

COUNCIL COMMUNICATION

Meeting Date: September 10, 2019	Agenda Item:	Agenda Location: Public Hearing	Goal(s):	Legal Review:	<input type="checkbox"/> 1 st Reading <input checked="" type="checkbox"/> 2 nd Reading
Subject: An ordinance amending Chapter 10, Articles I, II, and III, and repealing and reenacting the provisions of Article IV of the Thornton City Code pertaining to adoption by reference of the 2018 Edition of the following codes: International Building Code, International Plumbing Code, International Mechanical Code, International Fuel Gas Code, International Residential Code, International Energy Conservation Code, International Existing Building Code, International Swimming Pool and Spa Code, the 2017 Edition of the National Electrical Code, and local amendments thereto.					
Recommended by: Jeff Coder Presenter(s): Greg Wheeler, Chief Building Official		Approved by: Kevin S. Woods		Ordinance previously introduced by: <hr style="width: 100%;"/>	

SYNOPSIS:

Every three years the City, like other jurisdictions in Colorado, has historically adopted the latest editions of the International Codes (I-Codes) regulating all aspects of building as a part of the City Code. The 2018 Edition of the International Building Codes replaces the currently adopted 2015 Edition and is comprised of the International Building, Plumbing, Mechanical, Fuel Gas, Residential, Energy Conservation, Existing Building, and Swimming Pool and Spa Codes. In accordance with City Code and State Statute, the I-Codes are adopted by reference and Council considered the amendments on first reading on August 13, 2019, then set a public hearing for second reading on September 10, 2019. The effective date of the ordinance will be September 16, 2019.

RECOMMENDATION:

Staff and the BCAB recommend Alternative No. 1, approve the ordinance adopting the 2018 Edition of the International Building Codes and the 2017 Edition of the National Electric Code, as amended. In addition, any modifications to or newer versions of the National Electrical Code (NFPA-70) that are adopted by the Colorado State Electrical Board pursuant to its authority under C.R.S. §12-23-104(2)(a) shall be automatically incorporated herein and deemed to modify this code.

BUDGET/STAFF IMPLICATIONS:

None.

ALTERNATIVES:

1. Approve the ordinance, to adopt the 2018 Edition of the International Building Codes and the 2017 Edition of the National Electric Code, as amended.
2. Do not approve the ordinance to adopt the 2018 Edition of the International Building Codes and the 2017 Edition of the National Electric Code, as amended, and remain with the currently adopted 2015 International Codes and 2014 National Electric Code.

Public Notice:

The public notice of the hearing was advertised on the City's official website on August 14, 2019; at City Hall, the Margaret W. Carpenter Recreation Center, and the Thornton Active Adult Center on August 15, 2019; and in the Northglenn-Thornton Sentinel on August 22, 2019.

BACKGROUND (ANALYSIS/NEXT STEPS/HISTORY): (includes previous City Council action)

In 2000, the International Code Council produced and published the first full set of the I-Codes. Since then, every three years, a new code is produced and subsequently adopted by Council. The City has adopted the 2015 Editions of the I-Codes, as amended, and has been enforcing those since September 6, 2016.

The I-Codes are published every three years after extensive code development hearings to stay abreast of the latest in technology, new construction materials, and new construction methods. The I-Codes are developed with participation by building officials, fire officials, engineers, architects, builders, academia, producers, and users. They are model codes for state and local jurisdictions to adopt and may need to be modified, through amendments, to best serve the communities. A few examples of these are a change to the Energy Code to insulate ductwork in residences with unheated attics and the requirement for lighting to be a minimum of 90% efficient (up from 75%). Another is that the Plumbing Code now requires all single user toilet facilities to be identified for use by either gender.

Staff has carried over the local amendments from previous editions to the 2018 editions, a majority of which were a derivation of conversations and requests from the business community and residents, which were not specifically addressed in the model codes. Examples of these local amendments include the threshold for drinking fountains and the number of required bathrooms. Staff has also included amendments that provide an additional benefit to homeowners. These amendments include the maximum allowable number of outlets on a circuit, no permit for replacing same size windows, and a required sump pump as a backup to the underground drainage system.

The amendments to the International Residential Code have been sent to the Homebuilders Association (HBA) and there were no objections to the recommended amendments. The HBA's biggest concern is whether or not the City will require residential fire sprinklers in new one- and two-family dwellings and townhouse construction.

Regarding the residential fire sprinkler systems, staff sent out a survey to other area jurisdictions asking if they will be enforcing the 2018 requirements to install fire sprinkler systems in townhomes and single-family dwellings. The majority of the surrounding communities are opting to amend this provision to make installation of these systems an option rather than a requirement. Staff recommends the current amendment not to make residential fire sprinklers mandatory.

The BCAB held a public hearing on May 8, 2019 regarding the adoption of the 2018 International Codes and the 2017 National Electric Code and voted unanimously to recommend approval of all codes as amended. BCAB and staff recommend approval of the ordinance with an effective date of September 16, 2019.

INTRODUCED BY: Tade

AN ORDINANCE AMENDING CHAPTER 10, ARTICLES I, II, AND III, AND REPEALING AND REENACTING THE PROVISIONS OF ARTICLE IV OF THE THORNTON CITY CODE PERTAINING TO ADOPTION BY REFERENCE OF THE 2018 EDITION OF THE FOLLOWING CODES: INTERNATIONAL BUILDING CODE, INTERNATIONAL PLUMBING CODE, INTERNATIONAL MECHANICAL CODE, INTERNATIONAL FUEL GAS CODE, INTERNATIONAL RESIDENTIAL CODE, INTERNATIONAL ENERGY CONSERVATION CODE, INTERNATIONAL EXISTING BUILDING CODE, INTERNATIONAL SWIMMING POOL AND SPA CODE, THE 2017 EDITION OF THE NATIONAL ELECTRICAL CODE, AND LOCAL AMENDMENTS THERETO.

WHEREAS, the City adopted the 2015 editions of the various above-referenced international codes and the 2014 edition of the National Electrical Code on September 6, 2016; and

WHEREAS, the above-referenced revised editions of the identified International Codes and the National Electrical Code, represent national building and construction standards that are updated and amended from time to time to conform to the changing need of the construction industry; and

WHEREAS, it is deemed to be in the best interest of the citizens of the City and in the interest of public health, safety, and general welfare to adopt by reference the updated versions of the various codes identified herein and with local amendments thereto.

NOW, THEREFORE, BE IT ORDAINED BY THE CITY COUNCIL OF THE CITY OF THORNTON, COLORADO, AS FOLLOWS:

1. Section 10-61 of the Thornton City Code is hereby amended by the addition of the words double-underlined to read as follows.

Sec. 10-61. - Required

(g) *Application.* To obtain a Building Permit, the applicant shall first file an application therefor in writing or electronically on a form furnished by the Building Department for that purpose. Such application shall:

2. Section 10-64 of the Thornton City Code is hereby amended by addition of the words double-underlined and the deletion of the words stricken, to read as follows.

Sec. 10-64. – Inspections.

(a) *Generally.*

- (1) Upon issuance of a building permit for construction or work for which a building permit is required, such construction or work shall be subject to inspection and shall remain accessible and exposed for such inspection until the construction or work is approved.
- (2) Approval as a result of an inspection shall not be construed to be an approval of a violation of the provisions of this code or of other ordinances of the city. It shall be the responsibility of the building permit holder to notify the building official when construction or work is ready for inspection. Neither the building official nor the city shall be liable for expense entailed in the removal or replacement of any material that is required to allow inspection.
- (3) The building official is authorized to accept reports of approved inspection agencies, provided such agencies satisfy the requirements as to qualifications and reliability.
- (4) The building official may require retest of any installation or assembly on which a report has been filed and, in the case of substantial discrepancy in the results of the test, may suspend any agency's privilege to file the report in lieu of actual inspection.
- (5) Required inspections shall include but not be limited to the following:
 - a. *Plumbing inspection.*
 1. *Rough-in.* This is the first inspection, which shall consist of the water or air test on all potable water lines, waste and vent piping and is performed prior to covering.
 2. *Final.* The final inspection shall be made when all fixtures are set and work is completed and operating.
 - b. *Electrical inspection.*
 1. *Rough-in.* This is the first inspection, which shall consist of all conduit, semi rigid piping or wiring being in place prior to covering.
 2. *Final.* The final inspection shall be made when the work is completed and operating.
 - c. *Mechanical inspection.*
 1. *Rough-in.* The first inspection shall be made when all duct and pipe work is in place before it is covered.
 2. *Final.* Final inspection shall be made when the system is completed and operating.
 - d. *Footing, caisson inspection.* Footing or caisson inspection shall be made after trenches or caissons are excavated and the forms are erected but before the concrete is deposited. If engineered footings are to be used, a copy of the engineer's report must be submitted to the building inspector at this time.
 - e. *Form survey.* Setbacks shall be verified by a survey signed and sealed by a registered surveyor performed after the foundation forms are set and submitted prior to the placement of concrete in the forms.

