

Article I.

Residential Code

Section 11-1. Adopted.

The International Residential Code, ~~2006~~2009 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~~2009 edition of the International Residential Code and amendments thereto shall be applied to any building permit issued after April 30, ~~2007~~2010. The code shall be filed with the city clerk.

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

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 townhouses not more than three stories above *grade plane* in height with a separate means of egress and their *accessory structures*.

Exceptions:

1. Live/work units complying with the requirements of Section 419 of the *International Building Code* shall be permitted to be built as one- and two-family dwellings or townhouses. Fire suppression required by Section 419.5 of the *International Building Code* when constructed under the *International Residential Code for One- and Two-family Dwellings* shall conform to Section 903.3.1.3 of the *International Building Code*.
2. Existing buildings undergoing repair, alteration or additions, and change of occupancy may be permitted to comply with the *International Existing Building Code*.

R103.1 ~~Creation of e~~Enforcement agency. ~~The department of building safety-~~Building Services is hereby created and the official in charge thereof shall be known as the *building official*.

R103.2 Appointment. Building Services is hereby created and the official in charge thereof shall be known as the *building official*. ~~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 any immunities and defenses provided by other applicable state and federal law. ~~defended by legal representative of the jurisdiction until the final termination of the proceedings.~~ 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.

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.

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 (18.58 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 footing 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.
6. Painting, papering, tiling, carpeting, cabinets, counter-tops, and similar finish work.
7. Prefabricated swimming pools that are less than 18 24-inches (457 610-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.
10. Decks not exceeding 200 square feet (18.58 m²) in area, that are not more than 30 inches (762 mm) above *grade* at any point, are not attached to a *dwelling* and do not serve the exit door required by Section R311.4.

Electrical:

1. *Listed* cord-and-plug connected temporary decorative lighting.
2. Reinstallation of attachment plug receptacles but not the outlets therefor.
3. Replacement of branch circuit overcurrent devices of the required capacity in the same location.
4. Electrical wiring, devices, *appliances*, apparatus, or *equipment* operating at less than 25 volts and not capable of supplying more than 50 watts of energy.
5. 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 Submittal documents. Submittal documents consisting of construction documents and other data shall be submitted with each application for a permit. The construction documents shall be prepared by a registered design professional where required by the statutes of the jurisdiction in which the project is to be constructed. Where special conditions exist, the building official is authorized to require additional construction documents to be prepared by a registered design professional.

Exception: The building official is authorized to waive the submission of construction documents and other data not required to be prepared by a registered design professional if it is found that the nature of the work applied for is such that reviewing of construction documents is not necessary to obtain compliance with this code.

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.

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 R404.1.1(2), R404.1.1(3), and R404.1.1(4) for reinforced masonry foundation walls, Tables R404.1.2(2), R404.1.2(3), R404.1.2(4), and R404.1.1(8) for flat concrete foundation walls, and Tables 404.1.2(5), R404.1.2(5), and R404.1.2(6) for waffle-grid basement walls, and Table R404.1.2(7) for screed-grid basement walls where the foundation wall exceeds the provisions for plain masonry and concrete foundation walls.

R106.3.1 Approval of construction documents. When the *building official* issues a *permit*, the *construction documents* shall be submitted and reviewed. ~~approved in writing or by a stamp which states "REVIEWED FOR CODE COMPLIANCE."~~ One set of *construction documents* so reviewed shall be retained by the *building official*. ~~The other set shall be returned to the applicant, shall be kept at the site of work and shall be open to inspection by the building official or his or her authorized representative.~~

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-applicable governing authority.

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)

<u>Total Valuation</u>	<u>Fee</u>
<u>\$1 to \$1,100</u>	<u>\$20</u>
<u>\$1,101 to \$2,000</u>	<u>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 \$2,000</u>
<u>\$2,001 to \$25,000</u>	<u>\$32.50 for the first \$2,000, plus \$6 for each additional \$1,000 or fraction thereof, to and including \$25,000</u>
<u>\$25,001 to \$50,000</u>	<u>\$170.50 for the first \$25,000, plus \$4.50 for each additional \$1,000 of fraction thereof, to and including \$50,000</u>
<u>\$50,001 top \$100,000</u>	<u>\$283 for the first \$50,000, plus \$3 for each</u>

