

INTERNATIONAL RESIDENTIAL CODE

§ 150.001 ADOPTED.

- (a) The *International Residential Code*, 2021 edition, including Appendix AE, Appendix AG, Appendix AH, and Appendix AQ 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 not more than three stories in height, and provides for the issuance of permits and the collection of fees therefor.
- (b) The adoption of the *International Residential Code*, 2021 edition, will become effective January 1, 2022. The minimum building standards in the 2021 edition of the *International Residential Code* and amendments thereto shall be applied to any building permit issued after December 31, 2021.
- (c) The city shall publish this ordinance, without attachments, after its passage. The attachments are on file and available for inspection at the office of the city clerk.

§ 150.002 AMENDMENTS, ADDITIONS, AND DELETIONS TO THE 2021 *INTERNATIONAL RESIDENTIAL CODE.*

The following sections and subsections of the 2021 *International Residential Code* adopted in this article shall be amended, added, or not adopted by the city as follows. All other sections or subsections of the 2021 *International Residential Code* as published 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.”

Commentary: *This simply inserts that these local modifications are applicable to the “City of Sioux Falls.”*

R101.2 Scope. The provisions of this code shall apply to the construction, alteration, movement, enlargement, replacement, repair, equipment, use and occupancy, location, removal, and demolition of detached one- and two-family dwellings and townhouses not more than three stories above grade plane in height with a separate means of egress and their accessory structures not more than three stories above grade plane in height.

Exception 1: The following shall be permitted to be constructed in accordance with this code where provided with an automatic sprinkler system complying with Section P2904:

- ~~1. — Live/work units located in townhouses and complying with the requirements of Section 508.5 of the International Building Code.~~

~~2. Owner-occupied lodging houses with five or fewer guestrooms.~~

31. A care facility with five or fewer persons receiving custodial care within a dwelling unit.
42. A care facility with five or fewer persons receiving medical care within a dwelling unit.
53. A care facility for five or fewer persons receiving care that are within a single-family dwelling.

Exception 2: The following shall be permitted to be constructed in accordance with this code. A fire sprinkler system if installed may be in accordance with Section P2904.

1. Live/work units located in townhouses and complying with the requirements of Section 419 of the *International Building Code*.
2. Owner-occupied lodging houses with five or fewer guestrooms.

Exception 3: Existing buildings undergoing repair, alteration or additions, and change of occupancies may be permitted to comply with the *International Existing Building Code*.

Commentary: This is a carryover from the 2018 IRC. This section establishes when the provision of the residential code may apply, whether in all or in part. Exception 2 eliminates any mandatory reference to the installation of an automatic fire sprinkler system consistent with state law. In addition, the third condition is a carryover from previous code adoptions that allows the *International Existing Building Code* to be used in lieu of the IRC.

R103.1 Creation of 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*.

Commentary: This is a carryover from the 2018 IRC. This inserts the correct title of the office that enforces minimum building standards, *Building Services*.

R103.2 Appointment. ~~The building official shall be appointed by the jurisdiction.~~ Not adopted by the city.

Commentary: This is a carryover from the 2018 IRC. This is eliminated because the building official is not an appointed position.

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 civilly or criminally 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.

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.

Commentary: This is a carryover from the 2018 IRC. The second paragraph maintains language as it relates to assuming liability in the enforcement of the minimum building standards of the code.

R104.8.1 Legal defense. Any suit or criminal complaint 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 and defended by legal representatives 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.

Commentary: This is a carryover from the 2018 IRC. This amendment inserts that an employee who enforces the code is protected from liability within the limitations of the City's insurance pool or any other applicable state or federal law.

R105.1 Required. Any owner or owner's 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 performed, 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.

Commentary: This is a carryover from the 2018 IRC. This gives the authority to exempt permits for work that is considered minor enough to not require inspections. It also references that any work that is contracted for an owner of an occupied one- and two- family dwelling is required to be permitted by a licensed residential contractor.

R105.2 Work exempt from permit. 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. Permits shall not be required for the following:

Building:

1. Other than storm shelters, one-story detached accessory structures, provided that the floor area does not exceed 200 square feet (18.58 m²). [A placement permit is required by the zoning division.](#)
2. Fences not over 7 feet (2,134 mm) high. [A fence permit is required by the zoning division.](#)
3. Retaining walls that are not over 4 feet (1,219 mm) in height measured from the bottom of the 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. [A driveway permit is required by the zoning division. A sidewalk permit is required by the engineering division.](#)
6. Painting, papering, tiling, carpeting, cabinets, countertops, and similar finish work.
7. Prefabricated swimming pools that are less than 24 inches (610 mm) deep.
8. Swings and other playground equipment.
9. Window awnings supported by an exterior wall that 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.

Plumbing:

1. 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.
2. 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.

Commentary: This is a carryover from the 2018 IRC with the exception that it clarifies that a storm shelter no matter the size does require a permit. This section defines the types of work that do not require a building permit. Even though a building permit is not required for a shed

less than 200 square feet, a zoning placement permit is nevertheless required; fences do not require a building permit, but there is a reference that a zoning permit is required; the height of a retaining wall that is exempt from permit issuance is clarified as the amount of grade that it supports, not from the bottom of the footing; the Zoning Division requires permits for driveways; based on established ordinances for fence enclosures for pools, the exemption is 18 inches in water depth. In addition, the exception for decks 200 square feet and under that are less than 30 inches in height, not attached to the house and not utilized by the front main entrance, has been eliminated because it is felt that the stairs of a deck of any size should be verified that the risers and treads should be symmetrical.

R106.1 Submittal documents. Submittal documents consisting of construction documents, and other data shall be submitted ~~in two or more sets, or in a digital format where allowed by the building official,~~ 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.

Commentary: This is a carryover from the 2018 IRC. This clarifies that construction documents shall be provided with each application for a permit. It does not specify whether it must be a hard copy or an electronic copy.

R106.1.6 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.

Commentary: This is a carryover from the 2018 IRC. This clarifies that new dwelling plans detail the minimum energy efficiency values for ceilings walls, floors, basement walls, and crawl spaces.

R106.1.7 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; Tables 404.1.2(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.

Commentary: This is a carryover from the 2018 IRC. This requires that new dwelling plans detail the minimum size and spacing of reinforcement for foundation walls.

R106.2 Site plan or plot plan. The *construction documents* submitted with the application for *permit* shall be accompanied by a site plan showing the size and location of new construction and existing structures on the site and distances from *lot lines*. Site plans for new dwellings are required to specify the corner pin elevations and the minimum ground elevation (MGE) which designates the elevation of the top of the black dirt under the grass, or the top of the landscape rock or other landscape material at the lowest exposed part of the house. In the case of demolition, the site plan shall show construction to be demolished and the location and size of existing structures and construction that are to remain on the site or plot. The *building official* is authorized to waive or modify the requirement for a site plan where the application for *permit* is for *alteration* or *repair* or where otherwise warranted.

Commentary: This is a carryover from the 2018 IRC. This requires the site plan to be supplied with minimum ground elevation on the plans. This helps in determining that the structure is higher than the surrounding area in order to determine that the building is not set too low to allow water to flow into the building.

R106.3.1 Approval of construction documents. Where the *building official* issues a *permit*, the *construction documents* shall be approved. ~~in writing or by a stamp that 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 a duly authorized representative.~~

Commentary: This is a carryover from the 2018 IRC. This requires that one set of construction documents will be saved. It may be either a hard copy or an electronic copy as it does not specify. It clarifies that a second copy of the reviewed plans is not required to be returned to the permit holder.

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 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	
Group R Division 3	
(Including Congregate Residences Defined as R-3 and Accessory Group U Occupancies)	
Total Valuation	Fee
\$1 to \$1,100	\$20
\$1,101 to \$2,000	For valuations in excess of \$1,100, \$10 for the first \$500, plus \$1.50 for each additional \$100 or fraction thereof, to and including \$2,000
\$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 or fraction thereof, to and including \$50,000
\$50,001 to \$100,000	\$283 for the first \$50,000, plus \$3 for each additional \$1,000 or fraction thereof, to and including \$100,000
\$100,001 and up	\$433 for the first \$100,000 plus \$2.50 for each additional \$1,000 or fraction thereof

Table 1-C. Other Inspections and Fees	
1. Inspection outside of normal business hours, per hour* (minimum charge—one hour)	\$70
2. Reinspection fees, per hour	\$70
3. Inspections for which no fee is specifically indicated, per hour* (minimum charge—one-half hour)	\$70
4. Additional plan review required by changes, additions, or revisions to approved plans, per hour* (minimum charge—one-half hour)	\$70
* 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
6. Swimming pool fence enclosures	\$20
7. Residential reshingles	\$20
8. Residential resides	\$20
9. Residential window replacements with no structural modifications (Group R and U occupancies)	\$20
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 or her authorized agent, the sum of \$65 to cover the approximate cost of the procedure. Under no condition shall the sum or any part thereof be refunded for failure of the request to be approved.	
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.	

12. Residential contractor's license examination fee	\$75
13. Bond claims. An administrative fee shall be charged to cover the administrative cost of filing a claim	\$150
14. Fee for late corrections. A \$100.00 administrative fee may be charged for failure to correct violations within the time specified on a contractor's correction report.	
15. Fee for failure to request a required inspection. Where building construction work is completed without a request for an inspection, an administrative fee of \$250.00 may be charged.	

Commentary: *This is a carryover from the 2018 IRC. This inserts those fees to cover the costs of the work expended by Building Services staff which includes plan review, inspections, administering permit issuance, and department overhead. No fee increases are included for this code cycle.*

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. [Administrative citations and legal and/or civil proceedings may also be commenced.](#)

Commentary: *This is a carryover from the 2018 IRC. This clarifies that work that is commenced without the issuance of a building permit can result in the issuance of administrative citations through the code enforcement process and which could include subsequent legal proceedings.*

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

Commentary: *This is a carryover from the 2018 IRC. This clarifies that permits and inspections can be refused for a contractor whose accounts are delinquent with the City.*

R109.1.1 ~~Foundation~~ Footing inspection. Inspection of the footing 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.

Commentary: *This is a carryover from the 2018 IRC. The reference to foundation inspections is eliminated because inspections occur for the footings but do not occur prior to the pouring of foundation walls.*

R109.1.3 Floodplain inspections. For construction in flood hazard areas as established by [Table R301.2 Chapter 156: Floodplain Management](#), upon placement of the lowest floor, including *basement*, and prior to further vertical construction, the *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 ~~Section R322~~ [Chapter 156: Floodplain Management](#).

