

# Article I.

## Residential Code

### Section 11-1. Adopted.

The International Residential Code, 2006 edition—including Appendix E, Appendix G, and Appendix H—as published by the International Code Council Inc. as amended is hereby adopted as the residential building code by the City for regulating the design, construction, quality of materials, erection, installation, alteration, movement, repair, equipment, use and occupancy, location, removal, and demolition of detached one- and two-family dwellings and town houses not more than three stories in height with a separate means of egress and their accessory structures, and provides for the issuance of permits and the collection of fees therefore. The minimum building standards in the 2006 edition of the International Residential Code and amendments thereto shall be applied to any building permit issued after April 30, 2007. The code shall be filed with the city clerk.

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### Section 11-2. Amendments, additions, and deletions to the 2006 International Residential Code.

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*The following sections and subsections of the residential building code adopted in this article shall be amended, added, or deleted as follows. All other sections or subsections of the 2006 International Residential Code shall remain the same.*

**R101.1 Title.** These provisions shall be known as the *Residential Code for One- and Two-Family Dwellings of the city of Sioux Falls*, and shall be cited as such and will be referred to herein as “*this code*.”

**R101.2 Scope.** The provisions of the *International Residential Code for One- and Two-Family Dwellings* 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 town houses not more than three stories above grade in height with a separate means of egress and their accessory structures.

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**Exception:** Existing buildings undergoing repair, alteration or additions, and change of occupancy may be permitted to comply with the *International Existing Building Code*.

**R103.1 Enforcement agency.** Building Services is hereby created and the official in charge thereof shall be known as the building official.

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**R103.2 Appointment.** Deleted.

Deleted: The building official shall be appointed by the chief appointing authority of the jurisdiction.

**R104.8 Liability.** The building official, member of the board of appeals, or employee charged with the enforcement of this code, while acting for the jurisdiction in good faith and without malice in the discharge of the duties required by this code or other pertinent law or ordinance, shall not thereby be rendered liable personally and is hereby relieved from personal liability for any damage accruing to persons or property as a result of any act or by reason of an act or

omission in the discharge of official duties. Any suit instituted against an officer or employee because of an act performed by that officer or employee in the lawful discharge of duties and under the provisions of this code shall be afforded all the protection provided by the city's insurance pool and immunities and defenses provided by other applicable state and federal laws.

The building official or any subordinate shall not be liable for cost in any action, suit, or proceeding that is instituted in pursuance of the provisions of this code.

**Deleted:** shall be defended by legal representative of the jurisdiction until the final termination of the proceedings.

This code shall not be construed to relieve from or lessen the responsibility of any person owning, operating, or controlling any building or structure for any damages to persons or property caused by defects, nor shall the code enforcement agency or the city be held as assuming any such liability by reason of the inspection authorized by this code or any permits or certificates issued under this code.

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**R105.1 Required.** Any owner or authorized agent who intends to construct, enlarge, alter, repair, move, demolish, or change the occupancy of a building or structure, or to erect, install, enlarge, alter, repair, remove, convert, or replace any electrical, gas, mechanical, or plumbing system, the installation of which is regulated by this code, or to cause any such work to be done, shall first make application to the building official and obtain the required permit. The building official may exempt permits for minor work.

Exclusive of a homeowner, no person or firm shall be issued a building permit for residential building defined as owner-occupied one- and two-family dwellings, including accessory garages, until that person or firm has been issued a residential contractor's license required by this chapter.

**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 (11.15 m2).
2. Fences not over 6 feet (1,829 mm) high. A fence permit in accordance with the zoning ordinance is required.
3. Retaining walls that are not over 4 feet (1,219 mm) in height measured from the bottom of the grade elevation, to the top of the wall, unless supporting a surcharge.
4. Water tanks supported directly upon grade if the capacity does not exceed 5,000 gallons (18 927 L) and the ratio of height to diameter or width does not exceed 2 to 1.
5. Sidewalks and driveways.

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6. Painting, papering, tiling, carpeting, cabinets, countertops, and similar finish work.
7. Prefabricated swimming pools that are less than 18 inches (610 mm) deep.
8. Swings and other playground equipment.
9. Window awnings supported by an exterior wall which do not project more than 54 inches (1,372 mm) from the exterior wall and do not require additional support.

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#### **Electrical:**

**Repairs and maintenance:** A permit shall not be required for minor repair work, including the replacement of lamps or the connection of approved portable electrical equipment to approved permanently installed receptacles.

#### **Gas:**

1. Portable heating, cooking, or clothes drying appliances.
2. Replacement of any minor part that does not alter approval of equipment or make such equipment unsafe.
3. Portable-fuel-cell appliances that are not connected to a fixed piping system and are not interconnected to a power grid.

#### **Mechanical:**

1. Portable heating appliances.
2. Portable ventilation appliances.
3. Portable cooling units.
4. Steam, hot, or chilled water piping within any heating or cooling equipment regulated by this code.
5. Replacement of any minor part that does not alter approval of equipment or make such equipment unsafe.
6. Portable evaporative coolers.
7. Self-contained refrigeration systems containing 10 pounds (4.54 kg) or less of refrigerant or that are actuated by motors of 1 horsepower (746 W) or less.

8. Portable-fuel-cell appliances that are not connected to a fixed piping system and are not interconnected to a power grid.

The stopping of leaks in drains, water, soil, waste or vent pipe; provided, however, that if any concealed trap, drainpipe, water, soil, waste or vent pipe becomes defective and it becomes necessary to remove and replace the same with new material, such work shall be considered as new work and a permit shall be obtained and inspection made as provided in this code.

The clearing of stoppages or the repairing of leaks in pipes, valves or fixtures, and the removal and reinstallation of water closets, provided such repairs do not involve or require the replacement or rearrangement of valves, pipes, or fixtures.

**R106.1.4 Energy efficiency.** Construction documents for detached one- and two-family dwellings and townhomes shall be provided with the intended R-value for the ceilings, walls, floors, basement walls (if finished), slab perimeter R-value and depth, and crawl space walls.

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**R106.1.5 Foundation reinforcement.** Construction for detached one- and two-family dwellings and town houses shall be provided with the intended reinforcement of foundation walls referenced in Tables 404.1.1(2), 404.1.1(3), and 404.1.1(4) for masonry foundation walls and Table 404.1.1(5) for concrete foundation walls where the foundation wall exceeds the provisions of Table 404.1.1(1).

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**R108.2 Schedule of permit fees.** On buildings, structures, electrical, gas, mechanical, and plumbing systems or alterations requiring a permit, a fee for each permit shall be paid as required, in accordance with the schedule as established by the city.

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The fee for each residential building permit shall be set forth in Table 1-A and other inspections and fees shall be in accordance with Table 1-C.

**Table No. 1-A.  
Residential Building Permit Fees R Division 3  
(Including Congregate Residences Defined as R-3 and Accessory Group U Occupancies)**

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<b>Total Valuation</b>	<b>Fee</b>
\$1 to \$1,100	\$20
\$1,100 to \$2,000	For valuations in excess of \$1,100, \$10 for the first \$500, plus \$1.50 for each additional \$100 of fraction thereof, to and including \$2000
\$2,001 to \$25,000	\$32.50 for the first \$2,000, plus \$6 for each additional \$1,000 or fraction thereof, to and including \$25,000
\$25,001 to \$50,000	\$170.50 for the first \$25,000, plus \$4.50 for each additional \$1,000 of fraction thereof, to and including \$50,000

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\$50,001 top \$100,000

\$283 for the first \$50,000, plus \$3 for each additional \$1,000 or fraction thereof, to and including \$100,000

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\$100,001 and up

\$433 for the first \$100,000, plus \$2.50 for each additional \$1,000 of fraction thereof

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**Table 1-C. Other Inspections and Fees**

1. Inspection outside of normal business hours, per hour\* (minimum charge—one hour).....

\$70.00

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2. Reinspection fees, per hour.....

\$70.00

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3. Inspections for which no fee is specifically indicated, per hour\* (minimum charge—one-half hour).....

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4. Additional plan review required by changes, additions, or revisions to approved plans, per hour\* (minimum charge—one-half hour).....

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\*Or the total hourly cost to the jurisdiction, whichever is the greatest. This cost shall include supervision, overhead, equipment, hourly wages, and fringe benefits of the employees involved.