Exception: Additions, detached Group U occupancies, remodels and renovations

- f. *Framing inspection.* The framing inspection shall be made after wall and roof framing are completed, bracing and fire stops are in place and all pipes, wires and vents are complete.
- g. *Final inspection.* The final inspection shall be made at the time the contractor feels the building or structure fulfills all requirements for a certificate of occupancy.

(b) *Inspection requests.* Any person or entity issued a building permit or their duly authorized agent shall notify the building official when work is ready for inspection. It shall be the responsibility of any person or entity issued a building permit to call for an inspection before the building permit expires. It shall be the responsibility of the building permit holder to provide access to and means for inspections of such work that are required by the Building Code.

~~(c) *Inspection record card.* All construction work, including new work, additions, alteration and repairs for all occupancies, shall not be commenced until the building permit holder or the building permit holder's agent shall have posted an inspection record card in a conspicuous place so as to conveniently allow the building department to make the required entries thereon regarding the inspection of the work.~~

(c)~~(d)~~ *Reinspections.* A reinspection fee may be imposed for each inspection or reinspection when such portion of work for which inspection is called is not complete or when corrections called for are not made. This section is not to be interpreted as requiring reinspection fees the first time a job is rejected for failure to comply with the requirements of this Building Code. Reinspection fees may be imposed when the inspection record card is not posted or otherwise available on the worksite, the approved plans are not readily available to the inspector, for failure to provide access on the date for which inspection is requested or for deviating from plans requiring the approval of the building official. Where reinspection fees have been imposed no inspection will take place until the required reinspection fees have been paid. Reinspection fees shall be in amounts as established in the schedule of fees established from time to time by resolution of the city council.

(d)~~(e)~~ *Approval required.*

- (1) Work shall not be performed on any portion of a building, structure or utility beyond the point indicated in each successive inspection without first obtaining the approval of the building department. Such approval shall be given only after an inspection shall have been made of each successive step in the construction as indicated by each of the inspections in this section.

- (2) Foundation work, reinforcing steel or the structural framework of any part of any building, structure or utility shall not be covered or concealed in any manner whatever without first obtaining the approval of the building official.

~~(e)~~(f) *Stop work orders.* Whenever the building official finds any work regulated by the Building Code being performed in a manner either contrary to the provisions of this Building Code or dangerous or unsafe, the building official is authorized to issue a stop work order.

- (1) *Issuance.* The stop work order shall be in writing and shall be given to the owner of the property involved, or to the owner's agent, or to the person doing the work or conspicuously posted on the site. Upon issuance of a stop work order, the cited work shall immediately cease. The stop work order shall state the reason for the order, and the conditions under which the cited work will be permitted to resume
- (2) *Unlawful continuance.* It is unlawful for any person to continue any work after having been served with a stop work order, except such work as that person is directed to perform to remove a violation or unsafe condition by the building official.
- (3) *Unlawful removal.* It is unlawful for any person to remove or deface any stop work order posted on property pursuant to this subsection (f) unless resumption of work is authorized by the building official.

~~(f)~~(g) *Connection of service utilities.*

- (1) No person shall make connections from a utility, source of energy, fuel or power to any building or system that is regulated by the Building Code for which a building permit is required, until released by the building official.
- (2) The building official shall have the authority to authorize the temporary connection of the building or system to the utility source of energy, fuel or power.
- (3) The building official shall have the authority to authorize disconnection of utility service to the building, structure or system regulated by the Building Code, and the referenced codes and standards set forth in Section 10-3 in case of emergency where necessary to eliminate an immediate hazard to life or property or when such utility connection has been made without the approval required by this Building Code. The building official shall notify the serving utility, and wherever possible the owner and occupant of the building, structure or service system of the decision to disconnect prior to taking such action. If not notified prior to disconnecting, the owner or occupant of the building, structure or service system shall be notified in writing, as soon as practical thereafter.

~~(g)(h)~~ *Certificate of occupancy.*

- (1) No building or structure shall be used or occupied, and no change in the existing occupancy classification of a building or structure or portion thereof shall be made until the building official has issued a certificate of occupancy therefor as provided herein. Issuance of a certificate of occupancy shall not be construed as an approval of a violation of the provisions of this Building Code, regulations or standards or of any other ordinances of the City of Thornton. A certificate of occupancy shall be issued for completion of a project in accordance with the International Building Code, as adopted in Section 10-151, or the International Residential Code, as adopted in Section 10-166, or the International Existing Building Code, as adopted in Section 10-177, otherwise a letter of compliance shall be issued upon the completion of a job following the final inspection if it is found that all licenses and building permits are in order, the building complies with the provisions of this Building Code and other applicable municipal regulations and the use of the structure is a permitted use.
Exception: Certificates of occupancy are not required for work exempt from building permits under Section 10-61(c).
- (2) After the building official inspects the building or structure and finds no violations of the provisions of Building Code or other laws that are enforced by the building department, the building official shall issue a certificate of occupancy that contains the following:
 1. The building permit number;
 2. The address of the structure;
 3. The name and address of the owner;
 4. A description of that portion of the structure for which the certificate is issued;
 5. A statement that the described portion of the structure has been inspected for compliance with the requirements of the Building Code for the occupancy and division of occupancy and the use for which the proposed occupancy is classified;
 6. The name of the building official;
 7. The edition of the Building Code under which the building permit was issued;
 8. The use and occupancy of the building or structure;
 9. The type of construction the building or structure is built to; and
 10. Any special stipulations and conditions of the building permit.
- (3) The certificate of occupancy shall be posted in a conspicuous place on the premises and shall not be removed except by the building official.
Exception: Dwelling units and Group U occupancies shall not be required to post the certificate of occupancy.

- (4) The building official is authorized to issue a temporary certificate of occupancy before the completion of the entire work covered by the building permit, provided that such portions can be occupied safely as determined by the building official, and all applicable fees have been paid. The building official shall set a time period during which the temporary certificate of occupancy is valid. The temporary certificate of occupancy fee is in an amount established by the scheduled of fees adopted by resolution.
- (5) The building official is authorized to, in writing, suspend or revoke a certificate of occupancy or completion issued under the provisions of this Building Code wherever the certificate is issued in error, or on the basis of incorrect information supplied, or where it is determined that the building or structure or portion thereof is in violation of any ordinance or regulation or any of the provisions of this Building Code.

(h)(4) *Change of occupancy.* A change of occupancy is defined as a change in the ownership of a building, change in the ownership of a business, a change in the business name, or a change in the use of a building. A change of use is not limited to a change of classification. Every change of occupancy requires the issuance of a new certificate of occupancy following a safety inspection and approval by the building official.

(i)(4) *Letter of compliance.* Any work completed in compliance with a building permit for which a certificate of occupancy is not issued pursuant to this Building Code shall be issued a letter of compliance; if following the final inspection it is found that all licenses are issued, the building complies with the provisions of this Building Code and other applicable municipal regulations, and the use of the structure is a permitted use.

3. Section 10-151 of the Thornton City Code is hereby repealed and reenacted to read as follows:

Article IV. Technical Standards

Sec. 10-151. International Building Code adopted by reference.

The International Building Code, 2018 edition, is published by the International Code Council, Inc. 500 New Jersey Avenue, NW, 6th Floor, Washington, D.C. 20001. The purpose and subject matter of the International Building Code includes regulating construction aspects of building and providing greater safety to the public and uniformity in building laws. The International Building Code, 2018 edition, is hereby adopted by this reference and incorporated into this Code as the Building Construction Code of the City. Except as otherwise provided in Section 10-152, the International Building Code, 2018 edition, is adopted in full including the outline of contents and the index, but excluding all appendix chapters, except Appendix I.

4. Section 10-152 of the Thornton City Code is hereby repealed and reenacted to read as follows:

Sec. 10-152. Amendments to International Building Code.

The International Building Code adopted in Section 10-151 is hereby amended to read as follows, with section numbers referring to section numbers of the International Building Code:

Subsection 101.1 is hereby amended by the deletion of the words stricken and the addition of the words double-underlined to read as follows:

101.1 Title. These regulations shall be known as the *Building Code* of ~~[NAME OF JURISDICTION]~~ the City of Thornton, hereinafter referred to as “this code.”