	<u>additional \$1,000 or fraction thereof, to and including \$100,000</u>
<u>\$100,001 and up</u>	<u>\$433 for the first \$100,000, plus \$2.50 for each additional \$1,000 of fraction thereof</u>

Table 1-C. Other Inspections and Fees

1.	<u>Inspection outside of normal business hours, per hour* (minimum charge—one hour)</u>	\$70.00
2.	<u>Reinspection fees, per hour</u>	\$70.00
3.	<u>Inspections for which no fee is specifically indicated, per hour* (minimum charge—one-half hour)</u>	\$70.00
4.	<u>Additional plan review required by changes, additions, or revisions to approved plans, per hour* (minimum charge—one-half hour)</u>	\$70.00
	<u>*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.</u>	
5.	<u>Wrecking permit fees</u>	\$20.00
6.	<u>Swimming pool fence enclosures</u>	\$20.00
7.	<u>Residential reshingles</u>	\$20.00
8.	<u>Residential resides</u>	\$20.00
9.	<u>Residential window replacements with no structural modifications (Group R and U occupancies)</u>	\$20.00
10.	<u>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.</u>	
11.	<u>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.</u>	
12.	<u>Residential contractor’s license examination fee</u>	\$75.00
13.	<u>Bond claims. An administrative fee shall be charged to cover the administrative cost of filing a claim</u>	\$150.00

R108.6 Work commencing before permit issuance. Any person who commences work requiring a *permit* on a building, structure, electrical, gas, mechanical or plumbing system before

obtaining the necessary permits shall be subject to a fee established by the applicable governing authority that shall be in addition to the required *permit* fees. Legal and/or civil proceedings may also be commenced.

R108.7 Delinquent accounts. The administrative authority may refuse to issue permits or conduct inspections for any person or business whose account is delinquent.

R109.1.1 ~~Foundation~~ Footing inspection. Inspection of the ~~footings foundation~~ 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 foundation~~ 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.

R109.1.3 Floodplain inspections. For construction in areas prone to flooding as established by Appendix D, the Floodplain Management Ordinance Table R301.2(1), upon placement of the lowest floor, including *basement*, and prior to further vertical construction, the ~~floodplain administrator~~ building official shall require submission of documentation, prepared and sealed by a registered *design professional*, of the elevation of the lowest floor, including *basement*, required in Appendix D, the Floodplain Management Ordinance Section R322.

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 therefor 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 city jurisdiction. Certificates presuming to give authority to violate or cancel the provisions of this code or other ordinances of the city jurisdiction 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.

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. In order to hear and decide appeals of orders, decisions, or determinations made by the *building official* 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, to review requests for house moves, and to examine applicants for licensing and to investigate matters brought before the board, there shall be and is hereby created a board of appeals and examiners. The *building official* shall be an ex officio member of said board but shall have no vote on any matter before the board. ~~The board of appeals Members~~ shall be appointed by the mayor with the consent of the council ~~the governing body and shall hold office at its pleasure, and shall hold office for a 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 and/or fire services department* official.

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 thereunder 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.

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 (<u>Footnote l</u>).....	40 psf contour
2.	Wind Speed. (Footnote e).....	90 mph
4.	3. <u>Topographic Effects (Footnote k).....</u>	no
5.	4. Seismic Design Category. (Footnotes f and g).....	A
6.	5. Weathering. (Footnote a).....	Severe
	6. Frost Line Depth. (Footnote b).....	42 inches (1,067 mm)

7.6.	Termite Damage. (Footnote c).....	Slight to Moderate
8.7.	Winter Design Temperature.....	-11 Degrees Fahrenheit.
9.8.	Ice Barrier Underlayment Requirement. (Footnote i)	yes
10.9.	Flood Hazards. (Footnote g) Sioux Falls entered the regular phase of the National Flood Insurance Program on September 17, 1979.	
11.10.	Air Freezing Index (Footnote i)	3000 <u>2,500</u>
12.11.	Mean Annual Temperature	46 degrees Fahrenheit

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 97 1/2 percent values for winter from Appendix D of the *International Plumbing Code*. Deviations from the Appendix D 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.
- 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.