5. Wrecking permit fees.....

\$20.00

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6. Swimming pool fence enclosures.....

\$20.00

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7. Residential reshingle.....

\$20.00

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8. Residential re-sides.....

\$20.00

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9. Residential window replacements with no structural modifications (Group R and U occupancies).....

\$20.00

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10. Board of appeals fees: Before any action is taken by the board, the party or parties requesting such hearing shall deposit with the secretary of the board or his authorized agent, the sum of \$65.00 to cover the approximate cost of the procedure. Under no condition shall said sum or any part thereof be refunded for failure of said request to be approved.

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Exception: appeals referred to the board from the code for abatement of dangerous buildings.

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11. A mileage fee at the current rate per mile as established by the Finance Department shall be charged for any inspection occurring outside city limits.

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12. Residential contractor's license examination fee.....

\$75.00

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13. Bond claims. An administrative fee shall be charged to cover the administrative cost of filing a claim.....

\$150.00

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**R108.6 Delinquent accounts.** The administrative authority may refuse to issue permits or conduct inspections for any person or business whose account is delinquent.

**R108.7 Work commencing before permit issuance.** Any person who commences any work on a building, structure, electrical, gas, mechanical, or plumbing system before obtaining the necessary permits shall be subject to an additional fee established by the building official that shall be in addition to the required permit fees. Legal and/or civil proceedings may also be commenced.

**R109.1.1 Footing inspection.** Inspection of the footings shall be made after poles or piers are set or trenches or basement areas are excavated and any required forms erected and any required reinforcing steel is in place and supported prior to the placing of concrete. The footing inspection shall include excavations for thickened slabs intended for the support of bearing walls, partitions, structural supports, or equipment and special requirements for wood foundations.

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**R110.1 Use and occupancy.** No building or structure shall be used or occupied, and no change in the existing occupancy classification of a building or structure or portion thereof shall be made until the building official has issued a certificate of occupancy therefore as provided herein and final inspections have been obtained from the electrical, mechanical, plumbing, and building inspection divisions of building services. An inspection placard shall be posted on the electrical panel, which is signed after final inspections have occurred by the electrical inspector, mechanical inspector, and plumbing inspector for new one- and two-family dwelling units and multiple single-family dwellings (town houses). Issuance of a certificate of occupancy shall not be construed as an approval of a violation of the provisions of this code or of other ordinances of the jurisdiction. Certificates presuming to give authority to violate or cancel the provisions of this code or other ordinances of the city, shall not be valid.

**Exceptions:**

1. Certificates of occupancy are not required for work exempt from permits under Section R105.2.
2. Accessory buildings or structures.

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**R110.6 Placards.** Placards or inspection record tags placed on the job by the inspectors to indicate approval of the work inspected shall not be removed, except when authorized by the building official.

**R112.1 General.** There shall be and is hereby created a board of appeals and examiners to hear and decide appeals of orders, decisions or determinations made by the building official and assistant director of building services relative to the application and interpretation of this code, to review all proposed changes to the respective codes and to submit recommendations to the responsible official and the city council, and to examine applicants for licensing and to investigate matters brought before the board. The building official shall be an ex officio member of said board but shall have no vote on any matter before the board. Members shall be appointed by the mayor with the advice and consent of the council, and shall hold office for a

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term of three years. The board shall adopt rules of procedure for conducting its business, and shall render all decisions and findings in writing to the appellant with a duplicate copy to the building services department.

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The board in exercising its authority over house moving may deny the building request, or may require additional stipulations to be placed on the building permit to address the protection of the property values and neighborhood compatibility.

**R112.2 Limitations on authority.** An application for appeal shall be based on a claim that the true intent of this code or the rules legally adopted there under have been incorrectly interpreted, the provisions of this code do not fully apply, or an equally good or better form of construction is proposed. The board shall have no authority relative to the interpretation of the administrative provisions of this code nor shall the board be empowered to waive requirements of this code.

**R113.3 Prosecution of violation.** If the notice of violation is not complied with in the time prescribed by such notice, the building official is authorized to request the legal counsel of the jurisdiction to deem the violation as a strict liability offense and institute the appropriate proceeding at law or in equity to restrain, correct or abate such violation, or to require the removal or termination of the unlawful occupancy of the building or structure in violation of the provisions of this code or of the order or direction made pursuant thereto.

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**Section R202. Definitions.** Add the following definition.

**Strict Liability Offense.** An offense in which the prosecution in a legal proceeding is not required to prove criminal intent as a part of its case. It is enough to prove that the defendant either did an act which was prohibited, or failed to do an act which the defendant was legally required to do.

**Table R301.2(1)**

**Climatic and Geographic Design Criteria**

1. Ground Snow Load..... 40 psf contour

Roof slopes with a rise of three inches (76.2 mm) or less to 12 inches (305 mm) shall be designed for a full or unbalanced snow load of not less than 30 pounds per square foot (1.44 kN/square meter) of horizontal projection. Where a roof system is designed to slope less than one-quarter inch (6.35 mm) per 12 inches (305 mm), a surcharge load of not less five pounds per square foot (0.24 kN/square meter) in addition to the required live load due to snow shall be designed for.

Roof slopes with over three inches (76.2 mm) of rise per 12 inches (305 mm) shall be designed for a full or unbalanced snow load of not less than 25 pounds per square foot (1.2 kN/square meter) of horizontal projection.

Potential unbalanced accumulation of snow at valleys, parapets, roof structures, and offsets in roofs of uneven configuration shall be considered.

2. Wind Speed. (Footnote e) ..... 90 mph

3. Seismic Design Category. (Footnotes f and g) ..... A

4. Weathering. (Footnote a) ..... Severe

5. Frost Line Depth. (Footnote b) ..... 42 inches (1,067 mm)

6. Termite Damage. (Footnote c) ..... Slight to Moderate

7. Winter Design Temperature-11 Degrees Fahrenheit.

8. Ice Barrier Underlayment Requirement. (Footnote i) ..... yes

9. Flood Hazards. (Footnote g)

10. Air Freezing Index (Footnote i) ..... 2,500

11. Mean Annual Temperature ..... 46 degrees Fahrenheit

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

- a. Weathering may require a higher strength concrete or grade of masonry than necessary to satisfy the structural requirements of this code. The weathering column shall be filled in with the weathering index (i.e., “negligible,” “moderate,” or “severe”) for concrete as determined from the Weathering Probability Map [Figure R301.2(3)]. The grade of masonry units shall be determined from ASTM C 34, C 55, C 62, C 73, C 90, C 129, C 145, C 216, or C 652.

- b. The frost line depth may require deeper footings than indicated in Figure R403.1(1). The jurisdiction shall fill in the frost line depth column with the minimum depth of footing below finish grade.
- c. The jurisdiction shall fill in this part of the table to indicate the need for protection depending on whether there has been a history of local subterranean termite damage.
- d. The jurisdiction shall fill in this part of the table with the wind speed from the basic wind speed map [Figure R301.2(4)]. Wind exposure category shall be determined on a site-specific basis in accordance with Section R301.2.1.4.
- e. The outdoor design dry-bulb temperature shall be selected from the columns of 971/2-percent values for winter from ~~of the *Plumbing Code*~~. Deviations from the ~~temperatures~~ shall be permitted to reflect local climates or local weather experience as determined by the building official.
- f. The jurisdiction shall fill in this part of the table with the seismic design category determined from Section R301.2.2.1.