Subsection 101.4.4 is hereby amended by the deletion of the words stricken and the addition of the words double-underlined to read as follows:

101.4.4 Property maintenance. The provisions of the *International Existing Building Code and the Uniform Code for the Abatement of Dangerous Buildings Code* ~~*International Property Maintenance Code*~~ shall apply to existing structures and premises; equipment and facilities; light, ventilation, space heating, sanitation, life and fire safety hazards; responsibilities of owners, operators and occupants; and occupancy of existing premises and structures.

Subsection 102.6 is hereby amended by the deletion of the words stricken and the addition of the words double-underlined to read as follows:

102.6 Existing structures. The legal occupancy of any structure existing on the date of adoption of this code shall be permitted to continue without change, except as otherwise specifically provided in this code, the *Uniform Code for the Abatement of Dangerous Buildings*, the *International Existing Building Code*, ~~*the International Property Maintenance Code*~~, or the *International Fire Code*, or as is deemed necessary by the building official for the general safety and welfare of the occupants and the public.

Chapter 1 Part 2-Administration and Enforcement is hereby repealed in its entirety. Please refer to Thornton City Code Chapter 10 Article II.

Section 202 Definitions is hereby amended by the addition of the following definition inserted after the definition for Zone, Notification:

SLEEPING ROOM. A habitable space that meets the minimum area requirements of the building code, and, contains a closet or an area that is readily convertible to a closet. An adjacent area fitted with permanently affixed floor to ceiling shelving and no clothes rod may be defined as a storage room in a non-sleeping room.

Section 202 Definitions; [BS] DANGEROUS is hereby amended by addition of the words double-underlined to read as follows:

[BS] DANGEROUS. Any building, structure or portion thereof that meets any of the conditions described below or meets the definition of dangerous as stated in the Uniform Code for the Abatement of Dangerous Buildings shall be deemed *dangerous*:

1. The building or structure has collapsed, has partially collapsed, has moved off its foundation or lacks the support of the ground.
2. There exists a significant risk of collapse, detachment or dislodgement of any portion, member, appurtenance or ornamentation of the building or structure under service loads.

Table 508.4 is hereby amended by the addition of the words double-underlined to read as follows:

**TABLE 508.4
REQUIRED SEPARATION OF OCCUPANCIES (HOURS)^f**

OCCUPANCY	A, E		I-1 ^a , I-3, I-4		I-2		R ^a		F-2, S-2 ^b , U		B ^e , F-1, M, S-1		H-1		H-2		H-3, H-4		H-5	
	S	NS	S	NS	S	NS	S	NS	S	NS	S	NS	S	NS	S	NS	S	NS	S	NS
A, E	N	N	1	2	2	NP	1	2	N	1	1	2	NP	NP	3	4	2	3	2	NP
I-1 ^a , I-3, I-4	-	-	N	N	2	NP	1	NP	1	2	1	2	NP	NP	3	NP	2	NP	2	NP
I-2	-	-	-	-	N	N	2	NP	2	NP	2	NP	NP	NP	3	NP	2	NP	2	NP
R ^a	-	-	-	-	-	-	N	N	1 ^c	2 ^c	1	2	NP	NP	3	NP	2	NP	2	NP
F-2, S-2 ^b , U	-	-	-	-	-	-	-	-	N	N	1	2	NP	NP	3	4	2	3	2	NP
B ^e , F-1, M, S-1	-	-	-	-	-	-	-	-	-	-	N ^a	N ^a	NP	NP	2	3	1	2	1	NP
H-1	-	-	-	-	-	-	-	-	-	-	-	-	N	NP	NP	NP	NP	NP	NP	NP
H-2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	N	NP	1	NP	1	NP
H-3, H-4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1 ^d	NP	1	NP
H-5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	N	NP

- S = Buildings equipped throughout with an automatic sprinkler system installed in accordance with Section 903.3.1.1.
 NS = Buildings not equipped throughout with an automatic sprinkler system installed in accordance with Section 903.3.1.1.
 N = No separation requirement.
 NP = Not permitted.
- a. See Section 420.
 - b. The required separation from areas used only for private or pleasure vehicles shall be reduced by 1 hour but to not less than 1 hour.
 - c. See Section 406.3.2.
 - d. Separation is not required between occupancies of the same classification.
 - e. See Section 422.2 for ambulatory care facilities.
 - f. Occupancy separations that serve to define fire area limit established in Chapter 9 for requiring fire protection systems shall also comply with Section 707.3.10 and Table 707.3.10 in accordance with Section 901.7.
 - g. All tenants or tenant spaces within a multitenant commercial building shall have a minimum two-hour fire-resistance rated fire barrier between occupancies, or a one-hour fire-resistance rated fire barrier when the building is equipped with a fire sprinkler system throughout installed in accordance with Section 903.3.1.1; unless the provisions of Section 508.3 for non-separated occupancies are applied and the most restrictive occupancy group allowed is assumed.

Subsection 915.1.4 is hereby amended by the deletion of the words stricken to read as follows:

[F] 915.1.4 Fuel-burning appliances outside of dwelling units, sleeping units and classrooms. Carbon monoxide detection shall be provided in dwelling units, sleeping

units and classrooms located in buildings that contain fuel-burning appliances or fuel-burning fireplaces.

Exceptions:

1. Carbon monoxide detection shall not be required in ~~dwelling units~~, sleeping units and classrooms without communicating openings between the fuel-burning appliance or fuel-burning fireplace and the ~~dwelling unit~~, sleeping unit or classroom.
2. Carbon monoxide detection shall not be required in ~~dwelling units~~, sleeping units and classrooms where a carbon monoxide detector is provided in one of the following locations:
 - 2.1. In an approved location between the fuel-burning appliance or fuel-burning fireplace and the ~~dwelling unit~~, sleeping unit or classroom.
 - 2.2. On the ceiling of the room containing the fuel-burning appliance or fuel burning fireplace.

Subsection 915.1.5 is hereby amended by the deletion of the words stricken and addition of the words double-underlined to read as follows:

[F] 915.1.5 Private garages. Carbon monoxide detection shall be provided in dwelling units, sleeping units and classrooms in buildings with attached private garages.

Exceptions:

1. Carbon monoxide detection shall not be required in ~~dwelling units~~, sleeping units and classrooms without communicating openings between the private garage and the ~~dwelling unit~~, sleeping unit or classroom.
2. Carbon monoxide detection shall not be required in ~~dwelling units~~, sleeping units and classrooms located more than one story above or below a private garage.
3. Carbon monoxide detection shall not be required in sleeping units and classrooms where the private garage connects to the building through an open-ended corridor.
4. Where a carbon monoxide detector is provided in an approved location between openings to a private garage and ~~dwelling units~~, sleeping units or classrooms.

Subsection 915.2.1 is hereby amended by the deletion of the words stricken and the addition of the words double-underlined to read as follows:

[F] 915.2.1 Dwelling units. Carbon monoxide detection shall be installed in dwelling units outside of each separate sleeping area within fifteen feet (4572 mm) of the entrance to each~~in the immediate vicinity of the~~ bedrooms. Where a fuel-burning appliance is located within a bedroom or its attached bathroom, carbon monoxide detection shall be installed within the bedroom.

A new *Subsection 915.7* is hereby enacted to read as follows:

915.7 Where required in existing dwellings. Where interior work requiring a permit occurs in existing Group I or R occupancies that have attached garages or contain fuel-fired appliances, carbon monoxide alarms shall be provided in locations described in Section 915.2.1 through 915.2.2. A listed smoke/carbon monoxide detector may be used if the signals clearly differentiate between the two hazards. Carbon monoxide detectors may be hard wired, plugged into an unswitched outlet or battery powered and attached to the wall or ceiling. Carbon monoxide detectors are not required to be interconnected.

Subsection 1015.2 is hereby amended by the addition of the words double-underlined to read as follows:

1015.2 Where required. *Guards* shall be located along window wells and open-sided walking surfaces, including mezzanines, equipment platforms, aisles, stairs, ramps and landings that are located more than 30 inches (762 mm) measured vertically to the floor or grade below at any point within 36 inches (914 mm) horizontally to the edge of the open side. *Guards* shall be adequate in strength and attachment in accordance with Section 1607.8.