Commentary: *This is a carryover from the 2018 IRC. This is to clarify that floodplain provisions are found in the Floodplain Management Ordinance and not in the Residential Code.*

R109.1.6.1 Elevation documentation. If located in a flood hazard area, the documentation of elevations required in ~~Section R322.1.10~~ [Chapter 156: Floodplain Management](#) shall be submitted to the *building official* [floodplain administrator or his designated official](#) prior to the final inspection.

Commentary: *This is a carryover from the 2018 IRC. This is to clarify that elevation certificates are submitted to the Floodplain Administrator or his designated official, not the Building Official.*

R110.1 Use and change of occupancy. A building or structure shall not be used or occupied in whole or in part, and a *change of occupancy* [or change of use](#) of a building or structure or portion thereof shall not 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 *jurisdiction* city. Certificates presuming to give authority to violate or cancel the provisions of this code or other ordinances of the *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.](#)

Commentary: *This is a carryover from the 2018 IRC. These provisions clarify that occupancy in new dwellings is allowed to occur after final inspections from each respective division of Building Services. This directs the posting of a placard that is signed by each assigned inspector from each division of Building Services; i.e.; Building, Plumbing, Mechanical, and Electrical. The signatures designate that life safety provisions have been confirmed from each respective division of Building Services.*

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, to examine applicants for licensing, and to investigate matters brought before the board, there shall be and is hereby created a board of appeals. The *building official* shall be an ex officio member of said board but shall not have a vote on any matter before the board. ~~The board of appeals shall be appointed by the governing body and shall hold office at its pleasure.~~ Members shall be appointed by the mayor with the consent of the council and shall hold office for a term of three years. The board shall adopt rules of procedure for conducting its business, and shall render decisions and findings in writing to the appellant with a duplicate copy to the *building official* and/or the fire marshal.

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.

Commentary: This is a carryover from the 2018 IRC. Whereas the primary purpose of the Building Board of Appeals is to review interpretations of the Building and Fire Officials, these modifications include the additional responsibilities of the Board which relates to review of ordinances, review residential house moves, and review of residential licensure. This also clarifies that the members are appointed by the Mayor with the advice and consent of the Council and that any findings are referred to the appellant in writing.

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 not have authority relative to the interpretation of the administrative provisions of this code nor shall the board be empowered to waive requirements of this code.

Commentary: This is a carryover from the 2018 IRC. The purpose of the Board is to review technical determinations by the Building and Fire Code Officials, and not administrative provisions which defines the authority, establishes inspections, determines fees, etc.

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 202 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.

Commentary: This is a carryover from the 2018 IRC. Strict liability offense is inserted to clarify that it is applicable to any violation of a residential building code provision. This term brings the code in line with the current legal terminology used in other codes with regard to the prosecution of violations. With this term the prosecutor is not required to prove that code violations were intended by a defendant or were even due to negligence. It is difficult to prove such intentions or negligence in a court of law. This provision is located only in the Property Maintenance Code at the national level but is inserted into all of the adopted Building Services codes locally.

**Table R301.2
Climatic and Geographic Design Criteria**

GROUND SNOW LOAD ^a	WIND DESIGN				SEISMIC DESIGN CATEGORY ^f	SUBJECT TO DAMAGE FROM			ICE BARRIER UNDERLAYMENT REQUIRED ^b	FLOOD HAZARDS ^g	AIR FREEZING INDEX ⁱ	MEAN ANNUAL TEMP ^j
	Speed ^d (mph)	Topographic effects ^e	Special wind region ^l	Wind-borne debris zone ^m		Weathering ^a	Frost line depth ^b	Termite ^c				
40 psf	112	NO	NO	NO	A	Severe	42 inches (1067 mm)	Slight to moderate	Yes	Sioux Falls entered the regular phase of the National Flood Insurance Program on September 17, 1979.	3,000	46 degrees F

Manual J Design Criteriaⁿ

Elevation	Altitude correction factor	Coincident wet bulb	Indoor winter design dry-bulb temperature	Indoor winter design dry-bulb temperature	Outdoor winter design dry-bulb temperature	Heating temperature difference
1418	0.95	72 degrees F	70 degrees F	70 degrees F	-11 degrees F	81 degrees F
Latitude	Daily range	Indoor summer design relative humidity	Indoor summer design relative humidity	Indoor summer design dry-bulb temperature	Outdoor summer design dry-bulb temperature	Cooling temperature difference
43 degrees North	M	50% relative humidity	50% relative humidity	75 degrees F	90 degrees F	15 degrees F

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

- Where weathering requires a higher strength concrete or grade of masonry than necessary to satisfy the structural requirements of this code, the frost line depth strength required for weathering shall govern. The weathering column shall be filled in with the weathering index, “negligible,” “moderate,” or “severe” for concrete as determined from Figure R301.2(1). The grade of masonry units shall be determined from ASTM C34, ASTM C55, ASTM C62, ASTM C73, ASTM C90, ASTM C129, ASTM C145, ASTM C216, or ASTM C652.
- Where the frost line depth requires deeper footings than indicated in Figure R403.1(1), the frost line depth strength required for weathering shall govern. The jurisdiction shall fill in the frost line depth column with the minimum depth of footing below finish grade.
- 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.
- The jurisdiction shall fill in this part of the table with the wind speed from the basic wind speed map [Figure R301.2(2)]. Wind exposure category shall be determined on a site-specific basis in accordance with Section R301.2.1.4.
- The jurisdiction shall fill in this section of the table to establish the design criteria using Table 10A from ACCA Manual J or established criteria determined by the jurisdiction.
- The jurisdiction shall fill in this part of the table with the seismic design category determined from Section R301.2.2.1.

- g. The jurisdiction shall fill in this part of the table with the date of the jurisdiction's entry into the National Flood Insurance Program (date of adoption of the first code or ordinance for management of flood hazard areas); and the title and date of the currently effective Flood Insurance Study or other flood hazard study.
- h. In accordance with Sections R905.1.2, R905.4.3.1, R905.5.3.1, R905.6.3.1, R905.7.3.1, and R905.8.3.1, where there has been a history of local damage from the effects of ice damming, the jurisdiction shall fill in this part of the table with "YES." Otherwise, the jurisdiction shall fill in this part of the table with "NO."
- i. The jurisdiction shall fill in this part of the table with the 100-year return period air freezing index (BF-days) from Figure R403.3(2) or from the 100-year (99 percent) value on the National Climatic Data Center data table "Air Freezing Index-USA Method (Base 32°F)."
- j. The jurisdiction shall fill in this part of the table with the mean annual temperature from the National Climatic Data Center data table "Air Freezing Index-USA Method (Base 32°F)."
- k. In accordance with Section R301.2.1.5, where there is local historical data documenting structural damage to buildings due to topographic wind speed-up effects, the jurisdiction shall fill in this part of the table with "YES." Otherwise, the jurisdiction shall indicate "NO" in this part of the table.
- l. In accordance with Figure R301.2(2), where there is local historical data documenting unusual wind conditions, the jurisdiction shall fill in this part of the table with "YES" and identify any specific requirements. Otherwise, the jurisdiction shall indicate "NO" in this part of the table.
- m. In accordance with Section R301.2.1.2 the jurisdiction shall indicate the wind-borne debris wind zone(s). Otherwise, the jurisdiction shall indicate "NO" in this part of the table.
- n. The jurisdiction shall fill in these sections of the table to establish the design criteria using Table 1a or 1b from ACCA Manual J or established criteria determined by the jurisdiction.
- o. The jurisdiction shall fill in this section of the table using the Ground Snow Loads in Figures R301.2(3) and R301.2(4).

Commentary: Table R301.2(1) defines the minimum geographic design criteria for residential building construction. The footnotes give directions for a local jurisdiction to reference for such loading requirements such as minimum live loads due to snow, wind speed for lateral force capability, seismic zone location, etc. The additional two lines under the Manual J Design Criteria allows the City of Sioux Falls to establish the design criteria in order to assist design professionals and contractors to encourage consistent and accurate application of the code.

TABLE R301.5		
MINIMUM UNIFORMLY DISTRIBUTED LIVE LOADS (in pounds per square foot)		
USE	UNIFORM LOAD (psf)	CONCENTRATED LOAD (lb)
Uninhabitable attics without storage ^b	10	—
Uninhabitable attics with limited storage ^{b, g}	20	—
Habitable attics and attics served with fixed stairs	30	—
Balconies (exterior) and decks ^e	40	—
Fire escapes	40	—
Guards	—	200 ^{h, i}
Guard in-fill components ^f		50 ^h
Handrail ^d	200 ^h	—
Passenger vehicle garages ^a	50 ^a	2,000 ^h
Areas other than sleep areas Rooms	40	—
Sleeping areas	30	—
Stairs	40 ^c	300 ^c

For SI: 1 inch = 25.4 mm, 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 the uniformly distributed live load or a 2,000-pound concentrated load applied on an area of 4 1/2 inches by 4 1/2 inches, whichever produces the greater stresses.
- b. Uninhabitable attics without storage are those where the clear height between joists and rafters is not more than 42 inches, or where there are not two or more adjacent trusses with web configurations capable of accommodating an assumed rectangle 42 inches in height by 24 inches in width, or greater, within the plane of the trusses. This live load need not be assumed to act concurrently with any other live load requirements.
- c. Individual stair treads shall be capable of supporting the uniformly distributed live load or a 300-pound concentrated load applied on an area of 2 inches by 2 inches, whichever produces the greater stresses.
- d. A single concentrated load applied in any direction at any point along the top. For a guard not required to serve as a handrail, the load need not be applied to the top element of the guard in a direction parallel to such element.
- e. See Section R507.1 for decks attached to exterior walls.
- f. Guard in-fill components (all those except the handrail), balusters, and panel fillers shall be designed to withstand a horizontally applied normal load of 50 pounds on an area equal to 1 square foot. This load need not be assumed to act concurrently with any other live load requirement.
- g. Uninhabitable attics with limited storage are those where the clear height between joists and rafters is 42 inches or greater, or where there are two or more adjacent trusses with web configurations capable of accommodating an assumed rectangle 42 inches in height by 24 inches in width, or greater, within the plane of the trusses.