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- g. To establish flood hazard areas, the city has adopted a flood hazard map and supporting data. The flood hazard map shall include, at a minimum, areas of special flood hazard as identified by the Federal Emergency Management Agency in an engineered report entitled “The Flood Insurance Study for the City of Sioux Falls, SD” dated September 17, 1979, as amended or revised with the accompanying Flood Insurance Rate Map (FIRM) and Floodway Map (FBFM) and related supporting data along with any revisions thereto. The adopted flood hazard map and supporting data are hereby adopted by reference and declared to be part of this section. If there is a conflict between the provisions of this code and the city’s floodplain management ordinance, the provisions of the floodplain management ordinance shall prevail

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- h. In accordance with Sections R905.2.7.1, R905.4.3.1, R905.5.3.1, R905.6.3.1, R905.7.3.1, and R905.8.3.1, where there has been a history of local damage from the effects of ice damming, the jurisdiction shall fill in this part of the table with “Yes.” Otherwise, the jurisdiction shall fill in this part of the table with “No.”
- i. The jurisdiction shall fill in this part of the table with the 100-year return period air freezing index (BF-days) from Figure R403.3(2) or from the 100-year (99%) value on the National Climatic Data Center data table “Air Freezing Index- USA Method (Base 32°Fahrenheit)” at [www.ncdc.noaa.gov/fpsf.html](http://www.ncdc.noaa.gov/fpsf.html).
- j. The jurisdiction shall fill in this part of the table with the mean annual temperature from the National Climatic Data Center data table “Air Freezing Index-USA Method (Base 32°Fahrenheit)” at [www.ncdc.noaa.gov/fpsf.html](http://www.ncdc.noaa.gov/fpsf.html).

Deleted: The jurisdiction shall fill in this part of the table with (a) the date of the jurisdiction’s entry into the National Flood Insurance Program (date of adoption of the first code or ordinance for management of flood hazard areas), (b) the date(s) of the currently effective FIRM and FBFM, or other flood hazard map adopted by the community, as may be amended.¶

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

Use	Live Load
Attics with limited storage <sup>b, g, h</sup>	20
Attics without storage <sup>b</sup>	10
Decks <sup>c</sup>	40
Exterior balconies	60
Fire escapes	40
Guardrails and handrails <sup>d</sup>	200 <sup>i</sup>
Guardrails in-fill components <sup>f</sup>	50 <sup>i</sup>
Passenger vehicle garages <sup>a</sup>	50 <sup>a</sup>
Rooms other than sleeping rooms	40
Sleeping rooms	40
Stairs	40 <sup>c</sup>

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For SI: 1 pound per square foot = 0.0479 kPa, 1 square inch = 645 mm<sup>2</sup>, 1 pound = 4.45 N.

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- a. Elevated garage floors shall be capable of supporting a 2,000-pound load applied over a 20-square-inch area.
- b. Attics without storage are those where the maximum clear height between joist and rafter is less than 42 inches, or where there are not two or more adjacent trusses with the same web configuration capable of containing a rectangle 42 inches high by 2 feet wide, or greater, located within the plane of the truss. For attics without storage, this live load need not be assumed to act concurrently with any other live load requirements.
- 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 handrails), 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.
- g. For attics with limited storage and constructed with trusses, this live load need be applied only to those portions of the bottom chord where there are two or more adjacent trusses with the same web configuration capable of containing a rectangle 42 inches high or greater by 2 feet wide or greater, located within the plane of the truss. 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:

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1. The attic area is accessible by a pull-down stairway or framed opening in accordance with Section R807.1.

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2. The truss has a bottom chord pitch less than 2:12.

h. Attic spaces served by a fixed stair shall be designed to support the minimum live load specified for sleeping rooms.

i. Glazing used in handrail assemblies and guards shall be designed with a safety factor of 4. The safety factor shall be applied to each of the concentrated loads applied to the top of the rail, and to the load on the in-fill components. These loads shall be determined independent of one another, and loads are assumed not to occur with any other live load.

**Deleted: R302.1 Exterior walls.**  
Exterior walls with a fire separation distance less than 3 feet

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**Deleted:** sides. A detached garage of a Group U Division 1 occupancy which is located on the

**Deleted:** same property as a Group R Division 3 occupancy may be considered the same as an

**Deleted:** attached garage for the purpose of requiring wall and opening protection. An occupancy

**Deleted:** separation as defined in R309.2 is permitted as meeting the protection requirements

**Deleted:** between the garage and dwelling. Projections shall not extend to a point closer than 2

**Deleted:** feet (610 mm) from the line used to determine the fire separation distance.¶

¶  
**Exception:** Detached garages accessory to a dwelling located within 2 feet of a lot line may have roof eave projections not exceeding 4 inches.

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Projections extending into the fire separation distance shall have not less than one-hour fire-resistive 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 R105.2 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.¶

**Table R302.1  
Exterior Walls**

Exterior Wall Element		Minimum Fire-Resistance Rating	Minimum Fire Separation Distance
Walls	(Fire-resistance rated)	1 hour with exposure from both sides	0 feet
	(Not fire-resistance rated)	0 hours	5 feet
Projections	(Fire-resistance rated)	1 hour on the underside	≤ 3 feet
	(Not fire-resistance rated)	0 hours	≥ 3 feet
Openings	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 R317.3	< 5 feet
		None required	5 feet

N/A = Not Applicable

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**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 bifold 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 (1,524 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 (1,524 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:

**Deleted: R303.6.1 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.¶  
**Exception:** 1. Lights that are continuously illuminated or automatically controlled.¶  
 ¶  
 2. Stairs consisting of less than 6 steps  
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- 7.1. Exposed area of an individual pane larger than 9 square feet (0.836 m<sup>2</sup>).
- 7.2. Bottom edge less than 18 inches (457 mm) above the floor.
- 7.3. Top edge more 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 infill 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 (1,524 mm) above a walking surface and within 60 inches (1,524 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 (1,524 mm) above the plane of the adjacent walking surface.
11. Glazing adjacent to stairways within 60 inches (1,524 mm) horizontally of the bottom tread of a stairway in any direction when the exposed surface of the glass is less than 60 inches (1,524 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, other than the wall toward which the door swings when opened, 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  $\pm$  2 inches (914 mm  $\pm$  51 mm) above the floor. The bar shall be capable of withstanding a horizontal load of 50 pounds per linear foot (730 N/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 (7,620 mm) or more above grade, a roof, walking surfaces, or other horizontal [within 45 degrees (0.79 rad) of 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 1013 and 1607.7 of the *International Building Code*; and
  - 9.2. The plane of the glass is more than 18 inches (457 mm) from the railing; or
  - 9.3. When a solid wall or panel extends from the plane of the adjacent walking surface to 36 inches (914 mm) above the floor and the construction at the top of that wall or panel is capable of withstanding the same horizontal load as the protective bar.

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10. Glass block panels complying with Section R610.

**R310.1 Emergency escape and rescue required.** Basements, and every sleeping room shall have at least one operable emergency and rescue opening. Such opening shall open directly into a public street, public alley, yard, or court. Where basements contain one or more sleeping rooms, emergency egress and rescue openings shall be required in each sleeping room, but shall not be required in adjoining areas of the basement. Where emergency escape and rescue openings are provided, they shall have a sill height of not more than 48 inches (1,220 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. Emergency escape and rescue openings shall open directly into a public way, or to a yard or court that opens to a public way.

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**Exception:** Basements used only to house mechanical equipment and not exceeding total floor area of 200 square feet (18.58 m<sup>2</sup>).

**R310.1.1 Minimum opening area.** All emergency escape and rescue openings shall have a minimum net clear opening of 5.0 square feet (0.465 m<sup>2</sup>).

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**R310.2.1 Ladder and steps.** Window wells with a vertical depth greater than 48 inches (1,220 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 Sections R311.5 and R311.6. 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.

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**R311.4.3 Landings at doors.** There shall be a floor or landing on each side of each exterior door. The floor or landing at the exterior door shall not be more than 1.5 inches (38 mm) lower than the top of the threshold. The landing shall be permitted to have a slope not to exceed 0.25 unit vertical in 12 units horizontal (2 percent).

#### Exceptions:

1. 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, other than an exterior storm or screen door does not swing over the stairway.

2. The exterior landing at an exterior doorway shall not be more than 8 inches (202 mm) below the top of the threshold, provided the door, other than an exterior storm or screen door does not swing over the landing.

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3. The height of floors at exterior doors other than the exit door required by Section R311.4.1 shall not be more than 8 inches (202 mm) lower than the top of the threshold.

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**R311.5.3.1 Riser height.** The maximum riser height shall be 8 inches (202 mm). The riser shall be measured vertically between leading edges of the adjacent treads. The greatest riser height within any flight of stairs shall not exceed the smallest by more than 3/8 inch (9.5 mm).

