either ASTM E-119 or UL 263, a minimum fire separation distance is required from the lot line. The consensus as to the minimum distance necessary to provide a sufficient buffer against the spread of fire has changed somewhat over the years. For example, the 2000 and 2003 editions of the IRC required a minimum 3-foot separation from lot lines for unrated exterior walls. In the 2006 edition, that distance was increased to 5 feet to provide a higher level of safety and to correlate with the provisions for residential occupancies regulated by the IBC. The 2009 IRC introduced requirements for automatic fire sprinkler systems in all new one- and two-family dwellings and townhouses. When a sprinkler system is installed, the 2012 IRC permits non-rated walls that are not less than 3 feet from the lot line, a dimension previously prescribed in earlier editions of the code. This 3-foot dimension is the new threshold for exterior wall construction, projections, openings, and penetrations. For dwellings without sprinkler systems, the 5-foot separation distance still applies.



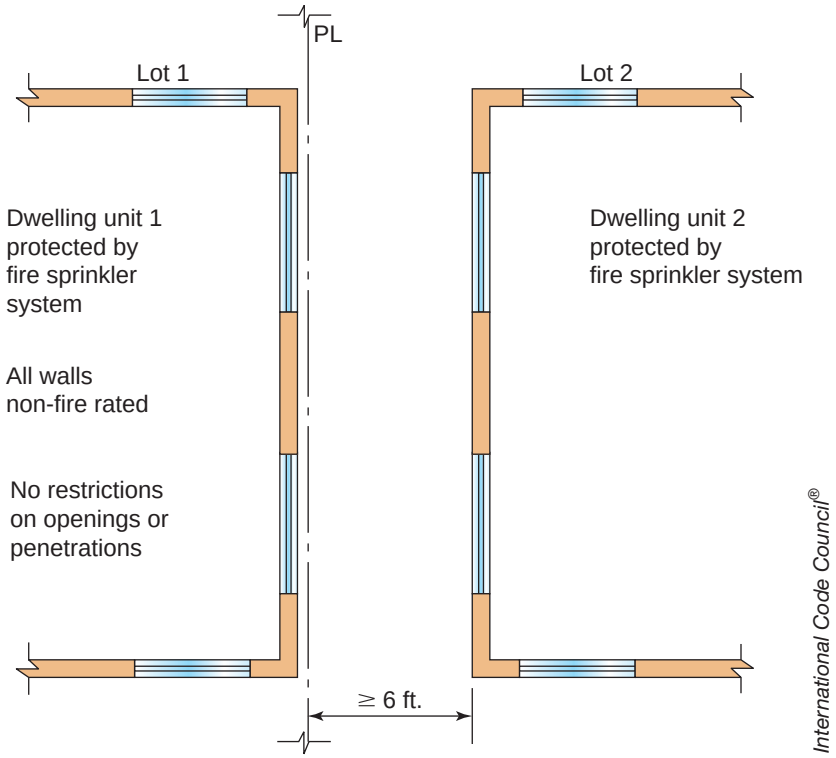
Exterior walls

Although the IRC requires automatic sprinkler systems for all new dwellings, a reduction in the minimum fire separation distance is now in place as an additional incentive for installing dwelling sprinkler systems. This provision recognizes that some state or local jurisdictions may not have enacted the sprinkler requirements and offers an alternative for builders choosing to install automatic sprinkler systems. The reduced clearances intend to provide design flexibility and reduce costs associated with fire-resistant construction, while maintaining a reasonable level of safety based on past performance of dwelling fire sprinkler systems. A dwelling automatic sprinkler system installed in accordance with Section P2904 or NFPA 13D aids in the detection and control of fires in residential occupancies regulated by the IRC. The design criteria of these sprinkler systems are for life safety to buy time for occupants to escape a fire; dwelling fire sprinklers are not designed for property protection. Sprinklers in accordance with Section P2904 or NFPA 13D are not required throughout the dwelling—they generally may be omitted in concealed spaces, closets, bathrooms, garages, and attics and crawlspaces without gas-fired appliances, for example. However, the automatic sprinkler system is expected to prevent total fire involvement (flashover) in the room of fire origin if the room is sprinklered. In addition to increasing the likelihood of occupants escaping or being evacuated, dwelling sprinklers often provide some measure of property protection as well.