~~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 Flood Insurance Study and (c) the panel numbers and dates of all currently effective FIRMs and FBFMs or other flood hazard map adopted by the authority having jurisdiction, as amended.~~

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

l. On roof systems that are not engineered, conventionally framed roof slopes with a rise of 3 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 1/4 inch (6.35 mm) per 12 inches (305 mm), a surcharge load of not less 5 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 3 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.

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

USE	LIVE LOAD
Attics without storage ^b	10
Attics with -limited storage ^{b, g}	20
Habitable attics and attics served with fixed stairs	30
Balconies (exterior) and decks ^c	40
Fire escapes	40
Guardrails and handrails ^d	200 ⁱ
Guardrails in-fill components ^f	50 ⁱ
Passenger vehicle garages ^a	50 ^a
Rooms other than sleeping rooms	40

Sleeping rooms	30
Stairs	40°

For SI: 1 pound per square foot = 0.0479 kPa, 1 square inch = 645 mm², 1 pound = 4.45 N.

- a. Elevated garage floors shall be capable of supporting a 2,000-pound load applied over a 20-square-inch area.
- b. 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 R502.2.2 for decks attached to exterior walls.
- f. Guard in-fill components (all those except the handrail), balusters, and panel fillers shall be designed to withstand a horizontally applied normal load of 50 pounds on an area equal to 1 square foot. This load need not be assumed to act concurrently with any other live load requirement.
- 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.
 1. The attic area is accessible by a pull-down stairway or framed in accordance with Section R807.1.
 2. The truss has a bottom chord pitch less than 2:12.
 3. Required insulation depth is less than the bottom chord member depth.

The 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, uniformly distributed over the entire span.

- h. 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.

**Table R302.1
Exterior Walls**

Exterior Wall Element		Minimum Fire-Resistance Rating	Minimum Fire Separation Distance
Walls	(Fire-resistance rated)	1 hour <u>tested in accordance with ASTM E 119 or UL 263</u> with exposure from both sides	<5 0 feet
	(Not fire-resistance rated)	0 hours	>5 feet
Projections	(Fire-resistance rated)	1 hour on the underside	4 <= 3 feet
	(Not fire-resistance rated)	0 hours	5 > 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

R302.2.1 Continuity. The fire-resistance-rated wall or assembly separating *townhouses* 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 3 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

R310.1 Emergency escape and rescue required. *Basements*, habitable attics, and every sleeping room shall have at least one operable emergency escape and rescue opening. Where *basements* contain one or more sleeping rooms, emergency egress and rescue openings shall be required in each sleeping room. Where emergency escape and rescue openings are provided, they shall have a sill height of not more than ~~48-44~~ inches (1,220-1118 mm) above the floor. Where a door opening having a threshold below the adjacent ground elevation serves as an emergency escape and rescue opening and is provided with a bulkhead enclosure, the bulkhead enclosure shall comply with Section R310.3. The net clear opening dimensions required by this section shall be obtained by the normal operation of the emergency escape and rescue opening from the inside. Emergency escape and rescue openings with a finished sill height below the adjacent ground elevation shall be provided with a window well in accordance with Section R310.2.

Emergency escape and rescue openings shall open directly into a public way, or to a *yard* or court that opens to a public way.

Exception: *Basements* used only to house mechanical *equipment* and not exceeding total floor area of 200 square feet (18.58 m²).

R310.1.1 Minimum opening area. All emergency escape and rescue openings shall have a minimum net clear opening of ~~5.0-5.7~~ square feet (~~0.465-0.530~~-m²).

~~**Exception:** *Grade floor openings* shall have a minimum net clear opening of 5 square feet (0.465-m²).~~

R310.2.1 Ladder and steps. Window wells with a vertical depth greater than ~~48-44~~ inches (~~1,220-1118~~ mm) shall be equipped with a permanently affixed ladder or steps usable with the window in the fully open position. Ladders or steps required by this section shall not be required to comply with Sections R311.7 and R311.8. 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.

R311.3.1 Floor elevations at the required egress doors. Landings or floors at the required egress door shall not be more than 1 1/2 inches (38 mm) lower than the top of the threshold.

Exception: The exterior landing or floor shall not be more than ~~8-73/4~~ inches (~~202-196~~mm) below the top of the threshold provided the door does not swing over the landing or floor.