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**R311.5.3.3 Profile.** The radius of curvature at the leading edge of the tread shall be no greater than 9/16 inch (14 mm). A nosing not less than 3/4 inch (19 mm) but not more than 1 1/4 inch (32 mm) shall be provided on stairways with solid risers. The greatest nosing projection shall not exceed the smallest nosing projection by more than 3/8 inch (9.5 mm) between two stories, including the nosing at the level of floors and landings. Beveling of nosing shall not exceed 1/2 inch (12.7 mm). Risers shall be vertical or sloped from the underside of the leading edge of the tread above at an angle not more than 30 degrees (0.51 rad) from the vertical. Open risers are permitted.

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#### Exceptions:

1. A nosing is not required where the tread depth is a minimum of 10 inches (255 mm).

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**R311.5.6.2 Continuity.** Handrails for stairways shall extend for the full length of the flight, from a point directly above the top riser of the flight to a point directly above the 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 inch (38 mm) between the wall and the handrails.

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**Exceptions:**

1. Handrails shall be permitted to be interrupted by a newel post at the turn.
2. The use of a volute, turnout, starting easing or starting newel 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 inch (19 mm) measured vertically from the tallest portion of the profile and achieve a depth of at least 5/16 inch (8 mm) within 7/8 inch (22 mm) below the widest portion of the profile. This required depth shall continue for at least 3/8 inch (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 inch (0.25 mm).

**Exception:** Exterior stairs are allowed to have a horizontal 2X member to form a 1 1/2 inch graspable dimension in lieu of the above referenced perimeter dimensions.

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**R312.2 Guard 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 5 inches (127 mm) or more in diameter.

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**Exception:** 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.

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**R313.2 Location.** Smoke alarms shall be installed in the following locations:

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1. In each sleeping room.
2. Outside each separate sleeping area in the immediate vicinity of the bedrooms.
3. On each additional story of the dwelling, including basements but not including crawl spaces and uninhabitable attics. In dwellings or dwelling units with split levels and without an intervening door between the adjacent levels, a smoke alarm installed on the upper level shall suffice for the adjacent lower level provided that the lower level is less than one full story below the upper level.

4. Where the ceiling height of a room is open to the hallway serving a bedroom exceeds that of the hallway by 24 inches (610 mm) or more, smoke detectors shall be installed in the hallway and in the adjacent room.

Exception. Hallways less than 4 feet (1,220 mm) in length are allowed to omit the smoke within the hallway adjacent to the bedrooms.

When more than one smoke alarm is required to be installed within an individual dwelling unit, the alarm devices shall be interconnected in such a manner that the actuation of one alarm will activate all of the alarms in the individual unit.

**R313.2.1 Alterations, repairs, and additions.** When alterations, repairs, or additions requiring a permit occur with a valuation in excess of \$1,000, or when one or more sleeping rooms are added or created in existing dwellings, the individual dwelling unit shall be equipped with smoke alarms located as required for new dwellings.

**Exception:** Work involving the exterior surfaces of dwellings, such as the replacement of roofing or siding, or the addition or replacement of windows or doors, or the addition of a porch or deck, are exempt from the requirements of this section.

**R317.2.1 Continuity.** The fire-resistance rated wall or assembly separating town houses shall be continuous from the foundation to the underside of the roof sheathing, deck, or slab. The fire-resistance rating shall extend the full length of the wall or assembly, including wall extensions through and separating attached enclosed accessory structures.

Exterior walls that extend beyond an adjacent structure that has a fire separation distance less than 5 feet (1,523 mm) to a common property line shall have not less than a one-hour fire rating with exposure from both sides with no openings allowed therein.

Projections such as deck which have a fire separation distance of less than three feet (914 mm) to a common property line shall have a one-hour fire rating with exposure from both sides with no openings allowed therein which extends at least 30 inches (762 mm) above the projection.

**R319.1 Location required.** Protection from decay shall be provided in the following locations by the use of naturally durable wood or wood that is preservative treated in accordance with

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AWPA U1 for the species, product, preservative, and end use. Preservatives shall be listed in Section 4 of AWPA U1.

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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 the exposed ground in crawl spaces or unexcavated area located within the periphery of the building foundation.
2. All wood framing members that rest on concrete or masonry exterior foundation walls and are less than 6 inches (203 mm) from the exposed ground.
3. Sills and sleepers supporting bearing walls 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 or framing members.

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**R321.1 Premises identification.** New and existing buildings shall have approved address numbers, building numbers, or approved building identification placed in a position that is plainly visible and legible from the street or road fronting the property. These numbers shall contrast with their background. Address numbers shall be Arabic numerals or alphabet letters. Numbers shall be a minimum of 4 inches (102 mm) high with a minimum stroke width of 0.5 inch (12.7 mm). Multi-building campus/complex developments addressed on private or public streets shall be provided with signage at the entrance to the campus/complex indicative of the address ranges within.

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**R401.3 Drainage.** Surface drainage shall be diverted to a storm sewer conveyance or other approved point of collection so as to not create a hazard. Lots shall be graded to drain surface water away from foundation walls. The grade shall fall a minimum of 6 inches (152 mm) within the first 10 feet (3,048 mm).

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**Exception:** Where lot lines, walls, slopes, or other physical barriers prohibit 6 inches (152 mm) of fall within 10 feet (3,048 mm), the final grade shall slope away from the foundation at a minimum slope of 2 percent and the water shall be directed to drains or swales to ensure drainage away from the structure. Swales shall be sloped a minimum of

1 percent when located within 10 feet (3,048 mm) of the building foundation. Impervious surfaces within 10 feet (3,048 mm) of the building foundation shall be sloped a minimum of 2 percent away from the building.

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**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. Constructing in accordance with Section R403.3.
3. Constructing in accordance with ASCE 32.
4. Erected on solid rock.

**Exceptions:**

1. Protection of freestanding accessory structures with an area of 1,500 square feet (129 m<sup>2</sup>) or less, of light-framed construction, with an eave height of 10 feet (3,048 mm) or less shall not be required.
2. Protection of freestanding accessory structures with an area of 400 square feet (37m<sup>2</sup>) or less, of other than light-framed construction, with an eave height of 10 feet (3,048 mm) or less shall not be required.
3. Decks not supported by a dwelling need not be provided with footings that extend below the frost line.

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Footings shall not bear on frozen soil unless the frozen condition is permanent.

**R404.1 Concrete and masonry foundation walls.** Concrete and masonry foundation walls shall be selected and constructed in accordance with the provisions of Section R404 or in accordance with ACI 318, ACI 332, NCMA TR68–A or ACI 530/ASCE 5/TMS 402 or other approved structural standards. When ACI 318, ACI 332 or ACI 530/ASCE 5/TMS 402 or the provisions of Section R404 are used to design concrete or masonry foundation walls, project drawings, typical details, and specifications are not required to bear the seal of the architect or engineer responsible for design, unless otherwise required by the state law of the jurisdiction having authority.