A footnote to the new table allows unrated exterior walls of dwellings equipped with sprinkler systems to be placed on the lot line if all dwellings in the subdivision are equipped with a sprinkler system and the adjacent lot maintains a 6-foot setback for buildings on the opposite side of

R302.1 continues

R302.1 continued



Exterior walls in subdivisions where all dwelling units are protected by fire sprinkler systems.

TABLE 3-1 Minimum Fire Separation Distance Comparison (Nonrated Construction)

Exterior Wall Element (Not fire-resistance rated)	Minimum Fire Separation Distance		
	Without Sprinkler System	With Sprinkler System	With Sprinkler System in All Dwellings of Subdivision and 6-Foot Setback for Building on Adjoining Lot
Walls	5 feet	3 feet	0 feet
Projections	5 feet	3 feet	2 feet*
Unlimited openings in walls	5 feet	3 feet	0 feet
Penetrations (no restrictions)	5 feet	3 feet	0 feet

*The distance is permitted to be reduced to zero feet for projections that have a 1-hour fire-resistance rating on the underside.

the lot line. Under these conditions, openings and penetrations are unrestricted, but projections that are less than 2 feet from the lot line still require 1-hour protection on the underside. This provision allows flexibility in placing buildings on the lot for maximum effective use of the buildable area while still maintaining a minimum 6 feet of clearance between buildings. Table 3-1 summarizes the new fire separation distance requirements for exterior walls that are not fire-resistance-rated.

R302.2.2
Parapet Exception

CHANGE TYPE: Modification

CHANGE SUMMARY: When a parapet is not installed, openings and penetrations of the roof are no longer permitted within 4 feet of the separating wall between townhouse dwelling units.

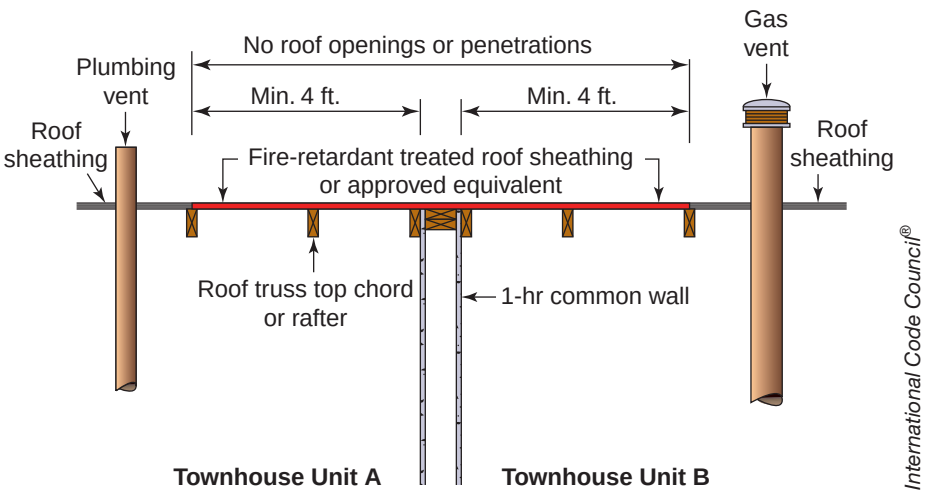
2012 CODE: **R302.2.2 Parapets.** Parapets constructed in accordance with Section R302.2.3 shall be constructed for townhouses as an extension of exterior walls or common walls in accordance with the following:

1. Where roof surfaces adjacent to the wall or walls are at the same elevation, the parapet shall extend not less than 30 inches (762 mm) above the roof surfaces.
2. Where roof surfaces adjacent to the wall or walls are at different elevations and the higher roof is not more than 30 inches (762 mm) above the lower roof, the parapet shall extend not less than 30 inches (762 mm) above the lower roof surface.