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

1. The attic area is accessed from an opening not less than 20 inches in width by 30 inches in length that is located where the clear height in the attic is not less than 30 inches.
2. The slopes of the joists or truss bottom chords are no greater than 2 ~~inches~~ units vertical in 12 units horizontal.
3. Required insulation depth is less than the joist or truss bottom chord member depth.

The remaining portions of the joists or truss bottom chords shall be designed for a uniformly distributed concurrent live load of not less than 10 pounds per square foot.

- h. Glazing used in handrail assemblies and guards shall be designed with a load adjustment factor of 4. The load adjustment 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.
- i. Where the top of a guard system is not required to serve as a handrail, the single concentrated load shall be applied at any point along the top in the vertical downward direction and in the horizontal direction away from the walking surface. Where the top of a guard is also serving as the handrail, a single concentrated load shall be applied in any direction at any point along the top. Concentrated loads shall not be applied concurrently.

Commentary: This is a carryover from the 2018 IRC. This table defines the minimum loads based on the use of a particular area or portion of the structure that must be considered for the design of the corresponding structural element for a residence. The table is consistent with ASCE 7 and the IBC. The local amendment maintains the same live load in a bedroom as any other portion of the house. The second column was added this code cycle to stay in line with the design loads specified in the IBC for concentrated loads. An example would be a vehicle with four tires should have a concentrated load on those tires as the weight is not spread out over the square footage of the vehicle.

TABLE R302.1(1)			
EXTERIOR WALLS			
EXTERIOR WALL ELEMENT		MINIMUM FIRE-RESISTANCE RATING	MINIMUM FIRE SEPARATION DISTANCE
Walls	Fire-resistance rated	1 hour—tested in accordance with ASTM E119, UL 263 or Section 703.3 of the <i>International Building Code</i> with exposure from both sides	0 feet
	Not fire-resistance rated	0 hours	≥ 5 feet
Projections	Not allowed	NA	< 2 feet
	Fire-resistance rated	1 hour on the underside, or heavy timber, or fire-retardant-treated wood ^{a, b}	≥ 2 feet to < 53 feet
	Not fire-resistance rated	0 hours	≥ 53 feet
Openings in walls	Not allowed	NA	< 3 feet
	25% maximum of wall area	0 hours	3 feet
	Unlimited	0 hours	5 feet
Penetrations	All	Comply with Section R302.4	< 3 feet
		None required	3 feet

For SI: 1 foot = 304.8 mm.

NA = Not Applicable.

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

- b. The fire-resistance rating shall be permitted to be reduced to 0 hours on the underside of the rake overhang where gable vent openings are not installed.

Commentary: This is a carryover from the 2018 IRC. This relaxes the mandate to install gypsum sheathing on the underside of a projecting element such as a roof overhang that is closer than 5 feet to a property line. The amendment would require a fire resistive membrane where a projecting element is closer than 3 feet to a property line. In addition, the 2018 IRC specified additional construction methods that are allowable versus gypsum wallboard.

R302.2.2 Common walls. Common walls separating *townhouse units* shall be assigned a fire-resistance rating in accordance with Item 1 or 2 and shall be rated for fire exposure from both sides. Common walls shall extend to and be tight against the exterior sheathing of the exterior walls, or the inside face of exterior walls without stud cavities, and the underside of the roof sheathing. The common wall shared by two *townhouse units* shall be constructed without ~~plumbing or~~ mechanical equipment, ducts or vents, other than water-filled fire sprinkler piping in the cavity of the common wall. Electrical installations shall be in accordance with ~~Chapters 34 through 43~~ the *National Electric Code*. Penetrations of the membrane of common walls for electrical outlet boxes shall be in accordance with Section R302.4. Plumbing installations shall be in accordance with the *Uniform Plumbing Code*. Membrane or through penetrations of common walls for plumbing systems shall be in accordance with Section 302.4.

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

Exception: Common walls are permitted to extend to and be tight against the inside of the exterior walls if the cavity between the end of the common wall and the exterior sheathing is filled with a minimum of two 2-inch nominal thickness wood studs.

Commentary: The majority of this is a carryover from the 2018 IRC. This reduces the required fire resistivity of a common wall between town house units from two hours to one hour, but is based upon the national model code that mandates sprinklers for all town houses. The local amendment recognizes that a reduced fire resistivity is acceptable if there is a sprinkler system installed, which is not a local code mandate but an option of the owner. This provision eliminated the penetration of the common wall by plumbing. With the capability to provide fire-stop provisions on plumbing pipe, the reference to not allow plumbing in said walls has been eliminated. Although the section has been modified locally to specify that any membrane or through penetrations are required to be fire-stopped to maintain the integrity of the common wall. The change in this code is to allow the fire-resistive wall stop at the interior of exterior wall provided it is fire blocked with two 2-inch nominal thickness of wood.

R302.2.3 Continuity. The fire-resistance-rated wall or assembly separating townhouse units 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 a deck that have a fire separation distance of less than 3 feet (914 mm) to a common property line shall have a 1-hour fire rating with exposure from both sides with no openings allowed therein that extends at least 30 inches (762 mm) above the projection.

Commentary: *This is a carryover from the 2018 IRC. This is intended to clarify that when one side of a town house extends past a common wall between units, the extended wall and/or projecting element is required to be of a fire-resistive construction consistent with location on property provisions.*

R302.3 Two-family dwellings. Dwelling units in two-family dwellings shall be separated from each other by wall and floor assemblies having not less than a 1-hour fire-resistance rating where tested in accordance with ASTM E119, UL 263, or Section 703.2.2 of the *International Building Code*. Such separation shall be provided regardless of whether a lot line exists between the two dwelling units or not. Fire-resistance-rated floor/ceiling and wall assemblies shall extend to and be tight against the exterior wall, and wall assemblies shall extend from the foundation to the underside of the roof sheathing.

Exception: 1. A fire-resistance rating of 1/2 hour shall be permitted in buildings equipped throughout with an automatic sprinkler system installed in accordance with Section P2904.

~~2. Wall assemblies need not extend through attic spaces where the ceiling is protected by not less than 5/8-inch (15.9 mm) Type X gypsum board, an attic draft stop constructed as specified in Section R302.12.1 is provided above and along the wall assembly separating the dwellings and the structural framing supporting the ceiling is protected by not less than 1/2-inch (12.7 mm) gypsum board or equivalent.~~

Commentary: *This is a new provision in the 2021 IRC. Exception 2 has been deleted locally as it was felt that the 1-hour fire-resistive wall should continue to the bottom of the roof sheathing on a two-family dwelling unit. In previous code additions, this would have required a 2-hour fire-resistive wall and fire-retardant-treated sheathing on each side of said fire-resistive wall for a minimum of 4 feet. It was felt that this is acceptable for the electrical which allows only one service to a structure since in the NEC it was approved to require an emergency disconnect for each service.*

R302.13 Fire protection of floors. Not adopted by the city.

Commentary: *This is a carryover from the 2018 IRC. The national provision requiring all floor assemblies consisting of light frame construction to be protected on the underside*

continues to be eliminated locally. This would have required a homeowner who chooses to finish a basement at a later date to remove the covering to accommodate mechanical, electrical, and plumbing systems.

R303.5.1 Intake openings. Mechanical and gravity outdoor air intake openings shall be located not less than 10 feet (3048 mm) from any hazardous or noxious contaminant, such as vents, chimneys, plumbing vents, streets, alleys, parking lots, and loading docks.

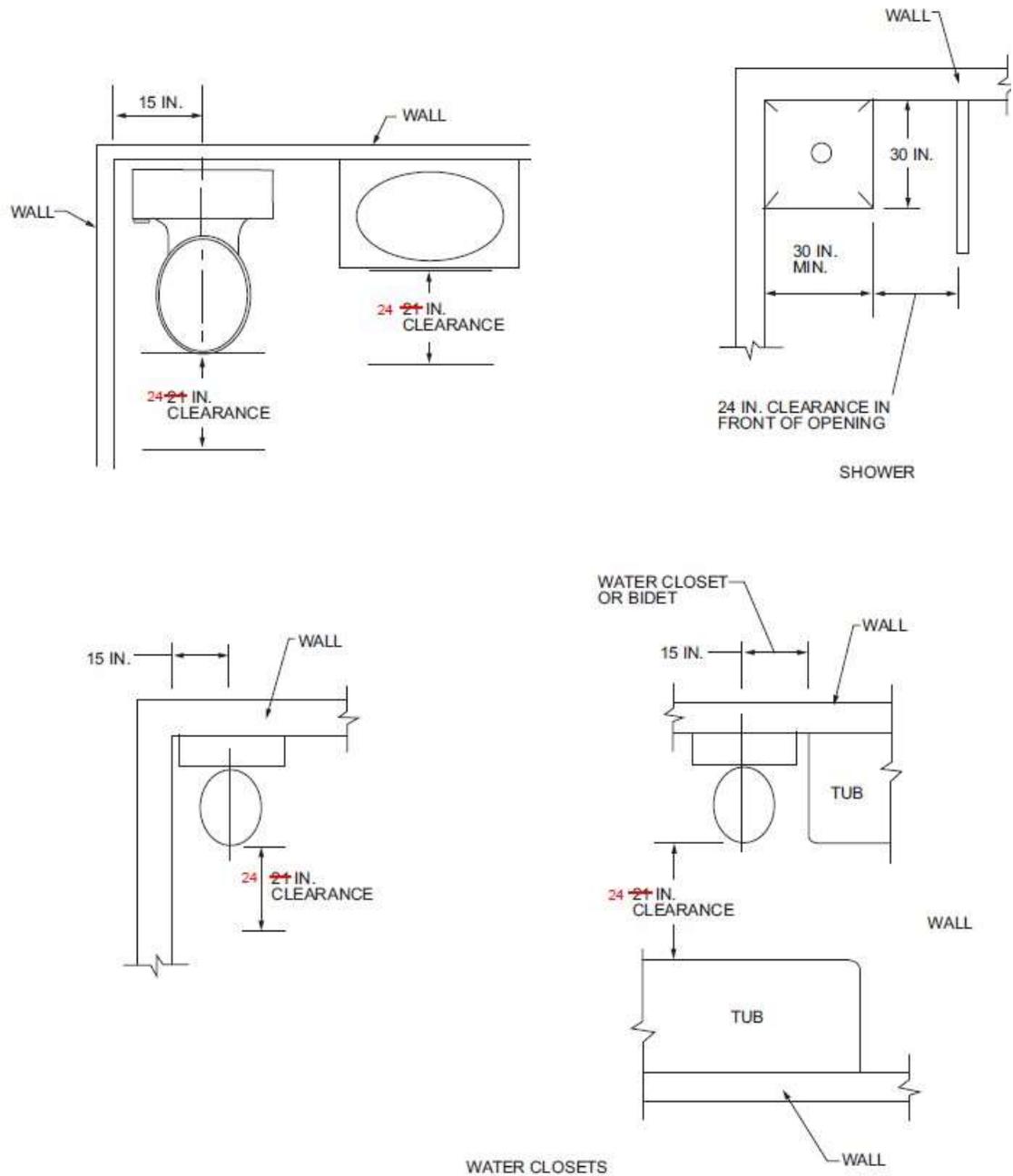
For the purpose of this section, the exhaust from *dwelling* unit toilet rooms, bathrooms, and kitchens shall not be considered as hazardous or noxious.