Exception: *Guards* are not required for the following locations:

1. On the loading side of loading docks or piers.
2. On the audience side of stages and raised platforms, including *stairs* leading up to the stage and raised *platforms*.
3. On raised stage and platform floor areas, such as runways, ramps and side stages used for entertainment or presentations.
4. At vertical openings in the performance area of stages and platforms.
5. At elevated walking surfaces appurtenant to stages and platforms for access to and utilization of special lighting or equipment.
6. Along vehicle service pits not accessible to the public.
7. In assembly seating areas at cross aisles in accordance with Section 1029.17.2

Subsection 1030.1 is hereby amended by the deletion of the words stricken and the addition of the words double-underlined to read as follows:

1030.1 General. In addition to the means of egress required by this chapter, emergency escape and rescue openings shall be provided in the following occupancies:

1. Group R-2 occupancies located in stories with only one exit or access to only one exit as permitted by Tables 1006.3.3(1) and 1006.3.3(2).
2. Group R-3 and R-4 occupancies.

Basements and sleeping rooms below the fourth story above grade plane shall have not fewer than one exterior emergency escape and rescue opening in accordance with this section. Where basements contain one or more sleeping rooms, emergency escape and rescue openings shall be required in each sleeping room, but shall not be required in adjoining areas of the basement. Such openings shall open directly into a public way or to a yard or court that opens to a public way.

Exceptions:

- ~~1. Basements with a ceiling height of less than 80 inches (2032 mm) shall not be required to have emergency escape and rescue openings.~~
21. *Emergency escape and rescue openings* are not required from basements or sleeping rooms that have an *exit door* or *exit access door* that opens directly into a public way or to a yard, court or exterior exit balcony that opens to a public way.
32. Basements without habitable spaces and having no more than 200 square feet (18.6 m²) in floor area and having ceiling heights less than required in Section 1207.2 shall not be required to have *emergency escape and rescue openings*.
- ~~4. Within individual dwelling and sleeping units in Groups R-2 and R-3, where the building is equipped throughout with an automatic sprinkler system installed in accordance with Section 903.3.1.1, 903.1.2 or 903.1.3, sleeping rooms in basements shall not be required to have emergency escape and rescue openings provided that the basement has one of the following:~~
 - ~~4.1. One means of egress and one emergency escape and rescue opening.~~
 - ~~4.2. Two means of egress.~~
3. *Emergency escape and rescue openings* are not required where existing basements undergo alterations or repairs except that new sleeping rooms created in an existing basement shall be provided with emergency escape and rescue openings that comply with section 1030.2 through 1030.5.

Subsection 1030.2 is hereby amended by the deletion of the words stricken and the addition of the words double-underlined to read as follows:

1030.2 Minimum size. *Emergency escape and rescue openings* shall have a minimum net clear opening of 5.7 square feet (0.53 m²).

~~Exception: The minimum net clear opening for grade-floor emergency escape and rescue openings shall be 5 square feet (0.46 m²).~~

Subsection 1030.5 is hereby amended by the addition of the words double-underlined to read as follows:

1030.5 Bars, grilles, covers and screens. Bars, grilles, covers, screens or similar devices that weigh no more than 30 pounds (13.6 kg) are permitted to be placed over emergency escape and rescue openings, bulkhead enclosures or window wells that serve such openings, provided that the minimum net clear opening size complies with Sections 1030.1.1 through 1030.4.2 and such devices shall be releasable or removable from the inside without the use of a key, tool or force greater than that which is required for normal operation of the emergency escape and rescue opening. Where such bars, grilles, covers, screens or similar devices are installed in existing buildings, they shall not reduce the net clear opening of the emergency escape and rescue.

Subsection 1206.1 is hereby amended by the deletion of the words stricken and the addition of the words double-underlined to read as follows:

1206.1 Scope. This section shall apply to common interior walls, partitions and floor/ceiling assemblies between adjacent dwelling units and sleeping units or between dwelling units and sleeping units and adjacent public areas such as halls, corridors, stairs or service areas; and between dwelling units and Group A, B, E, F, H, I, M, R, S and U Occupancies.

Subsection 1206.2 is hereby amended by the deletion of the words stricken and the addition of the words double-underlined to read as follows:

1206.2 Airborne sound. Walls, partitions and floor-ceiling assemblies separating dwelling units and sleeping units from each other or from public areas, or service areas, and Group A, B, E, F, H, I, M, R, S and U Occupancies, shall have a sound transmission class of not less than 50, or not less than 45 if field tested, for airborne noise where tested in accordance with ASTM E90. Alternatively, the sound transmission class of walls, partitions and floor-ceiling assemblies shall be established by engineering analysis based on a comparison of walls, partitions and floor-ceiling assemblies having sound transmission class ratings as determined by the test procedures set forth in ASTM E90. Penetrations or openings in construction assemblies for piping; electrical devices; recessed cabinets; bathtubs; soffits; or heating, ventilating or exhaust ducts shall be sealed, lined, insulated or otherwise

treated to maintain the required ratings. This requirement shall not apply to entrance doors; however, such doors shall be tight fitting to the frame and sill.

Subsection 1206.3 is hereby amended by the deletion of the words stricken and the addition of the words double-underlined to read as follows:

1206.3 Structure-borne sound. Floor-ceiling assemblies between dwelling units and sleeping units or between a dwelling unit or sleeping unit and a public area, ~~or service area~~, or Group A, B, E, F, H, I, M, R, S and U Occupancy within the structure shall have an impact insulation class rating of not less than 50, or not less than 45 if field tested, where tested in accordance with ASTM E492. Alternatively, the impact insulation class of floor-ceiling assemblies shall be established by engineering analysis based on a comparison of floor-ceiling assemblies having impact insulation class ratings as determined by the test procedures in ASTM E492.

Section 1208.1 is hereby amended by the deletion of the words stricken and the addition of the words double-underlined to read as follows:

1208.1 Crawl spaces. Crawl spaces shall be provided with not less than one access opening that shall be not less than 18²² inches by 24³⁰ inches (457-559 mm by 610-762 mm)

A new *Section 1210* is hereby enacted to read as follows:

SECTION 1210 SECURITY

1210.1 General. The purpose of this section is to establish minimum standards to make dwelling units resistant to unlawful entry and applies to all dwelling units.

1210.2 Door requirements. All main or front entry doors to dwelling units shall be of solid core construction or metal and shall be arranged so that the occupant has a view of the area immediately outside the door without opening the door. Such view may be provided by a door viewer having a field of view of not less than 180 degrees.

1210.3 Strike plate installation. In wood frame construction an open space between trimmers and wood door jambs shall be solid shimmed by a single piece extending not less than 12 inches (305 mm) above and below the strike plate.

Strike plates shall be attached to wood with not less than four No. 8 by 3-inch (76 mm) screws, which have a minimum of $\frac{3}{4}$ inch (19 mm) penetration into the nearest stud. Strike plates when attached to metal shall be attached with not less than four No. 8 machine screws.

1210.4 Hinges. When hinges are exposed to the exterior, at least one of the three required hinges shall be equipped with nonremovable hinge pins or a mechanical interlock to preclude removal of the door from the exterior by removing the hinge pins not less than three 4 $\frac{1}{2}$ inch (114 mm) steel butt hinges shall be symmetrically

fastened to both the door and the frame with not less than four No.9 by ¾ inch (19 mm) wood screws or to metal with not less than four No. 8 machine screws.

In wood construction, an open space between trimmers and wood door jambs shall be solid shimmed extending not less than 6 inches (152 mm) above and below the hinge.

1210.5 Locking hardware. Single swinging doors and the active leaf of doors in pairs shall be equipped with an approved exterior key operating deadbolt.

Subsection 1507.2.4 is hereby amended by the addition of the words double-underlined to read as follows:

1507.2.4 Asphalt shingles. Asphalt shingles shall comply with ASTM D3462. Asphalt shingles shall be approved and carry a manufacturer's national wind warranty for a minimum nominal windspeed of 80 mph.

Subsection 1507.2.6 is hereby amended by the addition of the words double-underlined to read as follows:

1507.2.6 Attachment. Asphalt shingles shall have the minimum number of fasteners required by the manufacturer, but not less than four fasteners per strip shingle or two fasteners per individual shingle. Where the roof slope exceeds 21 units vertical in 12 units horizontal (21:12), shingles shall be installed as required by the manufacturer. All asphalt shingles shall be fastened with a minimum of six fasteners between September 15 and April 15. Shingles that have not sealed at the time of final inspection shall be hand sealed in accordance with the manufacturer's installation instructions.

Subsection 1511.1 is hereby amended by the addition of the words double-underlined to read as follows:

1511.1 General. Materials and methods of application used for recovering or replacing an existing roof covering shall comply with the requirements of Chapter 15.