   Exception: A parapet is not required in the two cases above when the roof is covered with a minimum class C roof covering, and the roof decking or sheathing is of noncombustible materials or approved fire-retardant-treated wood for a distance of 4 feet (1219 mm) on each side of the wall or walls, or one layer of ⅝-inch (15.9 mm) Type X gypsum board is installed directly beneath the roof decking or sheathing, supported by a minimum of nominal 2-inch (51 mm) ledgers attached to the sides of the roof framing members, for a minimum distance of 4 feet (1219 mm) on each side of the wall or walls and there are no openings or penetrations in the roof within 4 feet (1219 mm) of the common walls.
3. [No change to text]

CHANGE SIGNIFICANCE: To prevent the spread of fire from one townhouse dwelling unit to another at the roof line, the IRC generally requires a fire-resistance-rated parapet that extends at least 30 inches above the roof.

R302.2.2 continues



No roof openings or penetrations within 4 feet of the townhouse separation are allowed when using the exception to the parapet provisions.

R302.2.2 continued This parapet is an extension of the fire-resistance-rated walls or common wall between townhouse units. However, common construction practices take advantage of the exception to the parapet provision, which allows a more architecturally pleasing design with a continuous roof surface over the adjacent dwelling units. In place of the parapet, the code requires noncombustible or fire-retardant roof sheathing, or installation of ⅝-inch Type X gypsum board below the combustible sheathing. When using any of these options, the prescribed sheathing or gypsum board must extend at least 4 feet beyond each side of the separating wall. The IRC has not previously placed any restrictions on the location of penetrations through the roof in relation to the location of the separating walls. When using the parapet exception, the code now specifically prohibits any openings in or penetrations through the roof in a location within 4 feet of the common wall separating the dwelling units. Typically, this new provision applies to skylights, roof windows, gas vents, plumbing vents, exhaust fan terminations, ridge vents, and ventilating louvers. Penetrations of noncombustible or fire-resistant elements of the roof reduce the effectiveness of the roof system in preventing the spread of fire from one dwelling unit to another at the roof line as intended by the exception to the parapet provisions.

R302.5.1

Garage Opening Protection

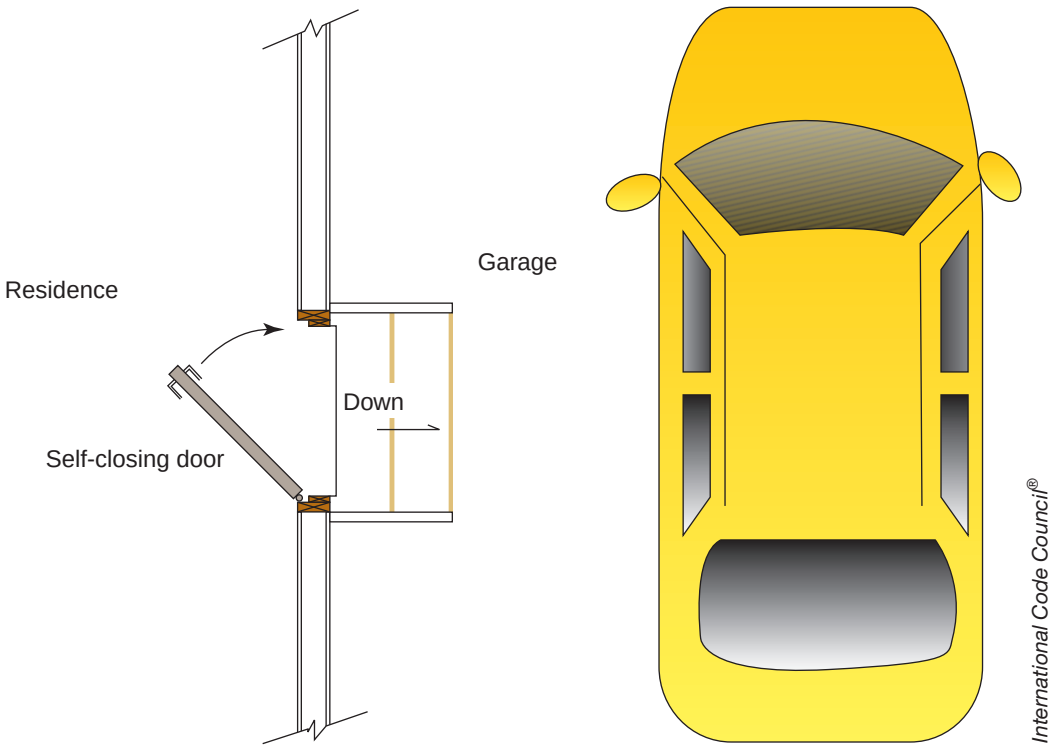
CHANGE TYPE: Modification

CHANGE SUMMARY: Doors between the garage and dwelling unit now require self-closing devices.