Exceptions:

1. The 10-foot (3,048 mm) separation is not required where the intake opening is located 3 feet (914 mm) or greater below the contaminant source.
2. Vents and chimneys serving fuel-burning appliances shall be terminated in accordance with the applicable provisions of Chapters 18 and 24.
3. Clothes dryer exhaust ducts shall be terminated in accordance with Section M1502.3.
4. For equipment replacements on existing structures, gravity outdoor intake openings for combustion air shall be located a minimum of 3 feet (914 mm) from any hazardous or noxious contaminant.

Commentary: This is a carryover from the 2018 IRC. The 10-foot distance is reduced to 3 feet in existing conditions because of the impracticality of existing space limitations.

R307.1 Space required. Fixtures shall be spaced in accordance with Figure R307.1, ~~and in accordance with the requirements of Section P2705.1.~~



For SI: 1 inch = 25.4 mm.

**FIGURE R307.1
MINIMUM FIXTURE CLEARANCES**

Commentary: This is a carryover from the 2018 IRC. The dimensions in front of the plumbing fixtures has been changed to coincide with the required fixture clearance required by the UPC which is adopted by the state.

R308.4.2 Glazing adjacent to doors. Glazing in an individual fixed or operable panel adjacent to a door shall be considered to be a hazardous location where the bottom exposed edge of the glazing is less than 60 inches (1,524 mm) above the floor or walking surface and it meets either of the following conditions:

1. Where the glazing is within 24 inches (610 mm) of either side of the door in the plane of the door in a closed position.
2. Where the glazing is on a wall ~~less than 180 degrees (3.14 rad) from~~ perpendicular to the plane of the door in a closed position and within 24 inches (610 mm) of the hinge side of an in-swinging door.

Exceptions:

1. Decorative glazing.
2. Where there is an intervening wall or other permanent barrier between the door and the glazing.
3. Where access through the door is to a closet or storage area 3 feet (914 mm) or less in depth. Glazing in this application shall comply with Section R308.4.3.
4. Glazing that is adjacent to the fixed panel of patio doors.

Commentary: This is a carryover from the 2018 IRC. The language in this section changed in the 2018 IRC to allow other than safety glazing on a wall less than 180 degrees. It is felt that if a person was standing off to the side of the door they could be pushed into this glazing, causing serious injury.

R309.5 Fire sprinklers. Not adopted by the city.

Commentary: This is a carryover from the 2018 IRC. This provision has been deleted because South Dakota Codified Law does not allow a county or municipality to mandate automatic fire extinguishers in town houses or one- or two-family dwellings and their accessory structures.

R310.2.1 Minimum size. Emergency and escape rescue openings shall have a net clear opening of not less than ~~5.7~~ 5.0 square feet (~~0.530 m²~~ 0.465 m²).

~~**Exception:** The minimum net clear opening for grade floor emergency escape and rescue openings shall be 5 square feet (0.465 m²).~~

R310.2.3 Maximum height from floor. Emergency escape and rescue openings shall have the bottom of the clear opening not greater than ~~44~~ 48 inches (~~1118 mm~~ 1,219 mm) above the floor.

R310.4.2 Ladder and steps. Area wells with a vertical depth greater than ~~44~~48 inches (~~1118 mm~~) (1,219 mm) shall be equipped with an approved, permanently affixed ladder or steps. The ladder or steps shall not be obstructed by the emergency escape and rescue opening where the window or door is in the open position. Ladders or steps required by this section shall not be required to comply with Section R311.7.

Commentary: This is a carryover from the 2018 IRC. These three provisions maintain local modifications to allow sill heights of windows and the height of a window well where a ladder is required to be increased from 44 inches to 48 inches. Also, instead of having two standards for the openable area of an egress window, a 5-square-foot clear openable area is deemed acceptable locally.

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

Exception: The landing or floor on the exterior side shall be not more than ~~7 3/4~~ 8 inches (~~196 mm~~) (202 mm) below the top of the threshold provided that the door does not swing over the landing or floor.

Where 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 at other exterior doors. Doors other than the required egress door shall be provided with landings or floors not more than ~~7 3/4~~ 8 inches (~~196 mm~~) (202 mm) below the top of the threshold.

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

R311.7.5.1 Risers. The riser height shall be not more than ~~7 3/4~~ 8 inches (~~196 mm~~) (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). Risers shall be vertical or sloped from the underside of the nosing of the tread above at an angle not more than 30 degrees (0.51 rad) from the vertical. ~~At open risers, openings located more than 30 inches (762 mm), as measured vertically, to the floor or grade below shall not permit the passage of a 4-inch diameter (102 mm) sphere.~~ Open risers are permitted.

Exceptions:

1. The opening between adjacent treads is not limited on spiral stairways.
2. The riser height of spiral stairways shall be in accordance with Section R311.7.10.1.

Commentary: This is a carryover from the 2018 IRC. These three provisions maintain local modifications to allow the riser height to be a maximum of 8 inches. This also allows open risers whereas the IRC would require no more than a 4-inch opening between stair treads.

R311.7.8 Handrails. Handrails shall be provided on not less than one side of each flight of stairs with four or more risers.

Exception: When the landing at the top of the stair is not required to have a guardrail.

Commentary: There are times when a handrail is required and a guardrail is not required. It doesn't make sense to require a handrail in these locations. The handrail can still be installed it just won't be required by code.

R311.7.8.4 Continuity. Handrails for stairways shall ~~be continuous~~ 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 toward a wall, guard walking surface continuous to itself, or terminate to a post.

Exceptions:

1. Handrails continuity shall be permitted to be interrupted by a newel post at a turn. ~~in a flight with winders, at a landing, or over the lowest tread.~~
2. The use of a volute, turnout, ~~or~~ starting easing, or starting newel shall be allowed over the lowest tread and over the top landing.

Commentary: This is a carryover from the 2018 IRC with some language cleanup and clarification. By replacing continuous with extend, it allows for the flexibility for an offset handrail that may terminate at a floor/wall intersection.

R311.7.8.5 Grip size. 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 not less than 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 of not less than 4 inches (102 mm) and not greater than 6 1/4 inches (160 mm) and a cross section of not more than 2 1/4 inches (57 mm). Edges shall have a radius of not less than 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 3/4 inch (19 mm) measured vertically from the tallest portion of the profile and have a depth of not less than 5/16 inch (8 mm) within 7/8 inch (22 mm) below the widest portion of the profile. This required depth shall continue for not less than 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 width of the handrail above the recess shall be not less than 1 1/4 inches (32 mm) and not more than 2 3/4 inches (70 mm). Edges shall have a radius of not less than 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.

Commentary: This is a carryover from the 2018 IRC. The exception recognizes that a flat or horizontal 2X member on an exterior deck provides an adequate gripping surface.

R312.1.3 Opening limitations. Required *guards* shall not have openings from the walking surface to the required *guard* height that allow passage of a sphere 4₅ inches (~~102 mm~~) (153 mm) in diameter.

Exceptions:

1. The triangular openings at the open side of 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 side of stairs shall not have openings that allow passage of a sphere 4³/₈ inches (111 mm) in diameter.~~

Commentary: This is a carryover from the 2018 IRC. This maintains a 5-inch spacing between intermediates on an open handrail or guardrail instead of the more restrictive 4-inch spacing.

R312.2.1 Window opening height. In dwelling units, where the bottom of the clear opening of an operable window opening is located less than 24 inches (610 mm) above the finished floor and greater than 72 inches (1,829 mm) above the finished grade or other surface below on the exterior of the building, the operable window shall comply with one of the following:

1. Operable window openings will not allow a 4₅-inch-diameter (102 mm) sphere to pass through where the openings are in their largest opened position.
2. Operable windows are provided with window opening control devices or fall prevention devices that comply with ASTM F2090.

Commentary: This change was made locally to maintain consistency with the guard requirements on a typical guardrail. A 5-inch spacing between intermediates on an open handrail or guardrail instead of the more restrictive 4-inch spacing.

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

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

Not adopted by the city.

R313.1.1 Design and installation. ~~When an automatic~~ ~~Automatic~~ sprinkler systems for townhouses ~~is installed, it~~ shall be designed and installed in accordance with Section P2904 or NFPA 13D.

R313.2 One- and two-family dwellings automatic fire sprinkler systems. ~~An automatic sprinkler system shall be installed in one- and two-family dwellings.~~

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

Not adopted by the city.

R313.2.1 Design and installation. ~~When automatic~~ ~~Automatic~~ sprinkler systems ~~are installed, it~~ shall be designed and installed in accordance with Section P2904 or NFPA 13D.

Commentary: This is a carryover from the 2018 IRC. These provisions have been deleted because South Dakota state law does not allow a county or municipality to mandate automatic fire extinguishers in town houses or one- and two-family dwellings and their accessory structures. The provisions that define the standard for residential automatic fire-extinguishing systems, a minimum NFPA-13 D or equivalent, is specified for a building owner that chooses to install a residential sprinkler system.

R314.2.2 Alterations, repairs, and additions. Where alterations, repairs or additions requiring a permit occur ~~with a valuation of more than \$1,000~~, the individual dwelling unit shall be equipped with smoke alarms located as required for new dwellings.