Exceptions:

1. Roof replacement or roof recover of existing low-slope roof coverings shall not be required to meet the minimum design slope requirement of one-quarter unit vertical in 12 units horizontal (2-percent slope) in Section 1507 for roofs that provide positive roof drainage and have been evaluated by a registered design professional for the increase in loading due to potential ponding of water.
2. Recovering or replacing an existing roof covering shall not be required to meet the requirement for secondary (emergency overflow) drains or scuppers in Section 1502.2 for roofs that provide for positive roof drainage. For the purposes of this exception, existing secondary drainage or scupper systems

required in accordance with this code shall not be removed unless they are replaced by secondary drains or scuppers designed and installed in accordance with Section 1502.2.

A new *Subsection 1511.1.1* is hereby enacted to read as follows:

1511.1.1 Replacement of asphalt shingles. When more than one square of asphalt shingles are required to be replaced over the aggregate area of the roof and a permit is required, every slope containing damaged shingles shall be replaced in its entirety. The interface of different types of shingles shall only occur at a ridge, hip or open valley. All existing layers of asphalt shingles shall be removed to the roof deck.

Subsection 1511.3.1.1 is hereby amended by the addition of the words double-underlined to read as follows:

1511.3.1.1 Exceptions. A roof recover shall not be permitted where any of the following conditions occur:

1. Where the existing roof or roof covering is water soaked or has deteriorated to the point that the existing roof or roof covering is not adequate as a base for additional roofing.
2. Where the existing roof covering is asphalt shingles, slate, clay, cement or asbestos-cement tile.
3. Where the existing roof has two or more applications of any type of roof covering.

A new *Subsection 1511.7* is hereby enacted to read as follows:

1511.7 Modified bitumen, thermoset single-ply or thermoplastic single-ply roofing membranes installation. Modified bitumen, thermoset single-ply or thermoplastic single-ply roofing membranes shall be listed by the manufacturer as either a Factory Mutual I-90 system, a UL Class 30 system, or shall be certified by an approved evaluation service report to withstand a minimum of 45 pounds per square foot of static wind uplift.

A new *Subsection 1511.8* is hereby enacted to read as follows:

1511.8 Metal panel and structural metal panel roof systems wind uplift design. Metal panel and structural metal panel roof systems shall be installed to resist a minimum of 45 pounds per square foot of uplift as determined by FM 4474, UL 580 or ASTM E 1592 testing.

A new Subsection 1601.2 and Table 1601.2 are hereby enacted to read as follows:

1601.2 Design criteria. The design and construction of all buildings shall be in accordance with the Climatic and Geographic Design Criteria Table 1601.2.

**TABLE 1601.2
CLIMATIC AND GEOGRAPHIC DESIGN CRITERIA**

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

a. Design shall be a minimum of 6 inches (152 mm) below the frost line depth per Section 1809.5

b. IRC Table R403.3(2)

c. National Climatic Data Center data table "Air Freezing Index-USA Method(Base32°F)" www.ncdc.noaa.gov

Subsection 1608.1 is hereby amended by the deletion of the words stricken and the addition of the words double-underlined to read as follows:

1608.1 General. Design snow loads shall be determined in accordance with Chapter 7 of ASCE 7, but the design roof load shall not be less than ~~that determined by Section 1607.30~~ pounds per square foot (2.787 m²).

Subsection 1612.3 is hereby amended by the deletion of the words stricken and the addition of the words double-underlined, to read as follows:

1612.3 Establishment of flood hazard areas. To establish flood hazard areas, the applicable governing authority shall adopt a flood hazard map and supporting data. The flood hazard map shall include, at a minimum, areas of special flood hazard as identified by the Federal Emergency Management Agency in an engineering report entitled "The Flood Insurance Study for ~~[INSERT NAME OF JURISDICTION]~~ the City of Thornton dated ~~[INSERT DATE OF ISSUANCE]~~ March 5, 2007, as amended or revised with the accompanying Flood Insurance Rate Map (FIRM) and Flood Boundary and Floodway Map (FBFM) and related supporting data along with any revisions thereto. The adopted flood hazard map and supporting data are hereby adopted by reference and declared to be part of this section.

Subsection 1805.4.3 is hereby amended by the deletion of the words stricken and the addition of the words double-underlined to read as follows:

1805.4.3 Drainage discharge. The floor base and foundation perimeter drain shall be designed to collect in a sump and discharge by gravity or mechanical means into an *approved* drainage system that complies with the *International Plumbing Code*.

~~**Exception:** Where a site is located in well-drained gravel or sand/gravel mixture soils, a dedicated drainage system is not required.~~

Subsection 1809.4 is hereby amended by the addition of the words double-underlined to read as follows:

1809.4 Depth and width of footings. The minimum depth of footings below the undisturbed ground surface shall be 12 inches (305 mm). Where applicable, the requirements of Section 1809.5 shall also be satisfied. The minimum width of footings shall be 12 inches (305 mm).

Exception: One-story detached accessory structures of light frame construction that do not exceed 200 square feet (18.58 m²) used as tool and storage sheds, playhouses and similar uses, may be supported on skids incorporated into the floor system or on a minimum 4 inch (102 mm) concrete slab. Such structures shall be anchored to the ground with approved materials to resist all applicable loads.

Subsection 1809.5 is hereby amended by the deletion of the words stricken and addition of the words double-underlined to read as follows:

1809.5 Frost Protection. Except where otherwise protected from frost, foundations and other permanent supports of buildings and structures shall be protected from frost by one or more of the following methods:

1. Extending 6 inches (152 mm) below the frost line ~~of the locality~~ specified in Table 1601.2.
2. Constructing in accordance with ASCE 32.
3. Erecting on solid rock.

Exception: Free-standing buildings meeting all of the following conditions shall not be required to be protected:

1. Assigned to *Risk Category I*.
2. Area of 600 square feet (56 m²) or less for light-frame construction or 400 square feet (37 m²) or less for other than light-frame construction.
3. Eave height of 10 feet (3048 mm) or less.

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

Subsection 2512.1.2 is hereby amended by the addition of the words double-underlined to read as follows:

2512.1.2 Weep screeds. A minimum 0.019-inch (0.48 mm) (No. 26 galvanized sheet gage), corrosion-resistant weep screed with a minimum vertical attachment flange of 3 1/2 inches (89 mm) shall be provided at or below the foundation plate line on exterior stud walls in accordance with ASTM C926. The weep screed shall be placed not less than 4 inches (102 mm) above the earth or 2 inches (51 mm) above paved areas, roof surfaces, or other areas of transition, and be of a type that will allow trapped water to drain to the exterior of the building. The water-resistant barrier shall lap the attachment

flange. The exterior lath shall cover and terminate on the attachment flange of the weep screed.

[P]Table 2902.1 is hereby amended by the deletion of the words stricken and the addition of the words double-underlined to read as follows:

[P]TABLE 2902.1
MINIMUM NUMBER OF REQUIRED PLUMBING FIXTURES^a (See Sections 2902.1.1 and 2902.2)

No.	CLASSIFICATION	DESCRIPTION	WATER CLOSETS (URINALS SEE SECTION 424.2 OF THE INTERNATIONAL PLUMBING CODE)		LAVATORIES		BATHTUBS/SHOWERS	DRINKING FOUNTAINS (SEE SECTION 410 OF THE INTERNATIONAL PLUMBING CODE) ^a	OTHER
			Male	Female	Male	Female			
1	Assembly	Theaters and other buildings for the performing arts and motion pictures ^d	1 per 125	1 per 65	1 per 200		—	1 per 500	1 service sink
		Nightclubs, bars, taverns, dance halls and buildings for similar purposes ^d	1 per 40	1 per 40	1 per 75		—	1 per 500	1 service sink
		Restaurants, banquet halls and food courts ^d	1 per 75	1 per 75	1 per 200		—	1 per 500	1 service sink
		Casino gaming areas	1 per 100 for the first 400 and 1 per 250 for the remainder exceeding 400	1 per 50 for the first 400 and 1 per 150 for the remainder exceeding 400	1 per 250 for the first 750 and 1 per 500 for the remainder exceeding 750		—	1 per 1,000	1 service sink