2012 CODE: **R302.5.1 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 1⅜ inches (35 mm) in thickness, solid or honeycomb core steel doors not less than 1⅜-inches (35 mm) thick, or 20-minute fire-rated doors, equipped with a self-closing device.

CHANGE SIGNIFICANCE: The IRC has always required a minimum level of separation between a dwelling unit and an attached garage to provide some resistance to the spread of fire from the garage side. Typically, this requirement is satisfied with the application of regular ½-inch gypsum board on the garage side of the separation. A fire-resistant-rated wall or floor assembly is not required for this separation. Likewise, the code prescribes the minimum thickness and construction of any door that passes from the garage to the residence, but does not require a fire-resistant-rated door assembly. That is, only the door slab must meet the construction specifications, and the frame and hardware are not evaluated for fire resistance. New to the 2012 IRC, doors from the garage to the residence now require self-closing devices. These may be spring-loaded hinges, automatic closers, or other approved devices.

R302.5.1 continues



The door between a house and a garage is required to be self-closing.

R302.5.1 continued

This new requirement intends to address concerns related to increased fuel loads and fire hazards located in a garage, toxic combustion by-products of fires originating in the garage, and elevated levels of carbon monoxide from the exhaust of vehicles operating in a garage. Functional self-closing devices assist in maintaining the door in a closed position when not in use and intend to help prevent the spread of fire or toxic gases from the garage to the dwelling unit. Proponents of this change did not consider the code-prescribed smoke alarms and carbon monoxide detectors in the dwelling unit as adequate safeguards to address these concerns and expected that the lack of self-closing devices contributed to doors frequently remaining open between the garage and residence, thereby creating a potential hazardous condition.

R303
Mechanical Ventilation

CHANGE TYPE: Modification

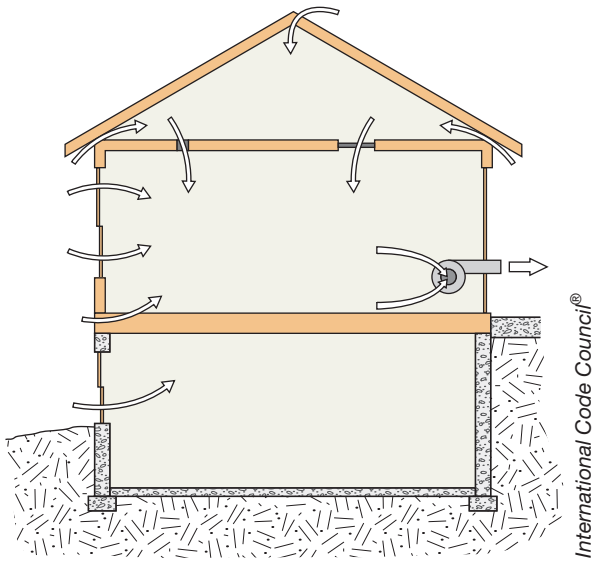
CHANGE SUMMARY: When used for satisfying the ventilation requirements for dwellings, mechanical ventilation must now comply with new provisions in Section M1507 for whole-house ventilation of habitable rooms and local exhaust of bathrooms. A whole-house mechanical ventilation system is now required for any dwelling that is tested with a blower door test and determined to have an air infiltration rate of less than 5 air changes per hour. Definitions for *whole-house mechanical ventilation system* and *local exhaust* have been added to Section R202.

2012 CODE: **R303.1 Habitable Rooms.** All habitable rooms shall have an aggregate glazing area of not less than 8 percent of the floor area of such rooms. Natural ventilation shall be through windows, doors, louvers, or other approved openings to the outdoor air. Such openings shall be provided with ready access or shall otherwise be readily controllable by the building occupants. The minimum openable area to the outdoors shall be 4 percent of the floor area being ventilated.