When exterior landings or floors serving the required egress door are not at *grade*, they shall be provided with access to *grade* by means of a ramp in accordance with Section R311.8 or a stairway in accordance with Section R311.7.

R311.3.2 Floor elevations for other exterior doors. Doors other than the required egress door shall be provided with landings or floors not more than ~~8-73/4~~ inches (~~202-196~~ mm) below the top of the threshold.

Exception: A landing is not required where a stairway of two or fewer risers is located on the exterior side of the door, provided the door does not swing over the stairway.

R311.7.4.1 Riser height. The maximum riser height shall be ~~8-73/4~~ inches (~~202-196~~-mm). The riser shall be measured vertically between leading edges of the adjacent treads. The greatest riser height within any flight of stairs shall not exceed the smallest by more than 3/8 inch (9.5 mm).

R311.7.4.3 Profile. The radius of curvature at the nosing 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 inches (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 nosings shall not exceed 1/2 inch

(12.7 mm). Risers shall be vertical or sloped under the tread above from the underside of the nosing above at an angle not more than 30 degrees (0.51 rad) from the vertical. Open risers are permitted; ~~provided that the opening between treads does not permit the passage of a 4-inch diameter (102 mm) sphere.~~

Exceptions:

1. A nosing is not required where the tread depth is a minimum of 11 inches (279 mm).
- ~~2. The opening between adjacent treads is not limited on stairs with a total rise of 30 inches (762 mm) or less.~~

R311.7.7.2 Continuity. Handrails for stairways shall ~~extend be continuous~~ 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.

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.

R311.7.7.3 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). Edges shall have a minimum radius of 0.01 inch (0.25 mm).
2. Type II. Handrails with a perimeter greater than 6 1/4 inches (160 mm) shall have 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.

R312.3 Opening limitations. Required *guards* shall not have openings from the walking surface to the required *guard* height which allow passage of a sphere ~~5-4~~ inches (~~127-102~~ mm) in diameter.

Exceptions: ~~1-~~ The triangular openings at the open side of a stair, formed by the riser, tread, and bottom rail of a *guard*, shall not allow passage of a sphere 6 inches (153 mm) in diameter.

~~2- Guards on the open sides of stairs shall not have openings which allow passage of a sphere 43/8 inches (111 mm) in diameter.~~

~~SECTION R313~~ ~~AUTOMATIC FIRE SPRINKLER SYSTEMS~~

~~**R313.1 Townhouse automatic fire sprinkler systems.** An automatic residential fire sprinkler system shall be installed in *townhouses*.~~

~~**Exception:** An automatic residential fire sprinkler system shall not be required when *additions* or *alterations* are made to existing *townhouses* that do not have an automatic residential fire sprinkler system installed.~~

~~**R313.1.1 Design and installation.** Automatic residential fire sprinkler systems for *townhouses* shall be designed and installed in accordance with Section P2904.~~

~~**R313.2 One- and two-family dwellings automatic fire systems.** Effective January 1, 2011, an automatic residential fire sprinkler system shall be installed in one- and two- family *dwellings*.~~

~~**Exception:** An automatic residential fire sprinkler system shall not be required for *additions* or *alterations* to existing buildings that are not already provided with an automatic residential sprinkler system.~~

~~**R313.2.1 Design and installation.** Automatic residential fire sprinkler systems shall be designed and installed in accordance with Section P2904 or NFPA 13D.~~

R314.3 Location. Smoke alarms shall be installed in the following locations:

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* and habitable attics 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 detector 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.

R314.3.1 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 *dwelling*s, the individual *dwelling* unit shall be equipped with smoke alarms located as required for new *dwelling*s.

Exceptions:

1. Work involving the exterior surfaces of *dwelling*s, 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.
2. Installation, *alteration*, or repairs of plumbing or mechanical systems are exempt from the requirements of this section.

R315.2 Where required in existing dwellings. ~~Where work requiring a *permit* occurs in existing *dwelling*s that have attached garages or in existing *dwelling*s within which fuel-fired appliances exist,~~ In existing *dwelling*s where fuel-fired appliances are altered, repaired, or replaced, or where one or more sleeping rooms are added or created in a *dwelling* that has fuel-fired equipment and/or an attached garage, carbon monoxide alarms shall be provided in accordance with Section R315.1.