Exceptions:

1. Work involving the exterior surfaces of dwellings, such as the replacement of roofing or siding, the addition or replacement of windows or doors, or the addition of a porch or deck.
2. Installation, alteration, or repairs of plumbing or mechanical systems.

Commentary: This is a carryover from the 2018 IRC. This maintains the requirement of a \$1000 threshold to not require the installation of smoke detectors for small interior projects. There were minor language changes on the opening statement.

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 and 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. Smoke alarms shall be installed not less than 3 feet (914 mm) horizontally from the door or opening of a bathroom that contains a bathtub or shower unless this would prevent placement of a smoke alarm required by this section.

4. Not less than 3 feet (914 mm) horizontally from the door or opening of a bathroom that contains a bathtub or shower unless this would prevent placement of a smoke alarm required by this section.
5. In the hallway and in the room open to the hallway in dwelling units where the ceiling height of a room open to a hallway serving bedrooms exceeds that of the hallway by 24 inches (610mm) or more.

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.

Commentary: *This section has changed where Item 5 has caught up to what we have been doing in previous years. The exception will stay to clarify where smoke detectors shall be installed on a cathedral or vaulted ceiling located adjacent to bedrooms or a hallway serving bedrooms.*

R314.4 Interconnection. Where more than one smoke alarm is required to be installed within an individual dwelling unit in accordance with Section R314.3, 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 *dwelling unit*. Physical interconnection of smoke alarms shall not be required where listed wireless alarms are installed and all alarms sound upon activation of one alarm.

Exception: Interconnection of smoke alarms in existing areas shall not be required where alterations or repairs do not result in removal of interior wall or ceiling finishes exposing the structure, unless there is an attic, crawl space, or basement available that could provide access for interconnection without the removal of interior finishes.

Commentary: *This is a carryover from the 2018 IRC. It is understandable the advantage of having the smoke detectors interconnected; however, it is more important to make sure that smoke alarms are installed.*

R315.2.2 Alterations, repairs, and additions. Where *alterations, repairs, or additions* requiring a permit occur with a valuation of more than \$1,000, the individual *dwelling unit* shall be equipped with carbon monoxide alarms located as required for new *dwellings*.

Exceptions:

1. 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.
2. Installation, alteration, or repairs of plumbing systems.

3. Installation, alteration, or repairs of mechanical systems that are not fuel fired.

Commentary: This maintains the requirement of a \$1,000 threshold to not require the installation of carbon monoxide alarms for small interior projects. The third exception was added this year so that if a new fuel-fired furnace is installed, a carbon monoxide detector will be required to be installed.

R326.3 Story above grade plane. A habitable attic shall be considered a story above grade plane.

Exceptions: A habitable attic shall not be considered to be a story above grade plane provided that the habitable attic meets all the following:

1. The aggregate area of the habitable attic is either of the following:
 - 1.1 Not greater than one-third of the floor area of the story below.
 - 1.2 Not greater than one-half of the floor area of the story below where the habitable attic is located within a dwelling unit equipped with a fire sprinkler system in accordance with Section P2904.
2. The occupiable space is enclosed by the roof assembly above, knee walls, if applicable, on the sides and the floor-ceiling assembly below.
3. The floor of the habitable attic does not extend beyond the exterior walls of the story below.
- ~~4. Where a habitable attic is located above a third story, the dwelling unit or townhouse unit shall be equipped with a fire sprinkler system in accordance with Section P2904.~~

Commentary: This is a new section in the 2021 IRC. Exception 4 needed to be deleted because South Dakota state law does not allow a county or municipality to mandate automatic fire extinguishers in town houses or one- and two-family dwellings and their accessory structures.

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.
2. Constructed in accordance with Section R403.3.
3. Constructed in accordance with ASCE 32.
4. Erected on solid rock.

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

Exceptions:

1. Protection of freestanding *accessory structures* with an area of 1,500 ~~600~~ square feet (139 m²) (~~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.

Commentary: *This is a carryover from the 2018 IRC. This increases the allowable area of a non-occupied building from 600 to 1,500 square feet before there is a requirement for the footings and foundations to be frost protected. This would allow up to a five-stall garage to be located on a floating slab.*

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 3040 pounds per square foot (~~1.44 kPa~~) (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 R802.5.

Commentary: *The referenced live load of a bedroom floor is changed from 30 to 40 psf to be consistent with the change that was made to Table R301.5, Minimum Uniformly Distributed Live Load. The local amendment maintains the same live load in a bedroom as any other portion of the house.*

R506.2.3 Vapor retarder. A minimum ~~10-mil~~ 6-mil (~~0.010~~ 0.006 inch; ~~0.254~~ 0.152 mm) vapor retarder conforming to ASTM E1745 Class A requirements with joints lapped not less than 6 inches (152 mm) shall be placed between the concrete floor slab and the base course or the prepared subgrade where a base course does not exist.

Exception: The vapor retarder is not required for the following:

1. Garages, utility buildings, and other unheated accessory structures.
2. For unheated storage rooms having an area of less than 70 square feet (6.5 m²) and carports.
3. Driveways, walks, patios, and other flatwork not likely to be enclosed and heated at a later date.
4. Where approved by the building official, based on local site conditions.

Commentary: This is a change in the 2021 IRC. It was felt that the 6-mil poly under the concrete in our locality is sufficient; therefore, it was changed to reflect what has been in the IRC in previous additions.

R507.3 Footings. Decks shall be supported on concrete footings or other approved structural systems designed to accommodate all loads in accordance with Section R301. Deck footings shall be sized to carry the imposed loads from the deck structure to the ground as shown in Figure R507.3.

Exceptions: Exception: Decks not supported by a dwelling need not be provided with footings that extend below the frost line.

- ~~1. Footings shall not be required for free-standing decks consisting of joists directly supported on grade over their entire length.~~
- ~~2. Footings shall not be required for free-standing decks that meet all of the following criteria:
 - ~~2.1 The joists bear directly on precast concrete pier blocks at grade without support by beams or posts.~~
 - ~~2.2 The area of the deck does not exceed 200 square feet (18.6 m²).~~
 - ~~2.3 The walking surface is not more than 20 inches (508 mm) above grade at any point within 36 inches (914 mm) measured horizontally from the edge.~~~~

Commentary: This is a change in the 2021 IRC. This was moved from Section R403.1.4.1 so that it is more in line with the 2021 IRC.

R602.10.1.2 Location of braced wall lines and permitted offsets. Each *braced wall line* shall be located such that no more than two-thirds of the required *braced wall panel* length is located to one side of the *braced wall line*. Braced wall panels shall be permitted to be offset up to 4 feet (1,219 mm) from the designated *braced wall line*. Braced wall panels parallel to a *braced wall line* shall be offset not more than 4 feet (1,219 mm) from the designated *braced wall line* location as shown in Figure R602.10.1.1.

Exterior walls parallel to a *braced wall line* shall be offset not more than 4 feet (1,219 mm) from the designated *braced wall line* location as shown in Figure R602.10.1.1.

Interior walls used as bracing shall be offset not more than 4 feet (1,219 mm) from a *braced wall line* through the interior of the building as shown in Figure R602.10.1.1.

Exception: The offset 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 (18.6 m²).

Commentary: *This section was rewritten to clarify the intentions of how braced wall lines are to be allowed. The local exception stayed in tack to be able to maintain the capability to build a relatively small addition without requiring structural engineering or conventional wind bracing capability.*

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

1. There shall be not more than three stories above the top of a concrete or masonry foundation or basement wall. Permanent wood foundations shall not be permitted.
2. Floors shall not cantilever more than 24 inches (607 mm) beyond the foundation or bearing wall below.
3. Wall height shall not be greater than ~~10-12~~ feet (~~3,048 mm~~ 3,658 mm).
4. The building shall have a roof eave-to-ridge height of ~~15~~ 20 feet (~~4,572 mm~~ 6,096 mm) or less.
5. Exterior walls shall have gypsum board with a minimum thickness of 1/2 inch (12.7 mm) installed on the interior side fastened in accordance with Table R702.3.5.
6. The structure shall be located where the ultimate design wind speed is less than or equal to 130 mph (58 m/s); and the exposure category is B or C.
7. The structure shall be located in Seismic Design Category A, B_s or C for detached one- and two-family dwellings or Seismic Design Category A or B for town_s houses.
8. Cripple walls shall not be permitted in three-story buildings.

Commentary: *This is a carryover from the 2018 IRC. This section provides for a simplified prescriptive procedure for bracing wall lines for houses. This simplified set of rules avoids the complexity of changes made to braced wall panels and wall lines that was introduced in the earlier editions of the IRC. Locally, this method has been expanded to wall heights of 12 feet and eave to ridge heights of 20 feet or less.*

R806.2 Minimum vent area. The minimum net free ventilating area shall be 1/150 of the area of the vented space.

Exception: The minimum net free ventilation area shall be 1/300 of the vented space provided ~~both~~ one or more of the following conditions are met:

1. In Climate Zones 6, 7_s and 8, a Class I or II vapor retarder is installed on the warm-in-winter side of the ceiling.

2. Not less than 40 percent and not more than 50 percent of the required ventilating area is provided by ventilators located in the upper portion of the attic or rafter space. Upper ventilators shall be located not more than 3 feet (914 mm) below the ridge or highest point of the space, measured vertically. The balance of the required ventilation provided shall be located in the bottom one-third of the *attic* space. Where the location of wall or roof framing members conflicts with the installation of upper ventilators, installation more than 3 feet (914 mm) below the ridge or highest point of the space shall be permitted.

Commentary: This is a carryover from the 2018 IRC. The word both was exchanged for one or more as it has never been the practice to install a vapor barrier on the ceiling as years ago this was done and it created moisture problems in the home itself.

N1101.2 (R101.3) Intent. This chapter shall regulate the design and construction of *buildings* for the effective use and conservation of energy over the useful life of each *building*. Additions, alterations, renovations, or repairs to an existing building, building system, or portion thereof may conform to the provisions of this code as they relate to new construction without requiring the unaltered portion(s) of the existing building or building system to comply with this code. This chapter is intended to provide flexibility to permit the use of innovative approaches and techniques to achieve this objective. This chapter is not intended to abridge safety, health or environmental requirements contained in other applicable codes or ordinances.