Exceptions:

1. The glazed areas need not be openable where the opening is not required by Section R310 and ~~an approved mechanical ventilation system capable of producing 0.35 air change per hour in the room is installed or~~ a whole-house mechanical ventilation system is installed ~~capable of supplying outdoor ventilation air of 15 cubic feet per minute (cfm) (78 L/s) per occupant computed on the basis of two occupants for the first bedroom and one occupant for each additional bedroom~~ in accordance with Section M1507.
2. and **3.** [No change to text]

R303 continues



Blower door test

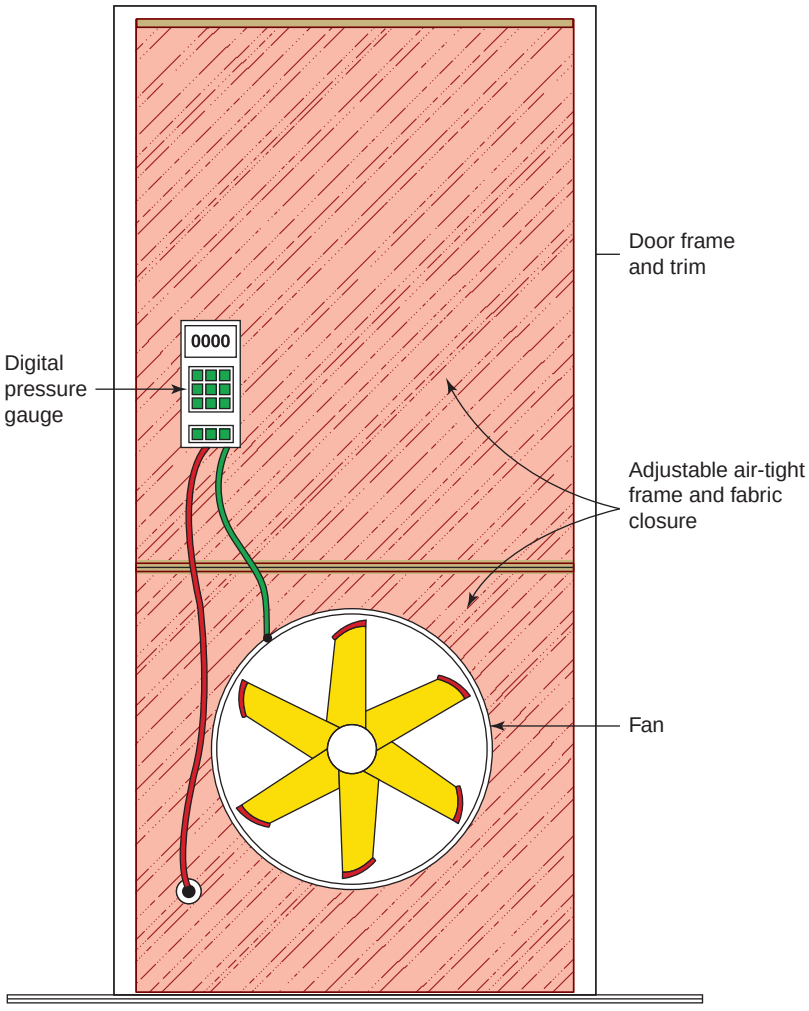
R303 continued

R303.2 Adjoining Rooms. [No change to text]

R303.3 Bathrooms. Bathrooms, water closet compartments, and other similar rooms shall be provided with aggregate glazing area in windows of not less than 3 square feet (0.3 m^2), one-half of which must be openable.

Exception: The glazed areas shall not be required where artificial light and a ~~mechanical ventilation~~ local exhaust system are provided. The minimum local exhaust ventilation rates shall be ~~50 cubic feet per minute (24 L/s) for intermittent ventilation or 20 cubic feet per minute (10 L/s) for continuous ventilation~~ determined in accordance with Section M1507. ~~Ventilation~~ Exhaust air from the space shall be exhausted directly to the ~~outside~~ outdoors.

R303.4 Mechanical Ventilation. Where the air infiltration rate of a dwelling unit is less than 5 air changes per hour when tested with a blower door at a pressure of 0.2 inch w.c. (50 Pa) in accordance with Section N1102.4.1.2, the dwelling unit shall be provided with whole-house mechanical ventilation in accordance with Section M1507.3.



Blower door

R202 Definitions

Local Exhaust. An exhaust system that uses one or more fans to exhaust air from a specific room or rooms within a dwelling

Whole-House Mechanical Ventilation System. An exhaust system, supply system, or combination thereof that is designed to mechanically exchange indoor air for outdoor air when operating continuously or through a programmed intermittent schedule to satisfy the whole-house ventilation rate.