R317.1 Location required. Protection of wood and wood based products 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 AWPAC U1 for the species, product, preservative, and end use. Preservatives shall be listed in Section 4 of AWPAC U1.

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 6-8 inches (152-203 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 1/2 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 or less than 2 inches (51 mm) measured vertically from concrete steps, porch slabs, patio slabs, and similar horizontal surfaces exposed to the weather.
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.

R319.1 Address numbers. New and existing Buildings-buildings shall have *approved* address numbers, building numbers, or *approved* building identification placed in a position that is plainly legible and visible from the street or road fronting the property. These numbers shall contrast with their background. Address numbers shall be Arabic numbers or alphabetical letters. Numbers shall be a minimum of 4 inches (102 mm) high with a minimum stroke width of 1/2 inch (12.7 mm). Where access is by means of a private road and the building address cannot be viewed from the public way, a monument, pole, or other sign or means shall be used to identify the structure. 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.

R401.3 Drainage. Surface drainage shall be diverted to a storm sewer conveyance or other *approved* point of collection that does 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).

Exceptions:

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

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; or
4. Erected on solid rock.

Exceptions:

1. Protection of freestanding *accessory structures* with an area of ~~1,500-600~~ square feet (~~139~~ ~~56~~ m²) or less, of light-frame 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 (37 m²) or less, of other than light-frame 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.

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

R404.4 Retaining walls. Retaining walls that are not laterally supported at the top and that retain in excess of ~~48-24~~ inches (~~1,220-610~~ 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 R311.7 provided that the design live load does not exceed ~~40~~ pounds per square foot (~~1.92~~ kPa) and the design dead load does not exceed 20 pounds per square foot (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.

TABLE R602.3(1) FASTENER SCHEDULE FOR STRUCTURAL MEMBERS; Row 5

Description of Building Elements	Number and Type of Fastener a, b, c, d	Spacing of
Top or sole plate to stud, end nail	2-12d (3½" x 0.135)	--

R602.10.1.4 Braced wall panel location. *Braced wall panels* shall be located in accordance with Figure R602.10.1.4(1). *Braced wall panels* shall be located not more than 25 feet

(7,620 mm) on center and shall be permitted to begin no more than 12.5 feet (3,810 mm) from the end of a *braced wall line* in accordance with Section R602.10.1 and Figure R602.10.1.4(2). The total combined distance from each end of a *braced wall line* to the outermost *braced wall panel* or panels in the line shall not exceed 12.5 feet (3,810 mm). *Braced wall panels* may be offset out-of-plane up to 4 feet (1,219 mm) from the designated *braced wall line* provided that the total out-to-out offset of *braced wall panels* in a *braced wall line* is not more than 8 feet (2,438 mm) in accordance with Figures R602.10.1.4(3) and R602.10.1.4(4). All *braced wall panels* within a *braced wall line* shall be permitted to be offset from the designated *braced wall line*.

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

R612.2 Window sills. 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 ~~18-24~~ inches (457-610 mm) above the finished floor of the room in which the window is located. Operable sections of windows shall not permit openings that allow passage of a 4-inch (102 mm) diameter sphere where such openings are located within ~~18-24~~ inches (457-610 mm) of the finished floor.

Exceptions:

1. Windows whose openings will not allow a 4-inch diameter (102 mm) sphere to pass through the opening when the opening is in its largest opened position.
2. Openings that are provided with window fall prevention devices that comply with Section R612.3.
3. Openings that are provided with fall prevention devices that comply with ASTM F 2090.
4. Windows that are provided with opening limiting devices that comply with Section R612.4.

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 Recovering versus replacement. New roof coverings shall not be installed without first removing all existing layers of roof coverings where any of the following conditions exist:

1. Where the existing roof or roof covering is water-soaked or has deteriorated to the point that the existing roof or roof covering is not adequate as a base for additional roofing.
2. Where the existing roof covering is wood shake, slate, clay, cement, or asbestos-cement tile.