		Auditoriums without permanent seating, art galleries, exhibition halls, museums, lecture halls, libraries, arcades and gymnasiums ^d	1 per 125	1 per 65	1 per 200	—	1 per 500	1 service sink	
		Passenger terminals and transportation facilities ^d	1 per 500	1 per 500	1 per 750	—	1 per 1,000	1 service sink	
		Places of worship and other religious services ^d	1 per 150	1 per 75	1 per 200	—	1 per 1,000	1 service sink	
		Coliseums, arenas, skating rinks, pools and tennis courts for indoor sporting events and activities	1 per 75 for the first 1,500 and 1 per 120 for the remainder exceeding 1,500	1 per 40 for the first 1,520 and 1 per 60 for the remainder exceeding 1,520	1 per 200	1 per 150	—	1 per 1,000	1 service sink
		Stadiums, amusement parks, bleachers and grandstands for outdoor	1 per 75 for the first 1,500 and 1 per 120 for	1 per 40 for the first 1,520 and 1 per 60 for the	1 per 200	1 per 150	—	1 per 1,000	1 service sink

		sporting events and activities ^f	the remainder exceeding 1,500	remainder exceeding 1,520				
2	Business	Buildings for the transaction of business, professional services, other services involving merchandise, office buildings, banks, light industrial, ambulatory care and similar uses	1 per 25 for the first 50 and 1 per 50 for the remainder exceeding 50	1 per 40 for the first 80 and 1 per 80 for the remainder exceeding 80	—	1 per 100	1 service sink ^e	
3	Educational	Educational facilities	1 per 50	1 per 50	—	1 per 100	1 service sink	
4	Factory and industrial	Structures in which occupants are engaged in work fabricating, assembly or processing of products or materials	1 per 100	1 per 100	—	1 per 400	1 service sink	

5	Institutional	Custodial care facilities	1 per 10	1 per 10	1 per 8	1 per 100	1 service sink
		Medical care recipients in hospitals and nursing homes ^b	1 per room ^c	1 per room ^c	1 per 15	1 per 100	1 service sink
		Employees in hospitals and nursing homes ^b	1 per 25	1 per 35	—	1 per 100	—
		Visitors in hospitals and nursing homes	1 per 75	1 per 100	—	1 per 500	—
		Prisons ^b	1 per cell	1 per cell	1 per 15	1 per 100	1 service sink
		Reformatories, detention centers and correctional centers ^b	1 per 15	1 per 15	1 per 15	1 per 100	1 service sink
		Employees in reformatories, detention centers and correctional centers ^b	1 per 25	1 per 35	—	1 per 100	—
		Adult day care and child day care	1 per 15	1 per 15	1	1 per 100	1 service sink

6	Mercantile	Retail stores, service stations, shops, salesrooms, markets and shopping centers	1 per 500	1 per 750	—	1 per 1,000	1 service sink ^e
7	Residential	Hotels, motels, boarding houses (transient)	1 per sleeping unit	1 per sleeping unit	1 per sleeping unit	—	1 service sink
		Dormitories, fraternities, sororities and boarding houses (not transient)	1 per 10	1 per 10	1 per 8	1 per 100	1 service sink
		Apartment house	1 per dwelling unit	1 per dwelling unit	1 per dwelling unit	—	1 kitchen sink per dwelling unit; 1 automatic clothes washer connection per 20 dwelling units
		One- and two-family dwellings and lodging houses with five or fewer guestrooms	1 per dwelling unit	1 per 10	1 per dwelling unit	—	1 kitchen sink per dwelling unit; 1 automatic clothes washer connection per dwelling unit

		Congregate living facilities with 16 or fewer persons	1 per 10	1 per 10	1 per 8	1 per 100	1 service sink
8	Storage	Structures for the storage of goods, warehouses, storehouses and freight depots, low and moderate hazard	1 per 100	1 per 100	—	1 per 1,000	1 service sink

a. The fixtures shown are based on one fixture being the minimum required for the number of persons indicated or any fraction of the number of persons indicated. The number of occupants shall be determined by this code.

b. Toilet facilities for employees shall be separate from facilities for inmates or care recipients.

c. A single-occupant toilet room with one water closet and one lavatory serving not more than two adjacent patient sleeping units shall be permitted, provided that each patient sleeping unit has direct access to the toilet room and provisions for privacy for the toilet room user are provided.

d. The occupant load for seasonal outdoor seating and entertainment areas shall be included when determining the minimum number of facilities required.

e. For business ~~and mercantile~~ classifications with an occupant load of ~~4525~~ or fewer, and mercantile classifications with an occupant load of 42 or fewer, a service sink shall not be required.

f. The required number and type of plumbing fixtures for outdoor swimming pools shall be in accordance with Section 609 of the *International Swimming Pool and Spa Code*.

g. Drinking fountains are not required where only one toilet room is required.

A new *Subsection 3001.6* is hereby enacted to read as follows:

3001.6 Annual inspections. Following initial installation and approval all commercial conveying systems shall receive a minimum of one inspection per year. Upon approval a Certificate of Inspection shall be issued. The current Certificate of Inspection shall be posted in the machine room and shall be accessible to the inspector for all inspections.

Section 3109 Swimming Pool Enclosures and Safety Devices is hereby repealed in its entirety. Refer to the 2015 International Swimming Pool and Spa Code.

5. Section 10-153 of the Thornton City Code is hereby repealed and reenacted as follows:

Sec. 10-153. International Plumbing Code adopted by reference.

The International Plumbing Code, 2018 edition, is published by the International Code Council, Inc. 500 New Jersey Avenue, NW, 6th Floor, Washington, D.C. 20001. The purpose and subject matter of the International Plumbing Code includes regulating the construction, alteration, and repair of all new and existing structures and specifically all plumbing installations therein or in connection therewith. The International Plumbing Code, 2015 edition, is hereby adopted by this reference and incorporated into this Code as the Plumbing Code of the City. Except as otherwise provided in Section 10-154, the International Plumbing Code, 2018 edition, is adopted in full including the outline of contents and the index, but excluding all appendix chapters, except Appendix E.

6. Section 10-154 of the Thornton City Code is hereby repealed and reenacted read as follows:

Sec. 10-154. Amendments to International Plumbing Code.

The International Plumbing Code adopted in Section 10-153 is amended to read as follows, with section numbers referring to section numbers of the International Plumbing Code:

Subsection [A] 101.1 is hereby amended by the deletion of the words stricken and addition of the words double underlined to read as follows:

[A] 101.1 Title. These regulations shall be known as the *Plumbing Code* of the City of Thornton~~[NAME OF JURISDICTION]~~, hereinafter referred to as “this code.”

Chapter 1 Part 2-Administration and Enforcement is hereby repealed in its entirety. Please refer to Thornton City Code Chapter 10 Article II.

Subsection 305.4 is hereby amended by the deletion of the words stricken and the addition of the words double-underlined to read as follows:

305.4 Freezing. Water, soil and waste pipes shall not be installed outside of a building, in attics or crawl spaces, concealed in outside walls, or in any other place subjected to freezing temperature unless adequate provision is made to protect such pipes from freezing by insulation or heat or both. Exterior water supply system piping shall be installed not less than 648 inches (~~152 mm~~ 1219 mm) below ~~the frost line and not less than 12 inches (305 mm)~~ finished grade.

Subsection 305.4.1 is hereby amended by the deletion of the words stricken and the addition of the words double-underlined to read as follows:

305.4.1 Sewer depth. ~~Building sewers that connect to private sewage disposal systems shall be installed not less than [NUMBER] inches (mm) below finished grade at the point of septic tank connection.~~ Building sewers shall be installed not less than [NUMBER] 12 inches (305 mm) below grade.

Subsection 312.1 is hereby amended by the deletion of the words stricken to read as follows:

312.1 Required tests. The permit holder shall make the applicable tests prescribed in Section 312.2 through 312.10 to determine compliance with the provisions of this code. The permit holder shall give reasonable advance notice to the code official when the plumbing work is ready for tests. The equipment, material, power and labor necessary for the inspection and test shall be furnished by the permit holder and he or she shall be responsible for determining that the work will withstand the test pressure prescribed in the following tests. Plumbing system piping shall be tested with either water or, ~~for piping systems other than plastic, by~~ air. After the plumbing fixtures have been set and their traps filled with water, the entire drainage system shall be submitted to final tests. The code official shall require the removal of any cleanouts if necessary to ascertain whether the pressure has reached all parts of the system.