**TABLE R404.1.1(5)  
CONCRETE FOUNDATION WALLS<sup>a, i, k</sup>**

MAXIMUM WALL HEIGHT (feet)	MAXIMUM UNBALANCED BACKFILL HEIGHT <sup>b</sup> (feet)	MINIMUM VERTICAL REINFORCEMENT SIZE AND SPACING <sup>c, d, e, f, j</sup>											
		Soil classes <sup>a</sup> and design lateral soil (psf per foot of depth)											
		GW, GP, SW and SP 30				GM, GC, SM, SM-SC and ML 45				SC, ML-CL and inorganic CL 60			
		Minimum wall thickness (inches)											
		5.5	7.5	9.5	11.5	5.5	7.5	9.5	11.5	5.5	7.5	9.5	11.5
5	4	PC	PC	PC	PC	PC	PC	PC	PC	PC	PC	PC	PC
	5	PC	PC	PC	PC	PC	PC	PC	PC	PC	PC	PC	PC
6	4	PC	PC	PC	PC	PC	PC	PC	PC	PC	PC	PC	PC
	5	PC	PC	PC	PC	PC	PC <sup>*</sup>	PC	PC	#4@35"	PC <sup>*</sup>	PC	PC
7	6	PC	PC	PC	PC	#5@48"	PC	PC	PC	#5@36"	PC	PC	PC
	4	PC	PC	PC	PC	PC	PC	PC	PC	PC	PC	PC	PC
	5	PC	PC	PC	PC	PC	PC	PC	PC	#5@47"	PC	PC	PC
8	6	PC	PC	PC	PC	#5@42"	PC	PC	PC	#6@43"	#5@48"	PC <sup>*</sup>	PC
	7	#5@46"	PC	PC	PC	#6@42"	#5@46"	PC <sup>*</sup>	PC	#6@34"	#6@48"	PC	PC
	4	PC	PC	PC	PC	PC	PC	PC	PC	PC	PC	PC	PC
	5	PC	PC	PC	PC	#4@38"	PC <sup>*</sup>	PC	PC	#5@43"	PC	PC	PC <sup>*</sup>
9	6	#4@37"	PC <sup>*</sup>	PC	PC	#5@37"	PC	PC	PC	#6@37"	#5@43"	PC <sup>*</sup>	PC <sup>*</sup>
	7	#5@40"	PC	PC	PC	#6@37"	#5@41"	PC	PC	#6@34"	#6@43"	PC	PC
	8	#6@43"	#5@47"	PC <sup>*</sup>	PC	#6@34"	#6@43"	PC	PC	#6@27"	#6@32"	#6@44"	PC
10	4	PC	PC	PC	PC	PC	PC	PC	PC	PC	PC	PC	PC
	5	PC	PC	PC	PC	#4@35"	PC <sup>*</sup>	PC	PC	#5@40"	PC	PC <sup>*</sup>	PC
	6	#4@34"	PC <sup>*</sup>	PC	PC	#6@48"	PC	PC	PC	#6@36"	#5@39"	PC <sup>*</sup>	PC
	7	#5@36"	PC	PC	PC	#6@34"	#5@37"	PC	PC	#6@33"	#6@38"	#5@37"	PC <sup>*</sup>
	8	#6@38"	#5@41"	PC <sup>*</sup>	PC	#6@33"	#6@38"	#5@37"	PC <sup>*</sup>	#6@24"	#7@39"	#6@39"	#4@48" <sup>h</sup>
-10	9	#6@34"	#6@46"	PC	PC	#6@26"	#7@41"	#6@41"	PC	#6@19"	#7@31"	#7@41"	#6@39"
	4	PC	PC	PC	PC	PC	PC	PC	PC	PC	PC	PC	PC
	5	PC	PC	PC	PC	#4@33"	PC <sup>*</sup>	PC	PC	#5@38"	PC	PC	PC
	6	#5@48"	PC <sup>*</sup>	PC	PC	#6@45"	PC	PC	PC	#6@34"	#5@37"	PC	PC
	7	#6@47"	PC	PC	PC	#6@34"	#6@48"	PC	PC	#6@30"	#6@35"	#6@48"	PC <sup>*</sup>
	8	#6@34"	#5@38"	PC	PC	#6@30"	#7@47"	#6@47"	PC <sup>*</sup>	#6@22"	#7@35"	#7@48"	#6@45" <sup>h</sup>
9	#6@34"	#6@41"	#4@48"	PC <sup>*</sup>	#6@23"	#7@37"	#7@48"	#4@48" <sup>h</sup>	DR	#6@22"	#7@37"	#7@47"	
10	#6@28"	#7@45"	#6@45"	PC	DR	#7@31"	#7@40"	#6@38"	DR	#6@22"	#7@30"	#7@38"	

**Deleted:** Foundation walls that meet all of the following shall be considered laterally supported:¶

1. Full basement floor shall be 3.5 inches (89 mm) thick concrete slab poured tight against the bottom of the foundation wall.¶

2. Floor joists and blocking shall be connected to the sill plate at the top of wall by the prescriptive method called out in Table R404.1(1), or; shall be connected with an approved connector with listed capacity meeting Table R404.1(1).¶

3. Bolt spacing for the sill plate shall be no greater than per Table R404.1(2).¶

4. Floor shall be blocked perpendicular to the floor joists. Blocking shall be full depth within two joist spaces of the foundation wall, and be flat-blocked with minimum 2-inch by 4-inch (51mm by 102mm) blocking elsewhere.¶

5. Where foundation walls support unbalanced load on opposite sides of the building, such as a daylight basement, the building aspect ratio, L/W, shall not exceed the value specified in Table R404.1(3). For such foundation walls, the rim board shall be attached to the sill with a 20 gage metal angle clip at 24 inches (610 mm) on center, with five 8d nails per leg, or an approved connector supplying 230 pounds per linear foot (3.36 kN/m) capacity.¶

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For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 pound per square foot = 0.0479 kPa, 1 pound per square foot per foot = 0.157 kPa/mm.

a. Soil classes are in accordance with the United Soil Classification System. Refer to Table R405.1

b. Unbalanced backfill height is the difference in height of the exterior and interior finish ground levels. Where there is an interior concrete slab, the unbalanced backfill height shall be measured from the exterior finish ground level to the top of the interior concrete slab.

c. The size and spacing of vertical reinforcement shown in the table is based on the use of reinforcement with a minimum yield strength of 60,000 psi. Vertical reinforcement with a

minimum yield strength of 40,000 psi or 50,000 psi is permitted, provided the same size bar is used and the spacing shown in the table is reduced by multiplying the spacing by 0.67 or 0.83, respectively.

d. Vertical reinforcement, when required, shall be placed nearest the inside face of the wall a distance  $d$  from the outside face (soil side) of the wall. The distance  $d$  is equal to the wall thickness,  $t$ , minus 1.25 inches plus one-half the bar diameter,  $db$  ( $d = t - (1.25 + db/2)$ ). The reinforcement shall be placed within a tolerance of  $\pm 3/8$ -inch where  $d$  is less than or equal to 8 inches, or  $\pm 1/2$  inch where  $d$  is greater than 8 inches.

e. In lieu of the reinforcement shown, smaller reinforcing bar sizes and closer spacings resulting in an equivalent cross-sectional area of reinforcement per linear foot of wall are permitted.

f. Concrete cover for reinforcement measured from the inside face of the wall shall not be less than 3/4 inch. Concrete cover for reinforcement measured from the outside face of the wall shall not be less than 1 1/2 inches for No. 5 bars and smaller, and not less than 2 inches for larger bars.

g. The minimum thickness is permitted to be reduced 2 inches, provided the minimum specified compressive strength of concrete  $f'c$  is 4,000 psi.

h. A plain concrete wall with a minimum thickness of 11.5 inches is permitted, provided minimum specified compressive strength of concrete,  $f'c$ , is 3,500 psi.

i. Concrete shall have a specified compressive strength of not less than 2,500 psi at 28 days, unless a higher strength is required by note g or h.

j. "DR" means design is required in accordance with ACI 318 or ACI 332.

k. "PC" means plain concrete.

l. Where vertical reinforcement is required, horizontal reinforcement shall be provided in accordance with the requirements of Section R404.4.6.2 for ICF foundation walls.

**R404.5 Retaining walls.** Retaining walls that are not laterally supported at the top and that retain in excess of 48 inches (1,220 mm) of unbalanced fill shall be designed to ensure stability against overturning, sliding, excessive foundation pressure and water uplift. Retaining walls shall be designed for a safety factor of 1.5 against lateral sliding and overturning.

**R502.3.1 Sleeping areas and attic joists.** Table R502.3.1(1) shall be used to determine the maximum allowable span of floor joists that support sleeping areas and attics that are accessed by means of a fixed stairway in accordance with Section R311.5 provided that the design live load does not exceed 40 psf (1.92 kPa) and the design dead load does not exceed 20 psf (0.96 kPa). The allowable span of ceiling joists that support attics used for limited storage or no storage shall be determined in accordance with Section R802.4.

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**Table R602.3(1) Fastener Schedule for Structural Members; Row 5**

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Description of Building Elements	Number and Type of Fastener a, b, c, d	Spacing of Fasteners
Top or sole plate to stud, end nail	2-12d (3 1/2" x 0.135)	—

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**R602.10.1 Braced wall lines.** Braced wall lines shall consist of braced wall panel construction in accordance with Section R602.10.3. The amount and location of bracing shall be in accordance with Table R602.10.1 and the amount of bracing shall be the greater of that required by the seismic design category or the design wind speed. Braced wall panels shall begin no more than 12.5 feet (3,810 mm) from each end of a braced wall line. Braced wall panels that are counted as part of a braced wall line shall be in line, except that offsets out-of-plane of up to 4 feet (1,219 mm) shall be permitted provided that the total out-to-out offset dimension in any braced wall line is not more than 8 feet (2,438 mm).