3. Where the existing roof has two or more applications of any type of roof covering.
4. ~~For asphalt shingles, when the building is located in an area subject to moderate or severe hail exposure according to Figure R903.5.~~

Exceptions:

1. Complete and separate roofing systems, such as standing-seam metal roof systems, that are designed to transmit the roof loads directly to the building’s structural system and that do not rely on existing roofs and roof coverings for support, shall not require the removal of existing roof coverings.
2. 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.
3. The application of new protective coating over existing spray polyurethane foam roofing systems shall be permitted without tear-off of existing roof coverings.

**TABLE N1102.1
INSULATION AND FENESTRATION REQUIREMENTS BY COMPONENT^a**

Climate Zone	Fenestration U-Factor		Glazed Fenestration SHGC	Ceiling R-Value ^l	Wood Frame Wall R-Value	Mass Wall R-Value ^k	Floor R-Value	Basement ^c Wall R-Value	Slab ^d R-Value and Depth	Crawl Space ^c Wall R-Value
	[Btu/hr-ft 2-degrees F]	Skylight ^b U-Factor								
6A	0.35	0.60	NR	49	20 or 13 + 5 ^h	15/19	30 ^e	10/13	10, 42 inches	10/13

- a. R-values are minimums. U-factors and solar heat gain coefficient (SHGC) are maximums. R-19 batts compressed in to nominal 2 X 6 framing cavity such that the R-value is reduced by R-1 or more shall be marked with the compressed batt R-value in addition to the full thickness R-value.
- b. The fenestration U-factor column excludes skylights. The SHGC column applies to all glazed fenestration.
- c. The first R-value applies to continuous insulation which is allowed to be applied at the time of finishing the basement, the second to framing cavity insulation; either insulation meets the requirement.
- d. R-5 shall be added to the required slab edge R-values for heated slabs. Insulation depth shall be the depth of the footing or 2 feet, whichever is less, in zones 1 through 3 for heated slabs.
- e. There are no SHGC requirements in the Marine Zone.
- f. Basement wall insulation is not required in warm-humid locations as defined by Figure N1101.2 and Table N1101.2.

- g. Or insulation sufficient to fill the framing cavity, R-19 minimum.
- h. “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.
- i. For impact-rated fenestration complying with Section R301.2.1.2, the maximum *U*-factor shall be 0.75 in zone 2 and 0.65 in zone 3.
- j. For impact-resistant fenestration complying with Section R301.2.1.2 of the *International Residential Code*, the maximum SHGC shall be 0.40.
- k. The second *R*-value applies when more than half the insulation is on the interior.
 - 1. The minimum R-value for ceilings is further based on a minimum 6-inch (152 mm) heel height to allow the ceiling insulation to extend over the top plate.

M1305.1.4.1 Ground clearance. *Equipment and appliances* supported from the ground shall be level and firmly supported on a concrete slab or other *approved* material extending not less than 1 1/2-3 inches (38-76 mm) above the adjoining ground. Such support shall be in accordance with the manufacturer’s installation instructions. *Appliances* suspended from the floor shall have a clearance of not less than 6 inches (152 mm) from the ground.

M1403.2 Foundations and supports. ~~Supports and foundations for the outdoor unit of a heat pump shall be raised at least 3 inches (76 mm) above the ground to permit free drainage of defrost water, and shall conform to the manufacturer’s installation instructions.~~

M1403.1 Heat pumps and 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 mm²/kW) output rating or as indicated by the conditions of the listing of the heat pump air conditioner. Electric heat pumps shall conform to UL 1995.

M1411.5 Insulation of refrigerant piping. Piping and fittings for refrigerant vapor (suction) lines shall be insulated with insulation having a thermal resistivity of at least R-2 R-4 and having external surface permeance not exceeding 0.05 perm [2.87 ng/(s - m² - Pa)] when tested in accordance with ASTM E 96.

M1502.4.4.1 Specified length. The maximum length of the exhaust duct shall be 35 25 feet (10668 7620 mm) from the connection to the transition duct from the dryer to the outlet terminal. Where fittings are used, the maximum length of the exhaust duct shall be reduced in accordance with Table M1502.4.4.1.

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 $\frac{1}{8}$ 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.