Commentary: This is a carryover from the 2018 IRC. This provision mandates that any additions, alterations, or repairs comply with the same energy efficiency standards as is required for new construction, but goes on to clarify certain building elements that are exempted. This amendment clarifies that the energy efficiency standards apply to new construction but takes away the mandatory language to provide an option in those cases when it is not practical to maintain more stringent requirements onto existing construction.

N1101.13 (R401.2) Application. Not adopted by the city.

Commentary: This section is not being adopted as it requires more energy requirements than just providing the requirements around the building thermal envelope.

N1101.14 (R401.3) Certificate. Not adopted by the city.

Commentary: This section is not being adopted as it requires virtually the same certificate that is required by South Dakota Codified Law 11-10-10 Builder's energy efficiency disclosure statement.

Table N1102.1.3 (R402.1.3)										
Insulation Minimum R-Values and Fenestration Requirements by Component ^a										
Climate Zone	Fenestration U-Factor ^{b,i}	Skylight ^b U-Factor	Glazed Fenestration SHGC ^{b, e}	Ceiling R-Value ^k	Wood Frame Wall R-Value ^g	Mass Wall R-Value ^h	Floor R-Value	Basement ^{c,g} Wall R-Value	Slab ^d R-Value & Depth	Crawl Space ^{c,g} Wall R-Value
6	0.30 <u>0.32</u>	0.55	NR	60 <u>49</u>	20 + 5ci or 13 + 10ci or 0 + 20 <u>20 or 13 + 5h</u>	15/ 20 <u>19</u>	30 ^l	15ci or 19 or 13 + 5ci <u>10/13</u>	10ci, 4 ft	15ci or 19 or 13 + 5ci <u>10/13</u>
For SI: 1 foot = 304.8 mm NR = Not Required.										
a. R-values are minimums. U-factors and SHGC are maximums. Where insulation is installed in a cavity which is less than the label or design thickness of the insulation, the installed R-value of the insulation shall not be less than the R-value specified in the table.										
b. The fenestration U-factor column excludes skylights. The SHGC column applies to all glazed fenestration. <i>Exception:</i> In Climate Zones 0 through 3, skylights shall be permitted to be excluded from glazed fenestration SHGC requirements provided that SHGC for such skylights does not exceed 0.30.										
c. "5ci or 13" means R-5 continuous insulation (ci) on the interior or exterior surface of the wall or R-13 cavity insulation on the interior side of the wall. "10ci or 13" means R-10 continuous insulation (ci) on the interior or exterior surface of the wall or R-13 cavity insulation on the interior side of the wall. "15ci or 19 or 13 + 5ci" means R-15 continuous insulation (ci) on the interior or exterior surface of the wall; or R-19 cavity insulation on the interior side of the wall; or R-13 cavity insulation on the interior of the wall in addition to R-5 continuous insulation on the interior or exterior surface of the wall. <u>"10/13" means R-10 continuous insulation on the interior or exterior of the home or R-13 cavity insulation on the interior of the basement wall. "15/19" means R-15 continuous insulation on the interior or exterior of the home or R-19 cavity insulation on the interior of the basement wall. Alternatively, compliance with "15/19" shall be R-13 cavity insulation on the interior of the basement wall plus R-5 continuous insulation on the interior or exterior of the home.</u>										
d. R-5 insulation shall be provided under the full slab area of a heated slab in addition to the required slab edge insulation R-value for slabs, as indicated in the table. The slab edge insulation for heated slabs shall not be required to extend below the slab.										
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 N1101.7 and Table N1101.7.										
g. The first value is cavity insulation; the second value is continuous insulation. Therefore, as an example, "13 + 5" means R-13 cavity insulation plus R-5 continuous insulation.										
h. Mass walls shall be in accordance with Section N1102.2.5. The second R-value applies where more than half of the insulation is on the interior of the mass wall.										
i. A maximum U-factor of 0.32 shall apply in Climate Zones 3 through 8 to vertical fenestration products installed in buildings located either: 1. Above 4,000 feet in elevation; or 2. In windborne debris regions where protection of openings is required by Section R301.2.1.2.										
<u>j. Alternatively, insulation sufficient to fill the framing cavity providing not less than an R-value of R-19.</u>										
<u>k. 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.</u>										

Commentary: This table changed in the 2021 IRC; however, it is the desire to keep the energy requirements the same that have been utilized since the adoption of the 2009 IRC.

N1102.2.8.1 (R402.2.8.1) Basement wall insulation installation. Where basement walls are insulated, the insulation shall be installed from the top of the basement wall down to 10 feet (3,048 mm) below grade or to the basement floor, whichever is less.

Exception: Exterior basement walls of enclosed mechanical rooms.

Commentary: This is a carryover from the 2018 IRC. The HBA requested that the thermal envelope not extend into an enclosed mechanical room in a basement due to space limitations, and that there is a redundancy of insulating the walls when outside air is introduced into the area for combustion air from the exterior.

N1102.4.1.2 (R402.4.1.2) Testing. Not adopted by the city.

N1102.4.1.3 (R402.4.1.3) Leakage rate. Not adopted by the city.

Commentary: This is a carryover from the 2018 IRC. This provision requires the testing of a new dwelling unit to demonstrate the building's air tightness and specifies the air leakage depending on the climate zone. The HBA considered such a test as an unwarranted cost to the homeowner and requested that the mandate be deleted.

N1102.4.4 (R402.4.4) Rooms containing fuel-burning appliances. Not adopted by the city.

Commentary: This is a carryover from the 2018 IRC. This provision to insulate a mechanical room where an outside combustion air opening is provided to the mechanical room was not supported by the HBA.

N1102.4.6 (R402.4.6) Electrical and communication outlet boxes (air-sealed boxes). Not adopted by the city.

Commentary: This is a new provision in the 2021 IRC. It requires electrical and communication outlet boxes to meet certain air leakage requirements and it is felt that this is not necessary at this time.

N1103.3.1 (R403.3.1) Ducts located outside conditioned space. Supply and return ducts located outside *conditioned space* shall be insulated to an *R*-value of not less than R-8 for ducts 3 inches (76 mm) in diameter and larger and not less than R-6 for ducts smaller than 3 inches (76 mm) in diameter. ~~Ducts buried beneath a building shall be insulated as required by this section or have an equivalent thermal distribution efficiency. Underground ducts utilizing the thermal distribution efficiency method shall be listed and labeled to indicate the *R*-value equivalency.~~

Commentary: This is a new provision in the 2021 IRC. It is felt that insulating the underground duct will significantly increase the cost of the affordable houses that are using this method.

N1103.3.5 (R403.3.5) Duct testing. Not adopted by the city.

Commentary: This is a carryover from the 2018 IRC. The testing of duct sealing in a new house would create an expense that is felt should not be incurred on a new home. This maintains a local amendment to visually inspect for air leakage instead of having a testing and balancing company perform the test.

N1103.5 (R403.5) Service hot water systems. Energy conservation measures for service hot water systems shall be in accordance with ~~Sections N1103.5.1 through N1103.5.3~~ [the plumbing code](#).

Commentary: This is a carryover from the 2018 IRC. This reverts any insulation of hot water services within a dwelling to the Plumbing Code.

N1103.6.3 (R403.6.3) Testing. Not adopted by the city.

Commentary: This is a new provision that requires the testing of the whole-dwelling mechanical ventilation system in a new dwelling unit to demonstrate that the system installed in accordance of the minimum ventilation flow rates required.

N1104.1 (R404.1) Lighting equipment (Mandatory). Not adopted by the city.

Commentary: This provision now requires all lighting fixtures to contain only high-efficacy lighting sources, whereas in the previous code cycles it required only 90 percent of the lighting fixtures to contain only high-efficiency lamps. It was determined that this is an area that should be determined by the homeowner on how efficient the lamps should be.

N1109.2 (R501.2) Compliance. Additions, alterations, repairs or changes of occupancy to, or relocation of, an existing *building*, *building* system or portion thereof ~~shall~~ [may](#) comply with Sections [N1110](#), [N1111](#), [N1112s](#), or [N1113](#), respectively, in this code. Changes where unconditioned space is changed to *conditioned space* shall comply with Section [N1110](#).

N1110.1 (R502.1) General. Additions to an existing *building*, *building* system or portion thereof ~~shall~~ [may](#) conform to the provisions of this chapter as they relate to new construction without requiring the unaltered portion of the existing *building* or *building* system to comply with this chapter. Additions shall not create an unsafe or hazardous condition or overload existing *building* systems. An *addition* shall be deemed to comply with this chapter where the *addition* alone complies, where the existing *building* and *addition* comply with this chapter as a single *building*, or where the *building* with the *addition* does not use more energy than the existing *building*. Additions shall be in accordance with [Sections N1110.2](#) or [N1110.3](#).

N1111.1 (R503.1) General. Alterations to any *building* or structure ~~shall~~ [may](#) comply with the requirements of the code for new construction, without requiring the unaltered portions of the existing *building* or *building* system to comply with this chapter. Alterations shall be such that the existing *building* or structure is not less conforming with the provisions of this chapter than the existing *building* or structure was prior to the *alteration*.

Alterations shall not create an unsafe or hazardous condition or overload existing *building* systems. *Alterations* shall be such that the existing *building* or structure does not use more energy than the existing *building* or structure prior to the *alteration*. *Alterations* to existing *buildings* shall comply with Sections N1111.1.1 through N1111.1.4.

N1112.1 (R504.1) *Buildings*, structures, and parts thereof ~~shall~~ may be repaired in compliance with Section N1109.3 and this section. Work on nondamaged components necessary for the required repair of damaged components shall be considered to be part of the *repair* and shall not be subject to the requirements for *alterations* in this chapter. Routine maintenance required by Section N1109.3, ordinary *repairs* exempt from *permit*, and abatement of wear due to normal service conditions shall not be subject to the requirements for *repairs* in this section.

N1113.1 (R505.1) General. Any space that is converted to a *dwelling unit* or portion thereof from another use or occupancy ~~shall~~ may comply with this chapter.

Exception: Where the simulated performance option in Section N1105 is used to comply with this section, the annual energy cost of the *proposed design* is permitted to be 110 percent of the annual energy cost allowed by Section N1105.2.

Commentary: *These last five amendments were changed to clarify that the energy efficiency standards apply to new construction and not where additions, alterations, repairs, changes of occupancy to, or relocation of an existing building takes place.*

M1305.1.3.1 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 ~~3~~ 3 1/2 inches (~~76-38~~ 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.