**Exception:** The offsets out-of-plane may exceed 4 feet (1,219 mm) and the out-to-out offset dimension may exceed 8 (2,438 mm) feet if the area of the offset is less than 200 square feet.

**R613.2 Windowsills.** In dwelling units, where the opening of an operable window is located more than 72 inches (1,829 mm) above the finished grade or surface below, the lowest part of the clear opening of the window shall be a minimum of 18 inches (457 mm) above the finished floor of the room in which the window is located. Glazing between the floor and 18 inches (457 mm) shall be fixed or have openings through which a 5-inch-diameter (127 mm) sphere cannot pass.

**Exceptions:**

1. Windows whose openings will not allow a 5-inch-diameter (127 mm) sphere to pass through the opening when the opening is in its largest opened position.
2. Openings that are provided with window guards that comply with ASTM F 2006 or F 2090.

**R703.2.1 Weather-resistive sheathing papers.** House wraps or weather-resistive sheathing papers consisting of spunbonded olefin sheets of high density polyethylene fibers are required to be installed on the exterior side of the sheathing material directly underneath the exterior veneer.

**R907.3 Re-covering versus replacement.** New roof coverings shall not be installed without first removing existing 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.

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2. Where the existing roof covering is wood shake, slate, clay, cement or asbestos-cement tile.

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

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**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.

Deleted: 4. For asphalt shingles, when the building is located in an area subject to moderate or severe hail exposure according to Figure R903.5.4

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2. Installation of metal panel, metal shingle, and concrete and clay tile roof coverings over existing wood shake roofs shall be permitted when the application is in accordance with Section R907.4.

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3. The application of new protective coating over existing spray polyurethane foam roofing systems shall be permitted without tear-off of existing roof coverings.

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**Table N1102.1  
Insulation and Fenestration Requirements by Component  
Row 15**

Climate Zone	Fenestration U-Factor [Btu/hr-ft <sup>2</sup> -degrees F]	Skylight U-Factor	Glazed Fenestration SHGC	Ceiling R-Value	Wood		Floor R-Value	Basement Wall R-Value	Slab <sup>d</sup> R-Value and Depth	Crawl Space Wall R-Value
					Wall R-Value	Mass Wall R-Value				
6	0.35	0.60	NR	40 <sup>a</sup>	19	15	19	11 <sup>b</sup>	10, 42 inches (1067 mm)	19

- a. The minimum R-value for ceilings is further based on a minimum 6-inch (151 mm) heel height to allow the ceiling insulation to extend over the top plate.
- b. The minimum R-value for basement wall to be applied at the time of finishing the basement.
- c. R-values are minimums. U-factors and SHGC are maximums. R-19 insulation shall be permitted to be compressed into a 2× 6 cavity.
- d. The fenestration U-factor column excludes skylights. The solar heat gain coefficient (SHGC) column applies to all glazed fenestration.

e. R-5 shall be added to the required slab edge R-values for heated slabs.

**Exception:** Qualifying buildings which have installed therein either a high-efficiency gas furnace having a minimum 90 AFUE rating, or high-efficiency heat pumps having a minimum 8.0 HSPF and 13 SEER, shall be permitted to apply the high efficient trade-off listed below for exterior above grade walls, basement walls, slab perimeter insulation, and crawl space walls. All other factors remain the same:

- Walls—R-15
- Basement Walls—R-8 (which is allowed to be applied upon the finishing of the basement)
- Crawl Space Walls—R-19
- Slab Perimeter R-Value and Depth—R-5, 42 inches (1067 mm)

**N1101.8 Certificate. Delete.**

**M1308.3 Foundations and supports.** Foundations and supports for outdoor mechanical systems shall be raised at least 1 1/2 inches (38 mm) above the finished grade, and shall also conform to the manufacturer's installation instructions.

**M1403.1 Heat pumps and/or air conditioners.** The minimum unobstructed total area of the outside and return air ducts or openings to a heat pump and/or air conditioners shall be not less than 6 square inches per 1,000 Btu/h (13 208 mm<sup>2</sup>/kW) output rating or as indicated by the

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Deleted: e. There are no solar heat gain coefficient (SHGC) requirements in the Marine Zone.¶

f. Or insulation sufficient to fill the framing cavity, R-19 minimum.¶

g. "13+5" means R-13 cavity insulation plus R-5 insulated sheathing. If structural sheathing covers 25% or less of the exterior, R-5 sheathing is not required where structural sheathing is used. If structural sheathing covers more than 25% of exterior, structural sheathing shall be supplemented with insulated sheathing of at least R-2.¶

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Deleted: A permanent certificate shall be posted on or in the electrical distribution panel. The certificate shall be completed by the builder or registered design professional. The certificate shall list the predominant R-values of insulation installed in or on ceiling/roof, walls, foundation (slab, basement wall, crawl space wall and/or floor) and ducts outside conditioned spaces; U-factors for fenestration; and the solar heat gain coefficient (SHGC) of fenestration. Where there is more than one value for each component, the certificate shall list the value covering the largest area. The certificate shall list the type and efficiency of heating, cooling and service water heating equipment.

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conditions of the listing of the heat pump [air conditioner](#). Electric heat pumps shall conform to UL 1995.

**Section M1508. Subslab Soil Exhaust Systems.**

**M1508.1 General.** When a subslab soil exhaust system is provided, the duct shall conform to the requirements of this section.

**M1508.2 Materials.** Subslab soil exhaust system duct material shall be air duct material listed and labeled to the requirements of UL 181 for Class 0 air ducts, or any of the following piping materials that comply with the *International Plumbing Code* as building sanitary drainage and vent pipe: cast iron; galvanized steel; brass or copper pipe; copper tube of a weight not less than that of copper drainage tube, Type DWV; and plastic piping.

**M1508.3 Grade.** Exhaust system ducts shall not be trapped and shall have a minimum slope of one-eighth unit vertical in 12 units horizontal (1-percent slope).

**M1508.4 Termination.** Subslab soil exhaust system ducts shall extend through the roof and terminate at least 6 inches (152 mm) above the roof and at least 10 feet (3,048 mm) from any operable openings or air intake.

**M1601.2 Factory-made ducts.** Factory-made air ducts or duct material shall be approved for the use intended, and shall be installed in accordance with the manufacturer's installation instructions. Each portion of a factory-made air duct system shall bear a listing and label indicating compliance with UL 181 and UL 181A or UL 181B.

Flexible air ducts shall be limited in length to 14 feet. Flexible air connectors are not allowed.

**M1601.3.1 Joints and seams.** Joints of duct systems outside of the building envelope and all return ducts located within ten feet (2.28 m) of any appliance or all return ducts within a mechanical room and the plenum/coil cabinet connections shall be made substantially airtight by means of tapes, mastics, gasketing or other approved closure systems. Closure systems used with rigid fibrous glass ducts shall comply with UL 181A and shall be marked "181A-P" for pressure-sensitive tape, "181 A-M" for mastic or "181 A-H" for heat-sensitive tape. Closure systems used with flexible air ducts and flexible air connectors shall comply with UL 181B and shall be marked "181B-FX" for pressure-sensitive tape or "181B-M" formastic. Duct connections to flanges of air distribution system equipment or sheet metal fittings shall be mechanically fastened. Mechanical fasteners for use with flexible nonmetallic air ducts shall comply with UL 181B and shall be marked 181B-C. Crimp joints for round metal ducts shall have a contact lap of at least 1 1/2 inches (38 mm) and shall be mechanically fastened by means of at least three sheet-metal screws or rivets equally spaced around the joint.

**M1601.3.2 Support.** Metal ducts shall be supported 1/2-inch (13mm) wide 18-gage, 1-inch wide (24 gage) or 1 1/2-inch (39mm) wide 26 gage metal straps or 12-gage galvanized wire, at intervals not exceeding 10 feet (3,048 mm) or other approved means. Nonmetallic ducts shall be supported in accordance with the manufacturer's installation instructions.

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**M1701.6 Opening location.** In areas prone to flooding as established by Table R301.2(1), openings shall be located at or above the design flood elevation established in Section R323.1.5.