**Table M1601.1.1(2)
Gages of Metal Ducts and Plenums Used for Heating or Cooling**

Duct Size	Minimum Thickness Inches and (mm)	Equivalent Galvanized Sheet No.	Minimum Thickness (In.)
Round ducts and enclosed rectangular ducts			
14 inches or less	0.0157 (0.3950 mm)	30 28	0.0175
>14 16 to and 18 inches	0.0187 (0.4712 mm)	26	0.018
>18 20 inches and over	0.0236 (0.6010 mm)	24	0.023
Exposed rectangular ducts			
14 inches or	0.0157 (0.3950 mm)	28	0.0175
Over 14 ² inches	0.0187 (0.4712 mm)	26	0.018

For SI: 1 inch = 25.4 mm.

- a. For duct gages and reinforcement requirements at static pressures of 1/2 inch, 1 inch and 2 inches w.g., SMACNA Duct Construction Standard Tables 2-1:2-2 and 2-3 shall apply.

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.

M1601.4.3 Support. Metal ducts shall be supported by 1/2-inch (13 mm) wide 18-gage, 1-inch (25 mm) wide 24 gage, or 1 1/2-inch (39 mm) 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.

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, or G2407.6.3. The minimum dimension of air openings shall be not less than 3 inches (76 mm).

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 3 feet from a gas meter.

G2407.6.3 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.

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 1 foot below the draft hood.

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

<u>Total Input of Appliances</u> <u>Thousands of Btu/hr</u>	<u>Required Free Area of Air Supply Opening or Duct,</u> <u>Square Inches</u>
<u>25 (26.4 KJ/h)</u>	<u>7 (4,516 mm²)</u>
<u>50 (52.8 KJ/h)</u>	<u>7 (4,516 mm²)</u>
<u>75 (79.1 KJ/h)</u>	<u>11 (7,097 mm²)</u>
<u>100 (106 KJ/h)</u>	<u>14 (9,032 mm²)</u>
<u>125 (132 KJ/h)</u>	<u>18 (11,610 mm²)</u>
<u>150 (158 KJ/h)</u>	<u>22 (14,190 mm²)</u>
<u>175 (185 KJ/h)</u>	<u>25 (16,130 mm²)</u>
<u>200 (211 KJ/h)</u>	<u>29 (18,710 mm²)</u>
<u>225 (237 KJ/h)</u>	<u>32 (20,650 mm²)</u>
<u>250 (264 KJ/h)</u>	<u>36 (23,230 mm²)</u>
<u>275 (290 KJ/h)</u>	<u>40 (25,810 mm²)</u>
<u>300 (317 KJ/h)</u>	<u>43 (27,740 mm²)</u>

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 (46 m), increase round duct diameter by one size. A square or rectangular duct may be used only where the required duct size is 9 square inches (5,800 mm²) or larger and the smaller dimension must be not less than 3 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.

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; **and Chapter 33—Storm Drainage.** The provisions of the ~~2003~~ ~~2006~~ 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 ~~34-33~~—General Requirements; Chapter ~~35-33~~—Electrical Definitions; Chapter ~~36-35~~—Services; Chapter ~~37-36~~—Branch Circuit and Feeder Requirements; Chapter ~~38-37~~—Wiring Methods; Chapter ~~39-38~~—Power and Lighting Distribution; Chapter ~~40-39~~—Device and Lighting Fixtures; Chapter ~~41-40~~—Appliance Installation; Chapter ~~42-41~~—Swimming Pools; Chapter ~~43-42~~—Class 2 Remote-Control, Signaling and Power Limited Circuits. The provisions of the ~~2005~~ ~~2008~~ 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.

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 *townhouse* 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 mm) deep. This includes in-ground, above-ground and on-ground swimming pools, hot tubs, and spas.

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 (457 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 (457 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:

1. The top of the barrier shall be at least ~~42-48~~ inches (1,067-1219 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 above-ground 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:

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 4-inch-diameter (102 mm) sphere.

~~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. 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.

~~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).~~

~~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 (12.7 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 and labeled in accordance with UL2017. 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 as long as the degree of protection afforded is not less than the protection afforded by Item 9.1 or 9.2 described above.~~

~~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.~~

AG105.3 Indoor swimming pool. ~~Walls surrounding an indoor swimming pool shall comply with Section AG105.2, Item 9.~~

AG105.4 Prohibited locations. ~~Barriers shall be located to prohibit permanent structures, equipment or similar objects from being used to climb them.~~

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.

Date adopted: _____.

Mayor

ATTEST:

City Clerk