Commentary: *This is a carryover from the 2018 IRC. This carries over an appliance support slab at 1 1/2 inches in height to be consistent with pre-manufactured products that are available locally.*

M1305.1.3.3 Electrical requirements. A luminaire controlled by a switch located at the required passageway opening and a receptacle outlet shall be installed at or near the *appliance* location in accordance with ~~Chapter 39~~ National Electric Code. Exposed lamps shall be protected from damage by location or lamp guards.

Commentary: *Chapter 39 is not adopted in this code; therefore, it is now a reference back to the National Electric Code.*

M1502.4.2 Duct installation. Exhaust ducts shall be supported at ~~12-4~~ 4-foot intervals (3,658 mm) and shall be secured in place. The insert end of the duct shall extend into the adjoining duct or fitting in the direction of airflow. Exhaust duct joints shall be sealed in accordance with Section M1601.4.1 ~~and shall be mechanically fastened~~. Ducts shall not be joined with screws or similar fasteners that protrude ~~more than 1/8-inch~~ into the inside of the duct. Where dryer

exhaust ducts are enclosed in wall or ceiling cavities, such cavities shall allow the installation of the duct without deformation.

Commentary: *This is a carryover from the 2018 IRC. This provision is inconsistent with the other portions of the IMC, IFGC, and the fuel gas provision of the residential code. Any protrusion of a screw into a clothes dryer exhaust would catch lint and create a fire hazard.*

M1504.2 Duct length. The length of exhaust and supply ducts used with ventilating equipment shall not exceed the lengths determined in accordance with Table M1504.2 [as revised](#).

~~**Exception:** Duct length shall not be limited where the duct system complies with the manufacturer’s design criteria or where the flow rate of the installed ventilating equipment is verified by the installer or approved third party using a flow hood, flow grid or other airflow measuring device.~~

<u>Table M1504.2</u>					
<u>Duct Size</u>					
<u>Fan airflow rating CFM</u>	<u>0–80</u>	<u>81–125</u>	<u>126–200</u>	<u>201–300</u>	<u>Over 300</u>
<u>Minimum duct diameter (inches)</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>	<u>8</u>

Commentary: *This is a carryover from the 2018 IRC. Table 1504.2 has been revised locally because the table in the IRC that references duct length will be difficult to use and enforce. In addition, local amendments limit the allowable length of flexible duct to 14 feet.*

M1504.3 Exhaust openings. Air exhaust openings shall terminate as follows:

1. Not less than 3 feet (914 mm) from property lines.
2. Not less than 3 feet (914 mm) from gravity air intake openings, operable windows, and doors.
3. Not less than 10 feet (3,048 mm) from mechanical air intake openings except where the exhaust opening is located not less than 3 feet (914 mm) above the air intake opening. Openings shall comply with Sections R303.5.2 and R303.6.
4. [Minimum clearance between the exhaust and intake openings of an HRV/PRV system shall be in accordance with the manufacturer’s installation instructions.](#)

Commentary: *This is a carryover from the 2018 IRC. There is no risk of an exhaust termination to the outside adjacent to a non-operable opening. HRV/PRV systems are UL listed, tested, and engineered designed pieces of equipment and this clarifies that the manufacturer’s installation instructions are applicable.*

M1505.4 Whole-house mechanical ventilation system. Whole-house mechanical ventilation systems shall be designed in accordance with Sections M1505.4.1 through M1505.4.4.

Exceptions:

1. A bathroom exhaust fan shall operate continuously at a minimum rate of 20 cfm. A 6-inch-round passive makeup air shall be provided. If opening directly into the occupied space, such opening shall not decrease the comfort conditions of the occupied space. Such opening may also be used to provide combustion air for fuel-fired appliances if sized and designed for combustion air purposes. If opening into the mechanical room, permanent openings shall be provided between the mechanical room and occupied space to provide a path of travel for the air. The exhaust fan shall be located in the bathroom farthest away from the source of makeup air and shall be rated for 0.8 sones or less.
2. A 4-inch-round outdoor air duct connected to the return side of the air handler. The duct shall be insulated to a minimum R-6 and shall connect to the return duct within 8 feet of the air handler connection, not above a finished ceiling.

Commentary: These two exceptions have been added this code cycle to make things easier to bring fresh air into the dwelling units. This gives the mechanical contractor and general contractor a couple of simple ways of doing this versus requiring a fan to exhaust air out of the dwelling units at all times.

**Table M1505.4.4
Minimum Required Local Exhaust Rates for
One- and Two-Family Dwellings**

Area to be exhausted	Exhaust Rates
Kitchens	100 cfm intermittent or 25 cfm continuous
Bathrooms - Toilet Rooms	Mechanical exhaust capacity of 50 cfm intermittent or 20 cfm continuous

Commentary: This is a carryover from the 2018 IRC. This maintains consistency with the IMC per the request of the HBA.

Section M1506 Subslab Soil Exhaust Systems.

M1506.1 General. When a subslab soil exhaust system is provided, the duct shall conform to the requirements of this section.

M1506.2 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 plumbing code as building sanitary drainage and vent pipe: cast iron; galvanized steel; copper or copper-alloy pipe and tube of a weight not less than type DWV; and plastic piping.

M1506.3 Grade. Exhaust system ducts shall not be trapped and shall have a minimum slope of 1/8 unit vertical in 12 units horizontal (1 percent slope).

M1506.4 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.

M1506.5 Identification. Subslab soil exhaust ducts shall be permanently identified within each floor level by means of a tag, stencil, or other approved marking.

Commentary: This is a carryover from the 2018 IRC. This provision is found in an appendix chapter that has not been adopted. If it is chosen to install a sub slab soil exhaust system, this placement into Chapter 15 at least provides a standard for slope and termination requirements. Section 1506.5 has been added so that the homeowner will know specifically what this pipe is used for at each floor level. This mirrors the requirements in the IMC.

M1601.1.1 Above-ground duct systems. Above-ground *duct systems* shall conform to the following:

1. *Equipment* connected to *duct systems* shall be designed to limit discharge air temperature to not greater than 250°F (121°C).
2. Factory-made ducts shall be listed and labeled in accordance with UL 181 and installed in accordance with the manufacturer's instructions. Flexible air ducts shall be limited in length to 14 feet. Flexible air connectors are not allowed.
3. Fibrous glass duct construction shall conform to the SMACNA *Fibrous Glass Duct Construction Standards* or NAIMA *Fibrous Glass Duct Construction Standards*.
4. Field-fabricated and shop-fabricated metal and flexible duct constructions shall conform to the SMACNA *HVAC Duct Construction Standards—Metal and Flexible* except as allowed by Table M1601.1.1. Galvanized steel shall conform to ASTM A653, except that sheet steel and strip used for duct, connectors, and round duct shall be G40 galvanized steel of lock-forming quality.
5. The use of gypsum products to construct return air ducts or plenums is permitted, provided that the air temperature does not exceed 125°F (52°C) and exposed surfaces are not subject to condensation.
6. *Duct systems* shall be constructed of materials having a flame spread index of not greater than 200.
7. Stud wall cavities and the spaces between solid floor joists to be used as air plenums shall comply with the following conditions:
 - 7.1 These cavities or spaces shall not be used as a plenum for supply air.
 - 7.2 These cavities or spaces shall not be part of a required fire-resistance-rated assembly.

- 7.3 Stud wall cavities shall not convey air from more than one floor level.
- 7.4 Stud wall cavities and joist-space plenums shall be isolated from adjacent concealed spaces by tight-fitting fireblocking in accordance with Section R302.11. Fireblocking materials used for isolation shall comply with Section R302.11.1.
- 7.5 Stud wall cavities in the outside walls of building envelope assemblies shall not be utilized as air plenums.
8. Volume dampers, equipment, and other means of supply, return, and exhaust air adjustment used in system balancing shall be provided with access.

Commentary: This is a carryover from the 2018 IRC. With reference to Item 2, due to high restrictions in flexible air ducts, this material has been limited locally to a maximum length of 14 feet since 1994 when the mechanical division was first created. With reference to Item 4, SMACNA standards are referenced in the residential code for the first time. These standards are typically used for commercial and industrial construction. The standard would have required a thicker galvanized coating, a G60, which has been modified to a G40 which is the standard thickness of galvanizing for residential ducts.

M1601.1.2 Underground duct systems. Underground duct systems shall be constructed of approved concrete, clay, metal or plastic. The maximum design temperature for systems utilizing plastic duct and fittings shall be 150°F (66°C). Metal ducts shall be protected from corrosion in an approved manner or shall be completely encased in concrete not less than 2 inches (51 mm) thick. Nonmetallic ducts shall be installed in accordance with the manufacturer's instructions. Plastic pipe and fitting materials shall conform to cell classification 12454-B of ASTM D1248 or ASTM D1784 and external loading properties of ASTM D2412. Ducts shall slope to a drainage point that has access. Ducts shall be sealed, secured, and tested prior to encasing the ducts in concrete or direct burial. ~~Duct tightness shall be verified as required by Section N1103.3.~~ Metallic ducts having an approved protective coating and nonmetallic ducts shall be installed in accordance with the manufacturer's instructions.

Commentary: This is a carryover from the 2018 IRC. This section, N1103.3.3 (R403.3.3), was not adopted; therefore, the reference to this section was taken out.

M1601.4.1 Joints, seams, and connections. Longitudinal and transverse joints, seams and connections in metallic and nonmetallic ducts shall be constructed as specified in SMACNA HVAC Duct Construction Standards—Metal and Flexible and NAIMA Fibrous Glass Duct Construction Standards. Joints, longitudinal and transverse seams, and connections in ductwork outside the building thermal envelope, all return ducts located within 10 feet (3.05 m) of any appliance or all return ducts within a mechanical room, and all supply main trunk ducts and branch duct connections to the main trunk ducts shall be securely fastened and sealed with welds, gaskets, mastics (adhesives), mastic-plus-embedded-fabric systems, liquid sealants, or tapes.

Tapes and mastics used to seal fibrous glass ductwork shall be listed and labeled in accordance with UL 181A and shall be marked "181A-P" for pressure-sensitive tape, "181 A-M" for mastic or "181 A-H" for heat-sensitive tape.