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Combustion air intake openings located on the exterior of a building shall have the lowest side of such openings located not less than 12 inches (305 mm) vertically from the adjoining grade level.

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Combustion air intake opening shall be located a minimum of three feet from a gas meter.

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**M1703.1 Outdoor air.** Where the space in which fuel-burning appliances are located does not meet the criterion for indoor air specified in Section M1702, outside combustion air shall be supplied as specified in Section M1703.2.

**Exception:** When all air is taken from the outdoors for appliances and the total input of the appliances is less than 300,000 Btu/hr (1,704,000 W/ meters squared K), one outside air duct may be used and shall terminate below the draft hood. An exterior opening may be used in place of a duct provided that it is located at least one foot below the draft hood.

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**M1703.2.1.1 Alternate combustion air sizing.** As an alternate to the above-referenced combustion air openings, the net free area of openings, ducts, or plenums supplying air to an area containing fuel-burning appliances shall be as specified below.

**Combustion Air Requirements for Appliances Requiring an Outside Air Opening  
in Areas with 5,000 degrees Fahrenheit (2,777 degrees Celsius)  
or Greater Heating Degree Days**

Total Input of Appliances <sup>1</sup> Thousand of Btu/h	Required Free Area of Air Supply Opening or Duct, Square Inches <sup>2</sup>
25 (26.4 KJ/h)	7 (4,516 mm <sup>2</sup> )
50 (52.8 KJ/h)	7 (4,516 mm <sup>2</sup> )
75 (79.1 KJ/h)	11 (7,097 mm <sup>2</sup> )
100 (106 KJ/h)	14 (9,032 mm <sup>2</sup> )
125 (132 KJ/h)	18 (11,610 mm <sup>2</sup> )
150 (158 KJ/h)	22 (14,190 mm <sup>2</sup> )
175 (185 KJ/h)	25 (16,130 mm <sup>2</sup> )
200 (211 KJ/h)	29 (18,710 mm <sup>2</sup> )
225 (237 KJ/h)	32 (20,650 mm <sup>2</sup> )
250 (264 KJ/h)	36 (23,230 mm <sup>2</sup> )
275 (290 KJ/h)	40 (25,810 mm <sup>2</sup> )
300 (317 KJ/h)	43 (27,740 mm <sup>2</sup> )

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1. For total inputs that fall between the listing figures, use the next largest listed input.
2. These figures are based on the maximum equivalent duct length of 20 feet (6.1 m). For equivalent duct lengths in excess of 20 feet (6.1 m) to and including a maximum of 150 feet (15.2 m), increase round duct diameter by one size. A square or rectangular duct may be used only where the required duct size is nine square inches (5,800 mm squared) or larger and the smaller dimension must be not less than three inches (76.2 mm).

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**G2407.6 (304.6) Outdoor combustion air.** Outdoor combustion air shall be provided through opening(s) to the outdoors in accordance with Section G2407.6.1 or G2407.6.2. The minimum dimension of air openings shall be not less than 3 inches (76 mm).

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Combustion air intake openings located on the exterior of a building shall have the lowest side of such openings located not less than 12 inches (305 mm) vertically from the adjoining grade level.

Combustion air intake opening shall be located a minimum of three feet from a gas meter.

**G2407.6.1 ( 304.6.1) Two permanent openings method.** Two permanent openings, one commencing within 12 inches (305 mm) of the top and one commencing within 12 inches (305 mm) of the bottom of the enclosure, shall be provided. The openings shall communicate directly, or by ducts, with the outdoors or spaces that freely communicate with the outdoors.

Where directly communicating with the outdoors, or where communicating with the outdoors through vertical ducts, each opening shall have a minimum free area of 1 square inch per 4,000 Btu/h (550 mm<sup>2</sup>/kW) of total input rating of all appliances in the enclosure [see Figures G2407.6.1(1) and G2407.6.1(2)].

Where communicating with the outdoors through horizontal ducts, each opening shall have a minimum free area of not less than 1 square inch per 2,000 Btu/h (1,100 mm<sup>2</sup>/kW) of total input rating of all appliances in the enclosure [see Figure G2407.6.1(3)].

**Combustion Air Requirements for Appliances Requiring an Outside Air Opening  
in Areas with 5,000 degrees Fahrenheit (2,777 degrees Celsius)  
or Greater Heating Degree Days**

Total Input of Appliances <sup>1</sup> Thousand of Btu/h	Required Free Area of Air Supply Opening or Duct, Square Inches <sup>2</sup>
25 (26.4 KJ/h)	7 (4,516 mm <sup>2</sup> )
50 (52.8 KJ/h)	7 (4,516 mm <sup>2</sup> )
75 (79.1 KJ/h)	11 (7,097 mm <sup>2</sup> )
100 (106 KJ/h)	14 (9,032 mm <sup>2</sup> )
125 (132 KJ/h)	18 (11,610 mm <sup>2</sup> )
150 (158 KJ/h)	22 (14,190 mm <sup>2</sup> )
175 (185 KJ/h)	25 (16,130 mm <sup>2</sup> )
200 (211 KJ/h)	29 (18,710 mm <sup>2</sup> )
225 (237 KJ/h)	32 (20,650 mm <sup>2</sup> )
250 (264 KJ/h)	36 (23,230 mm <sup>2</sup> )
275 (290 KJ/h)	40 (25,810 mm <sup>2</sup> )
300 (317 KJ/h)	43 (27,740 mm <sup>2</sup> )

1. For total inputs that fall between the listing figures, use the next largest listed input.
2. These figures are based on the maximum equivalent duct length of 20 feet (6.1 m). For equivalent duct lengths in excess of 20 feet (6.1 m) to and including a maximum of 150 feet (15.2 m), increase round duct diameter by one size. A square or rectangular duct may be used only where the required duct size is nine square inches (5,800 mm squared) or larger and the smaller dimension must be not less than three inches (76.2 mm).

**G2427.4.1 Plastic piping.** Plastic piping used for venting appliances listed for use with such venting materials shall be approved.

Plastic pipe and fittings used to vent appliances shall be installed in accordance with the pipe manufacturer's installation instructions and the appliance manufacturer's installation instructions. Solvent cement joints between ABS pipe and fittings shall be cleaned. Solvent cement joints between CPVC and PVC pipe and fittings shall be primed. The primer shall be a contrasting color.

**Exception:** Where compliance with this section would conflict with the appliance manufacturer's installation instructions,

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**Part VII—Plumbing. Delete** Chapter 25—Plumbing Administration; Chapter 26—General Plumbing Requirements; Chapter 27—Plumbing Fixtures; Chapter 28—Water Heaters; Chapter 29—Water Supply and Distribution; Chapter 30—Sanitary Drainage; Chapter 31—Vents; Chapter 32—Traps. The provisions of the 2003 Uniform Plumbing Code of the City of Sioux Falls shall apply to the installation, alterations, repairs, and replacement of plumbing systems, including equipment, appliances, fixtures, and appurtenances, and where connected to a water or sewage system for detached one- and two-family dwellings and multiple single-family dwellings (town houses) not more than three stories high with separate means of egress and their accessory structures.

**Part VIII—Electrical. Delete** Chapter 33—General Requirements; Chapter 33—Electrical Definitions; Chapter 35—Services; Chapter 36—Branch Circuit and Feeder Requirements; Chapter 37—Wiring Methods; Chapter 38—Power and Lighting Distribution; Chapter 39—Device and Lighting Fixtures; Chapter 40—Appliance Installation; Chapter 41—Swimming Pools; Chapter 42—Class 2 Remote-Control, Signaling and Power Limited Circuits. The provisions of the 2005 National Electrical Code of the City of Sioux Falls shall apply to the installation, alteration, repair, relocation, replacement, addition to, use, or maintenance of any electrical system, apparatus, wiring, or equipment for electrical, light, heat, power, fire alarms, and associate controls for detached one- and two-family dwellings and multiple single-family dwellings (town houses) not more than three stories high with separate means of egress and their accessory structures.

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**AG102.1 General.** For the purposes of these requirements, the terms used shall be defined as follows and as set forth in Chapter 2.