Table 403.1 is hereby amended by the deletion of the words stricken and the addition of the words double-underlined to read as follows:

**TABLE 403.1
MINIMUM NUMBER OF REQUIRED PLUMBING FIXTURES^a (See Sections 403.1.1 and 403.2)**

No.	CLASSIFICATION	DESCRIPTION	WATER CLOSETS (URINALS SEE SECTION 424.2 OF THE INTERNATIONAL PLUMBING CODE)		LAVATORIES		BATHTUBS/SHOWERS	DRINKING FOUNTAINS (SEE SECTION 410) <small>g</small>	OTHER
			Male	Female	Male	Female			
1	Assembly	Theaters and other buildings for the performing arts and motion pictures ^d	1 per 125	1 per 65	1 per 200		—	1 per 500	1 service sink
		Nightclubs, bars, taverns, dance halls and buildings for similar purposes ^d	1 per 40	1 per 40	1 per 75		—	1 per 500	1 service sink
		Restaurants, banquet halls and food courts ^d	1 per 75	1 per 75	1 per 200		—	1 per 500	1 service sink
		Casino gaming areas	1 per 100 for the first 400 and 1 per 250 for the remainder exceeding 400	1 per 50 for the first 400 and 1 per 150 for the remainder exceeding 400	1 per 250 for the first 750 and 1 per 500 for the remainder exceeding 750		—	1 per 1,000	1 service sink

		Auditoriums without permanent seating, art galleries, exhibition halls, museums, lecture halls, libraries, arcades and gymnasiums ^d	1 per 125	1 per 65	1 per 200	—	1 per 500	1 service sink	
		Passenger terminals and transportation facilities ^d	1 per 500	1 per 500	1 per 750	—	1 per 1,000	1 service sink	
		Places of worship and other religious services ^d	1 per 150	1 per 75	1 per 200	—	1 per 1,000	1 service sink	
		Coliseums, arenas, skating rinks, pools and tennis courts for indoor sporting events and activities	1 per 75 for the first 1,500 and 1 per 120 for the remainder exceeding 1,500	1 per 40 for the first 1,520 and 1 per 60 for the remainder exceeding 1,520	1 per 200	1 per 150	—	1 per 1,000	1 service sink
		Stadiums, amusement parks, bleachers and grandstands for outdoor	1 per 75 for the first 1,500 and 1 per 120 for	1 per 40 for the first 1,520 and 1 per 60 for the	1 per 200	1 per 150	—	1 per 1,000	1 service sink

		sporting events and activities ^r	the remainder exceeding 1,500	remainder exceeding 1,520				
2	Business	Buildings for the transaction of business, professional services, other services involving merchandise, office buildings, banks, light industrial, ambulatory care and similar uses	1 per 25 for the first 50 and 1 per 50 for the remainder exceeding 50	1 per 40 for the first 80 and 1 per 80 for the remainder exceeding 80	—	1 per 100	1 service sink ^e	
3	Educational	Educational facilities	1 per 50	1 per 50	—	1 per 100	1 service sink	
4	Factory and industrial	Structures in which occupants are engaged in work fabricating, assembly or processing of products or materials	1 per 100	1 per 100	—	1 per 400	1 service sink	

5	Institutional	Custodial care facilities	1 per 10	1 per 10	1 per 8	1 per 100	1 service sink
		Medical care recipients in hospitals and nursing homes ^b	1 per room ^c	1 per room ^c	1 per 15	1 per 100	1 service sink
		Employees in hospitals and nursing homes ^b	1 per 25	1 per 35	—	1 per 100	—
		Visitors in hospitals and nursing homes	1 per 75	1 per 100	—	1 per 500	—
		Prisons ^b	1 per cell	1 per cell	1 per 15	1 per 100	1 service sink
		Reformatories, detention centers and correctional centers ^b	1 per 15	1 per 15	1 per 15	1 per 100	1 service sink
		Employees in reformatories, detention centers and correctional centers ^b	1 per 25	1 per 35	—	1 per 100	—
		Adult day care and child day care	1 per 15	1 per 15	1	1 per 100	1 service sink

6	Mercantile	Retail stores, service stations, shops, salesrooms, markets and shopping centers	1 per 500	1 per 750	—	1 per 1,000	1 service sink ^e
7	Residential	Hotels, motels, boarding houses (transient)	1 per sleeping unit	1 per sleeping unit	1 per sleeping unit	—	1 service sink
		Dormitories, fraternities, sororities and boarding houses (not transient)	1 per 10	1 per 10	1 per 8	1 per 100	1 service sink
		Apartment house	1 per dwelling unit	1 per dwelling unit	1 per dwelling unit	—	1 kitchen sink per dwelling unit; 1 automatic clothes washer connection per 20 dwelling units
		One- and two-family dwellings and lodging houses with five or fewer guestrooms	1 per dwelling unit	1 per 10	1 per dwelling unit	—	1 kitchen sink per dwelling unit; 1 automatic clothes washer connection per dwelling unit

		Congregate living facilities with 16 or fewer persons	1 per 10	1 per 10	1 per 8	1 per 100	1 service sink
8	Storage	Structures for the storage of goods, warehouses, storehouses and freight depots, low and moderate hazard	1 per 100	1 per 100	—	1 per 1,000	1 service sink

a. The fixtures shown are based on one fixture being the minimum required for the number of persons indicated or any fraction of the number of persons indicated. The number of occupants shall be determined by this code.

b. Toilet facilities for employees shall be separate from facilities for inmates or care recipients.

c. A single-occupant toilet room with one water closet and one lavatory serving not more than two adjacent patient sleeping units shall be permitted, provided that each patient sleeping unit has direct access to the toilet room and provisions for privacy for the toilet room user are provided.

d. The occupant load for seasonal outdoor seating and entertainment areas shall be included when determining the minimum number of facilities required.

e. For business ~~and mercantile~~ classifications with an occupant load of ~~425~~ or fewer, and mercantile classifications with an occupant load of 42 or fewer, a service sink shall not be required.

f. The required number and type of plumbing fixtures for outdoor swimming pools shall be in accordance with Section 609 of the *International Swimming Pool and Spa Code*.

g. Drinking fountains are not required where only one toilet room is required.

Subsection 410.2 is hereby amended by the deletion of the words stricken and the addition of the words double-underlined to read as follows:

410.2 Small occupancies. Drinking fountains shall not be required where only one toilet room is required ~~for an occupant load of 15 or fewer.~~

Subsection 410.4 is hereby amended by the addition of the words double-underlined to read as follows:

410.4 Substitution. Where restaurants provide drinking water in a container free of charge, drinking fountains shall not be required in those restaurants. In other occupancies, where drinking fountains are required, water dispensers shall be permitted to be substituted for not more than 50 percent of the required number of drinking fountains.

Exception: Where only one drinking fountain is required by Table 403.1 a water cooler or bottled water dispenser may be substituted.

Subsection 416.1 is hereby amended by the addition of the words double-underlined to read as follows:

416.1 Approval. Domestic food waste disposers shall be installed under the kitchen sink in all dwelling units and manufactured homes and shall conform to ASSE 1008 and shall be listed and labeled in accordance with UL 430. Commercial food waste disposers shall conform to ASSE 1008. Food waste disposers shall not increase the *drainage fixture unit* load on the sanitary drainage system.

Subsection 421.2 is hereby amended by the addition of the words double-underlined to read as follows:

421.2 Water supply riser. Water supply risers from the shower valve to the shower head outlet, whether exposed or concealed, shall be attached to the structure. The attachment to the structure shall be made by the use of support devices designed for use with the specific piping material or by fittings anchored with screws. The rough-in height shall be not less than 75 inches (1,905 mm) above the shower or tub drain.

Subsection 421.3 is hereby amended by the deletion of the words stricken and the addition of the words double-underlined to read as follows:

421.3 Shower waste outlet. Waste outlets serving showers shall be not less than 4 ½ ~~2~~ inches (3850mm) in diameter and, for other than waste outlets in bathtubs, shall have removable strainers not less than 3 inches (76 mm) in diameter with strainer openings not less than ¼ inch (6.4 mm) in least dimension. Where each shower space is not provided with an individual waste outlet, the waste outlet shall be located and the floor pitched so that waste from one shower does not flow over the floor area

serving another shower. Waste outlets shall be fastened to the waste pipe in an approved manner.

Subsection 504.7 is hereby amended by the addition of the words double-underlined to read as follows:

504.7 Required pan. Where a storage tank-type water heater or a hot water storage tank is installed in a location where water leakage from the tank will cause damage, the tank shall be installed in a pan constructed of one of the following:

1. Galvanized steel or aluminum of not less than 0.0236 inch (0.6010 mm) in thickness.
2. Plastic not less than 0.036 inch (0.9 mm) in thickness.
3. Other approved materials.

A plastic pan shall not be installed beneath a gas-fired water heater.

Exception: Where the Building Official deems it impractical due to space restrictions to install a pan for a replacement water heater where a drain pan was not previously installed, a water alarm device may be used in lieu of the pan.