CHANGE SIGNIFICANCE: All dwelling units require either natural or mechanical ventilation to provide outdoor air and maintain a healthy indoor living environment. Previously, IRC Section R303 provided two options for calculating mechanical ventilation rates—a system that provided 0.35 air changes per hour (ACH) to each habitable room or a whole-house system that provided 50 cfm of outside air per occupant. Calculating mechanical ventilation rates was considered by many to be difficult and not well understood. In addition, the 0.35 ACH rate was considered more conservative than other industry standards. In order to provide clear guidance to designers, builders, installers, and code officials, the design criteria for mechanical systems have been removed from the building planning provisions of Chapter 3 and new provisions have been added to Section M1507, *Mechanical Ventilation*. (See discussion under Section M1507 of this publication.)

Where windows, doors, louvers, and other openings do not provide the minimum openable area required for natural ventilation, mechanical ventilation is required. The code is now clear that mechanical ventilation in this case must be provided with a whole-house mechanical ventilation system, a term that is now defined in Chapter 2 of the IRC. Whole-house ventilation simply exchanges outdoor air for indoor air at the minimum air-flow rates prescribed in Section M1507 based on the area of the dwelling and the number of bedrooms. The code does not require a separate system, but permits a combination of supply and exhaust fans in achieving adequate ventilation. For example, outdoor air introduced into the return side of the heating, ventilating, and air-conditioning (HVAC) system is permitted to satisfy the supply air requirements, and local exhaust fans may be considered as part of the system when complying with the continuous or intermittent operation requirements of Section M1507.

In addition to habitable rooms, bathrooms and toilet rooms require natural or mechanical ventilation. Unless windows provide adequate outside air, mechanical ventilation must be provided with the installation of a local exhaust system. Local exhaust is defined as one or more exhaust fans serving a specific room or rooms within a dwelling unit. Previously, the exception to Section R303.3 prescribed the continuous and intermittent ventilation rates for bathroom exhaust fans. Those design criteria have been removed in favor of a reference to Section M1507, which now contains all mechanical ventilation requirements. Other revisions to Section R303 clarify that mechanical ventilation of bathrooms relies on local exhaust to the outdoors through a typical bathroom exhaust system and does not require an outdoor air supply to these rooms as the previous term "mechanical ventilation" implied.

R303 continues

R303 continued

With a heightened focus on energy efficiency, new house construction increasingly relies on insulation, air barriers, and sealants to provide a tighter thermal envelope, which significantly reduces natural infiltration of outside air. Such tight construction under closed-house conditions, for example, during winter in cold climates, may lead to inadequate fresh air and poor indoor air quality. A whole-house ventilation system exchanges indoor air for outdoor air and increasingly is relied on as a solution to indoor air quality issues. A new provision in the 2012 IRC, Section R303.4 requires a whole-house ventilation system when the dwelling unit has been tested with a blower door under prescribed criteria and the test results show an air infiltration rate of less than 5 ACH at a pressure of 50 Pascals. This provision is separate from the minimum natural ventilation requirements and is triggered by the result of the blower door test regardless of the area of openings provided through windows, doors, louvers, and other natural air openings. The air infiltration rate of a dwelling unit can only be determined reliably through testing. Section N1102.4.1.2 (extracted from Section 402.4.1.2 of the *International Energy Conservation Code* (IECC)), as referenced in this new provision of the IRC, requires a blower door test to be performed on dwellings to verify that the natural air infiltration rate does not exceed that prescribed by Chapter 11 and the IECC for the applicable climate zone.

When determining if whole-house mechanical ventilation is needed, the threshold of 5 ACH at 50 Pascals of pressure corresponds to the minimum air infiltration rate established by the NAHB/ICC 700 *National Green Building Standard* and is somewhat less conservative than the traditional ventilation rate of 0.35 natural air changes per hour at ambient air pressure, which is equivalent to a rate between 7 and 10 ACH at 50 Pascals. With past construction practices, the natural ventilation rate of 0.35 air changes per hour was typically achieved without mechanical ventilation because homes were built without effective air barriers.