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

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

Exceptions:

1. Spray polyurethane foam shall be permitted to be applied without additional joint seals.
2. Where a duct connection is made that is partially without access, three screws or rivets shall be equally spaced on the exposed portion of the joint so as to prevent a hinge effect.
3. For ducts having a static pressure classification of less than 2 inches of water column (500 Pa), additional closure systems shall not be required for continuously welded joints and seams and locking-type joints and seams. This exception shall not apply to snap-lock and button-lock type joints and seams that are located outside of conditioned spaces.

Commentary: *This is a carryover from the 2018 IRC. The HVAC industry requested that only certain portions of a duct system necessitated sealing such as ducts outside of the thermal envelope and the ducts within the vicinity of a mechanical room due to a possible carbon monoxide mishap. The sealing of all ducts inside of the thermal envelope is considered as an additional expense as compared to the amount of air loss which occurs on an unsealed duct inside of the thermal envelope.*

M1601.4.4 Support. Factory-made ducts listed in accordance with UL 181 shall be supported in accordance with the manufacturer's installation instructions. Field- and shop-fabricated fibrous glass ducts shall be supported in accordance with the SMACNA *Fibrous Glass Duct Construction Standards* or the NAIMA *Fibrous Glass Duct Construction Standards*. Field- and shop-fabricated metal and flexible ducts shall be supported in accordance with the SMACNA *HVAC Duct Construction Standards—Metal and Flexible*. Metal ducts shall be supported by 1/2-inch-wide (13 mm) 18-gage, 1-inch-wide (25 mm) 24-gage, or 1 1/2-inch-wide (39 mm) 26-gage metal straps or 12-gage galvanized wire at intervals not exceeding 10 feet (3,048 mm) or other approved means.

Commentary: *This is a carryover from the 2018 IRC. This maintains lesser gage of strap to accommodate residential contractors that do not have the machinery necessary to shear a thicker gage material. A 1-inch 24-gage strap is equivalent to a 1/2-inch 18-gage strap.*

G2402.3 (201.3) Terms defined in other codes. Where terms are not defined in this code and are defined in the *International Building Code*, *International Fire Code*, *NFPA-70*, *International Mechanical Code*, *International Fuel Gas Code*, or ~~International~~ *Uniform Plumbing Code*, such terms shall have meanings ascribed to them as in those codes.

Commentary: The Uniform Plumbing Code is the plumbing code adopted by the state; therefore, this shall follow the same.

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 opening shall be located a minimum of 3 feet (914 mm) from a gas meter.

G2407.6.3 Alternate combustion air sizing. As an alternate, the net free area of openings, ducts, or plenums supplying air to an area containing gas- and oil-burning appliances shall be in accordance with CSA B149.1:20, Natural Gas and Propane Installation Code, published by the Canadian Standards Association (CSA).

The combustion air duct is required to be upsized one diameter size when a dryer is installed in the same room as the combustion air.

Commentary: This is a carryover from the 2018 IRC. This maintains a reduced size of combustion air opening, consistent with CSA B149.1, Natural Gas and Propane Installation Code published by the Canadian Standards Association. This Canadian Standard has been expanded at the request of the Mechanical Board of Appeals to include appliances greater than 300,000 Btu/hr inputs.

G2408.1 (305.1) General. *Equipment* and *appliances* shall be installed as required by the terms of their approval, in accordance with the conditions of listing, the manufacturer's instructions, and this code. Manufacturer's installation instructions shall be available on the job site at the time of inspection. Where a code provision is less restrictive than the conditions of the listing of the *equipment* or *appliance* or the manufacturer's installation instructions, the conditions of the listing and the manufacturer's installation instructions shall apply.

After completion of the installation, all safety and operating controls and venting shall be tested before placing the burner in service in accordance with the manufacturer's installation instructions. The following requirements need to be recorded and affixed to the inside of the gas train access panel:

1. The rate of flow of the gas or fuel shall be adjusted to within plus or minus 5 percent of the required Btu/hr rating at the manifold pressure specified by the manufacturer. When the prevailing pressure is less than the manifold pressure specified, the rates shall be adjusted at the prevailing pressure.
2. The gas inlet pressure per the manufacturer's installation settings.

3. [The temperature rise across the heat exchanger per the manufacturer's installation settings.](#)
4. [The static pressure of the supply and return ducts per the manufacturer's installation settings.](#)

Unlisted *appliances approved* in accordance with Section G2404.3 shall be limited to uses recommended by the manufacturer and shall be installed in accordance with the manufacturer's instructions, the provisions of this code, and the requirements determined by the *code official*.

Commentary: This is a carryover from the 2018 IRC. This maintains the requirement to place the furnace and/or boiler into operation in accordance with the manufacturer's installation settings.

G2408.4 (305.7) *Equipment and appliances* installed at grade level shall be supported on a level concrete slab or other *approved* material extending not less than ~~31~~ 1 1/2 inches (~~76~~ 38 mm) above adjoining grade or shall be suspended not less than 6 inches (152 mm) above adjoining grade. Such supports shall be installed in accordance with the manufacturer's instructions.

Commentary: To maintain consistency with the IMC, this was changed to 1 1/2 which is the standard height for a pre-manufactured support.

G2410.2 (309.2) Connections. Electrical connections between *appliances* and the building wiring, including the grounding of the *appliances*, shall conform to ~~Chapters 34 through 43~~ [the National Electric Code.](#)

Commentary: These chapters are not adopted because the electrical is regulated by the National Electric Code.

G2415.2 (404.2) CSST. CSST piping systems shall be installed in accordance with the terms of their approval, the conditions of listing, the manufacturer's instructions, and this code.

[The piping located on the exterior extending from the gas meter to the inside of the structure shall be a metallic pipe in compliance with Section G2414.3. The entrance into the structure shall be provided with the appropriate transition flange where an alternate gas piping material is utilized on the inside of the structure.](#)

Commentary: This is a carryover from the 2018 IRC. This provides consistency with the Plumbing Code that does not allow CSST piping from the meter to the entrance into the dwelling to eliminate tampering of the gas piping and to provide a rigid pipe connection from the meter to the entrance into the structure.

G2415.3 (404.3) Prohibited locations. Piping shall not be installed in or through a ducted supply, return or exhaust, or a clothes chute, chimney or gas vent, dumbwaiter or elevator shaft. ~~Piping installed downstream of the point of delivery shall not extend through any townhouse unit other than the unit served by such piping.~~

Commentary: This is a carryover from the 2018 IRC. This is taken out of the IRC because it is not consistent with the Plumbing Code and plumbing contractors are who typically runs gas piping.

G2415.6 (404.6) ~~Underground penetrations prohibited.~~ Piping through foundation walls
~~Gas piping shall not penetrate building foundation walls at any point below grade. Gas piping shall enter and exit a building at a point above grade and the annular space between the pipe and the wall shall be sealed.~~ Underground piping, where installed through the outer foundation or basement wall of a building shall be encased in a protective sleeve or protected by an approved device or method. The space between the gas piping and the sleeve and between the sleeve and the wall shall be sealed to prevent the entry of gas and water.

Commentary: This was changed in order to match the requirements in the Uniform Plumbing Code.

G2415.12 (404.12) Minimum burial depth. Underground piping systems shall be installed a minimum depth of 12 inches (305 mm) below grade, ~~except as provided for in Section G2415.12.1.~~ The minimum depth shall be increased to 18 inches (457 mm) if external damage to the piping or tubing from external forces is likely to result. Where a minimum of 12 inches (305 mm) of depth cannot be provided, the pipe shall be installed in conduit or bridged (shielded).

~~**G2415.12.1(404.12.1) Individual outdoor appliances.** Individual lines to outdoor lights, grills and other appliances shall be installed not less than 8 inches (203 mm) below finished grade, provided that such installation is approved and is installed in locations not susceptible to physical damage.~~

Commentary: This was changed in order to match the requirements in the Uniform Plumbing Code.

G2420.1.2 (409.1.2) Prohibited locations. Shutoff valves shall be prohibited in concealed locations, ~~and~~ furnace plenums, and accessible spaces between a fixed ceiling and a dropped ceiling unless serving a gas appliance installed in that space.

Commentary: This modification eliminates the differences between the IRC and the Plumbing Code as it relates to gas piping shutoff valve locations.

Part VII—Plumbing. The following chapters are not adopted by the city: Chapter 25—Plumbing Administration; Chapter 26—General Plumbing Requirements; Chapter 27—Plumbing Fixtures; Chapter 28—Water Heaters; Chapter 29—Water Supply and Distribution, except Section P2904 Dwelling Unit Fire Sprinkler System; Chapter 30—Sanitary Drainage; Chapter 31—Vents; Chapter 32—Traps; and Chapter 33—Storm Drainage.

The provisions of the plumbing code of the city of Sioux Falls or the most current *Uniform Plumbing Code* adopted by the South Dakota State Plumbing Commission 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.

Commentary: Part VII—Plumbing, of the IRC references the International Plumbing Code. The South Dakota State Plumbing Commission has mandated the use of the Uniform Plumbing Code. To avoid inconsistencies, the plumbing chapters referenced in Part VII are not adopted by the City and instead any plumbing systems for residential construction are referenced to the Plumbing Code or the most current Uniform Plumbing Code adopted by the South Dakota State Plumbing Commission. The exception to this is Section P2904 Dwelling Unit Fire Sprinkler Systems which is not mentioned in the Uniform Plumbing Code.

Part VIII—Electrical. The following chapters are not adopted by the city: Chapter 34—General Requirements; Chapter 35—Electrical Definitions; Chapter 36—Services; Chapter 37—Branch Circuit and Feeder Requirements; Chapter 38—Wiring Methods; Chapter 39—Power and Lighting Distribution; Chapter 40—Device and Luminaires; Chapter 41—Appliance Installation; Chapter 42—Swimming Pools; Chapter 43—Class 2 Remote- Control, Signaling and Power-Limited Circuits.

The provisions of the electrical code of the city of Sioux Falls or the most current code adopted *National Electrical Code* by the South Dakota State Electrical Commission 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.

Commentary: The South Dakota State Electrical Commission has mandated the use of the 2020 National Electrical Code and does not recognize any inconsistencies that may be found in Part VIII of the IRC. To avoid inconsistencies, the electrical chapters referenced in Part VIII are not adopted by the City and instead any electrical systems for residential construction are referenced directly to the 2020 National Electrical Code or the most current electrical code adopted by the South Dakota State Electrical Commission.