**Above-Ground/On-Ground Pool.** See “Swimming pool.”

**Barrier.** A fence, wall, building wall, or combination thereof which completely surrounds the swimming pool and obstructs access to the swimming pool.

**Hot Tub.** See “Swimming pool.”

**In-Ground Pool.** See “Swimming pool.”

**Residential.** That which is situated on the premises of a detached one- or two-family dwelling or a one-family town house not more than three stories in height.

**Spa, Nonportable.** See “Swimming pool.”

**Spa, Portable.** A nonpermanent structure intended for recreational bathing, in which all controls, water-heating and water-circulating equipment are an integral part of the product.

**Swimming Pool.** Any structure intended for swimming or recreational bathing that contains water over 18 inches (457.5 mm) deep. This includes in-ground, above-ground, and on-ground swimming pools, hot tubs and spas.

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**Swimming Pool, Indoor.** A swimming pool which is totally contained within a structure and surrounded on all four sides by the walls of the enclosing structure.

**Swimming Pool, Outdoor.** Any swimming pool which is not an indoor pool.

**AG105.1 Application.** The provisions of this chapter shall control the design of barriers for residential swimming pools, spas, and hot tubs. These design controls are intended to provide protection against potential drownings and near drownings by restricting access to swimming pools, spas, and hot tubs.

This requirement shall be applicable to all new swimming pools hereafter constructed, other than indoor pools, and shall apply to all existing pools, which have a depth of 18 inches (610 mm) or more of water. No person in possession of land within the city, either as owner, purchaser, lessee, tenant, or a licensee, upon which is situated a swimming pool having a depth of 18 inches (610 mm) or more shall fail to provide and maintain such barrier as herein provided.

**AG105.2 Outdoor swimming pool.** An outdoor swimming pool, including an in-ground, above-ground or on-ground pool, hot tub or spa shall be surrounded by a barrier that shall be installed, inspected and approved prior to filling with water, that completely surrounds and obstructs access to the swimming pool, which shall comply with the following:

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1. The top of the barrier shall be at least 42 inches (1,067 mm) above grade measured on the side of the barrier which faces away from the swimming pool. The maximum vertical clearance between grade and the bottom of the barrier shall be 2 inches (51 mm) measured on the side of the barrier which faces away from the swimming pool. Where the top of the pool structure is above grade, such as an aboveground pool, the barrier may be at ground level, such as the pool structure, or mounted on top of the pool structure. Where the barrier is mounted on top of the pool structure, the maximum vertical clearance between the top of the pool structure and the bottom of the barrier shall be 4 inches (102 mm).
2. Openings in the barrier shall not allow passage of a 4-inch-diameter (102 mm) sphere.
3. Where an aboveground pool structure is used as a barrier or where the barrier is mounted on top of the pool structure, and the means of access is a ladder or steps, then:

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3.1. The ladder or steps shall be capable of being secured, locked or removed to prevent access, or

3.2. The ladder or steps shall be surrounded by a barrier, which meets the requirements of Item 1 above. When the ladder or steps are secured, locked or removed, any opening created shall not allow the passage of a four inch-diameter (102 mm) sphere.

4. All gates or door openings through the barrier shall be equipped with self-closing and self-latching devices for keeping the door or gate securely closed at all times when the pool is not in actual use, except that the door of any dwelling that form part of the enclosure need not be so equipped.

**AG105.3 Indoor swimming pool. Delete.**

**AG105.4 Prohibited locations. Delete. AG105.5 Barrier exceptions.** Spas or hot tubs with a safety cover which complies with ASTM F 1346, as listed in Section AG107, shall be exempt from the provisions of this appendix.

Modifications in individual cases, upon a showing of good cause with respect to height, nature, or location of a fence, wall, gates, or latches, or the necessity thereof, may be made by the building official, provided the protection as sought hereunder is not reduced thereby. The building official may grant permission for other protective devices or structures to be used as long as the degree of protection afforded by this substitute device or structure is not less than the protection afforded by the wall, fence, gate, and latch described herein. A reasonable period within which to comply with the requirements of this section for existing swimming pools shall be allowed, which period shall not exceed 90 days after notification by the building official.

**Section 23-24 Licenses issued by the assistant director of building services (4) Residential building contractors** is amended to read as follows:

(4) *Residential building contractors.* The triennial license fee for various classes of residential building contractors licensed by the City shall be as follows:

- a. Residential building contractor, new.....\$300.00
- b. Renewal.....\$150.00
- c. Inactive construction supervisor .....\$25.00

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**Deleted:** Solid barriers which do not have openings, such as a masonry or stone wall, shall not contain indentations or protrusions except for normal construction tolerances and tooled masonry joints.¶

¶ 4. Where the barrier is composed of horizontal and vertical members and the distance between the tops of the ... [49]

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Solid barriers which do not have openings, such as a masonry or stone wall, shall not contain indentations or protrusions except for normal construction tolerances and tooled masonry joints.		

4. Where the barrier is composed of horizontal and vertical members and the distance between the tops of the horizontal members is less than 45 inches (1143 mm), the horizontal members shall be located on the swimming pool side of the fence. Spacing between vertical members shall not exceed 13/4 inches (44 mm) in width. Where there are decorative cutouts within vertical members, spacing within the cutouts shall not exceed 13/4 inches (44 mm) in width.

5. Where the barrier is composed of horizontal and vertical members and the distance between the tops of the horizontal members is 45 inches (1143 mm) or more, spacing between vertical members shall not exceed 4 inches (102 mm). Where there are decorative cutouts within vertical members, spacing within the cutouts shall not exceed 13/4 inches (44 mm) in width.

6. Maximum mesh size for chain link fences shall be a 21/4-inch (57 mm) square unless the fence has slats fastened at the top or the bottom which reduce the openings to not more than 13/4 inches (44 mm).

7. Where the barrier is composed of diagonal members, such as a lattice fence, the maximum opening formed by the diagonal members shall not be more than 13/4 inches (44 mm).

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8. Access gates shall comply with the requirements of Section AG105.2, Items 1 through 7, and shall be equipped to accommodate a locking device. Pedestrian access gates shall open outward away from the pool and shall be self-closing and have a self-latching device. Gates other than pedestrian access gates shall have a self-latching device. Where the release mechanism of the self-latching device is located less than 54 inches (1372 mm) from the bottom of the gate, the release mechanism and openings shall comply with the following:

8.1. The release mechanism shall be located on the pool side of the gate at least 3 inches (76 mm) below the top of the gate; and

8.2. The gate and barrier shall have no opening larger than 1/2 inch (13 mm) within 18 inches (457 mm) of the release mechanism.

9. Where a wall of a dwelling serves as part of the barrier, one of the following conditions shall be met:

9.1. The pool shall be equipped with a powered safety cover in compliance with ASTM F 1346; or

9.2. Doors with direct access to the pool through that wall shall be equipped with an alarm which produces an audible warning when the door and/or its screen, if present, are opened. The alarm shall be listed in accordance with UL 2017. The audible alarm shall activate within 7 seconds and sound continuously for a minimum of 30 seconds after the door and/or its screen, if present, are opened and be capable of being heard throughout the house during normal household activities. The alarm shall automatically reset under all conditions. The alarm system shall be equipped with a manual means, such as touch pad or switch, to temporarily deactivate the alarm for a single opening. Deactivation shall last for not more than 15 seconds. The deactivation switch(es) shall be located at least 54 inches (1372 mm) above the threshold of the door; or

9.3. Other means of protection, such as self-closing doors with self-latching devices, which are approved by the governing body, shall be acceptable so long as the degree of protection afforded is not less than the protection afforded by Item 9.1 or 9.2 described above.

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10. Where an above-ground pool structure is used as a barrier or where the barrier is mounted on top of the pool structure, and the means of access is a ladder or steps:

10.1. The ladder or steps shall be capable of being secured, locked or removed to prevent access; or

10.2. The ladder or steps shall be surrounded by a barrier which meets the requirements of Section AG105.2, Items 1 through 9. When the ladder or steps are secured, locked or removed, any opening created shall not allow the passage of a 4-inch-diameter (102 mm) sphere.

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Walls surrounding an indoor swimming pool shall comply with Section AG105.2, Item 9.

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Barriers shall be located to prohibit permanent structures, equipment or similar objects from being used to climb them.

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