Subsection 604.8 is hereby amended by the deletion of the words stricken and the addition of the words double-underlined to read as follows:

604.8 Water-pressure reducing valve or regulator. ~~Where water~~The maximum water pressure within a building ~~exceeds~~shall be 80 psi (552kPa) static.—~~a~~An approved water-pressure reducing valve conforming to ASSE 1003 or CSA B356 with strainer shall be installed to reduce the pressure in the building water distribution piping to not greater than 80 psi (552 kPa) static.

Subsection 705.10.2 is hereby amended by the deletion of the words stricken to read as follows:

705.10.2 Solvent cementing. Joint surfaces shall be clean and free from moisture. A purple primer that conforms to ASTM F656 shall be applied. Solvent cement not purple in color and conforming to ASTM D2564, CSA B137.3, CSA B181.2 or CSA B182.1 shall be applied to all joint surfaces. The joint shall be made while the cement is wet and shall be in accordance with ASTM D2855. Solvent cement joints shall be permitted above or below ground.

~~**Exception:** A primer is not required where both of the following conditions apply:~~

- ~~1. The solvent cement used is third-party certified as conforming to ASTM D 2564.~~
- ~~2. The solvent cement is used only for joining PVC drain, waste and vent pipe and fittings in nonpressure applications in sizes up to and including 4 inches (102 mm) in diameter.~~

Subsection 706.3 is hereby amended by the deletion of the words stricken to read as follows:

706.3 Installation of fittings. Fittings shall be installed to guide sewage and waste in the direction of flow. Change in direction shall be made by fittings installed in accordance with Table 706.3. Change in direction by combination fittings, side inlets or increasers shall be installed in accordance with Table 706.3 based on the pattern of flow created by the fitting. Double sanitary tee patterns shall not receive the discharge of back-to-back water closets and fixtures or appliances with pumping action discharge.

~~**Exception:** Back-to-back water closet connections to double sanitary tees shall be permitted where the horizontal developed length between the outlet of the water closet and the connection to the double sanitary tee pattern is 18 inches (457 mm) or greater.~~

Table 709.1 is hereby amended by the deletion of the words stricken and the addition of the words double-underlined to read as follows:

**TABLE 709.1
DRAINAGE FIXTURE UNITS FOR FIXTURES AND GROUPS**

FIXTURE TYPE	DRAINAGE FIXTURE UNIT VALUE AS LOAD FACTORS	MINIMUM SIZE OF TRAP (inches)
Automatic clothes washers commercial ^{a g}	3	2
Automatic clothes washers residential ^g	2	2
Bathroom group as defined in Section 202 (1.6 gpf water closet) ^f	5	—
Bathroom group as defined in Section 202 (water closet flushing greater than 1.6 gpf) ^f	6	—
Bathtub ^b (with or without overhead shower or whirlpool attachments)	2	1½
Bidet	1	1 ¼
Combination sink and tray	2	1½
Dental lavatory	1	1 ¼
Dental unit or cuspidor	1	1 ¼
Dishwashing machine ^c , domestic	2	1½
Drinking fountain	½	1 ¼
Emergency floor drain	0	2
Floor drains ^h	2 ^h	2
Floor sinks	Note h	2
Kitchen sink, domestic	2	1½
Kitchen sink, domestic with food waste disposer, dishwasher or both	2	1½
Laundry tray (1 or 2 compartments)	2	1½
Lavatory	1	1 ¼
Shower (based on the total flow rate through showerheads and body sprays)		
Flow rate:		
5.7 gpm or less	2	1½ <u>2</u>
Greater than 5.7 gpm to 12.3 gpm	3	2
Greater than 12.3 gpm to 25.8 gpm	5	3
Greater than 25.8 gpm to 55.6 gpm	6	4
Service sink	2	1½
Sink	2	1½
Urinal	4	Note d
Urinal, 1 gallon per flush or less	2 ^e	Note d
Urinal, non-water supplied	½	Note d

Wash sink (circular or multiple) each set of faucets	2	1½
Water closet, flushometer tank, public or private	4 ^e	Note d
Water closet, private (1.6 gpf)	3 ^e	Note d
Water closet, private (flushing greater than 1.6 gpf)	4 ^e	Note d
Water closet, public (1.6 gpf)	4 ^e	Note d
Water closet, public (flushing greater than 1.6 gpf)	6 ^e	Note d

For SI: 1 inch = 25.4 mm, 1 gallon = 3.785 L, gpf = gallon per flushing cycle, gpm = gallon per minute.

- a. For traps larger than 3 inches, use Table 709.2.
- b. A showerhead over a bathtub or whirlpool bathtub attachment does not increase the drainage fixture unit value.
- c. See Sections 709.2 through 709.4.1 for methods of computing unit value of fixtures not listed in this table or for rating of devices with intermittent flows.
- d. Trap size shall be consistent with the fixture outlet size.
- e. For the purpose of computing loads on building drains and sewers, water closets and urinals shall not be rated at a lower drainage fixture unit unless the lower values are confirmed by testing.
- f. For fixtures added to a bathroom group, add the dfu value of those additional fixtures to the bathroom group fixture count.
- g. See Section 406.2 for sizing requirements for fixture drain, branch drain and drainage stack for an automatic clothes washer standpipe.
- h. See Sections 709.4 and 709.4.1.

Subsection 903.1 is hereby amended by the deletion of the words stricken and the addition of the words double-underlined to read as follows:

903.1 Roof extension. Open vent pipes that extend through a roof shall be terminated not less than ~~NUMBER~~ 6 inches (152 mm) above the roof. Where a roof is to be used for assembly or as a promenade, observation deck, sunbathing deck or similar purposes, open vent pipes shall terminate not less than 7 feet (2134 mm) above the roof.

Subsection 918.7 is hereby amended by the addition of the words double-underlined to read as follows:

918.7 Vent required. Within each plumbing system, not less than one stack vent or vent stack shall extend outdoors to the open air. Each tenant space within a single story, multitenant commercial building shall have not less than one stack vent or vent stack that extends outdoors to the open air.

A new *Subsection 1002.1.1* is hereby enacted to read as follows:

1002.1.1 Hair traps. All fixtures whose intended purpose is for the washing of hair, including pet grooming facilities, shall be equipped with an approved hair trap.

Subsection 1101.3 is hereby amended by the addition of the words double-underlined to read as follows:

1101.3 Prohibited drainage. Storm water shall not be drained into sewers intended for sewage only. Storm water shall not discharge directly over exit doors or across sidewalks and walkways. Roof areas shall not shed onto exit doors or parking areas.

Subsection E103.1 of Appendix E is hereby amended by the addition of the words double-underlined to read as follows:

E103.1 General. Decide from Table 604.3 what is the desirable minimum residual pressure that should be maintained at the highest fixture in the supply system. If the highest group of fixtures contains flushometer valves, the pressure for the group should be not less than 15 pounds per square inch (psi) (103.4 kPa) flowing. For flush tank supplies, the available pressure should be not less than 8 psi (55.2 kPa) flowing, except blowout action fixtures must be not less than 25 psi (172.4 kPa) flowing. Velocities within the piping supply system shall not exceed 10 feet per second (3.05 meter per second) or as specified by the Manufacturer, whichever is least) except by prior approval of the Building Official. Meter sizing shall be by the "City of Thornton Standards and Specifications for the Design and Construction of Public Improvements".

Subsection E201 and Table E201.1 are hereby repealed in their entirety.

- 7. Section 10-155 of the Thornton City Code is repealed and reenacted to read as follows:

Sec. 10-155. International Mechanical Code adopted by reference.

The International Mechanical Code, 2018 edition, is published by the International Code Council, Inc. 500 New Jersey Avenue, NW, 6th Floor, Washington, D.C. 20001, is hereby adopted by this reference and incorporated in this Code as the Mechanical Code of the City. The purpose and subject matter of the International Mechanical Code includes the regulation of the construction, alteration, and repair of all new and existing structures and specifically all mechanical installations therein or in connection therewith. Except as otherwise provided in this Code, the International Mechanical Code, 2018 edition, is adopted in full, including the outline of contents and the index, but excluding all appendix chapters.

- 8. Section 10-156 of the Thornton City Code is hereby repealed and reenacted as follows:

Sec. 10-156. Amendments to the International Mechanical Code.

The International Mechanical Code adopted in Section 10-155 is amended to read as follows, with section numbers referring to section numbers of the International Mechanical Code:

Subsection [A] 101.1 is hereby amended by the deletion of the words stricken and addition of the words double underlined to read as follows:

[A] 101.1 Title. These regulations shall be known as the *Mechanical Code* of ~~[NAME OF JURISDICTION]~~ the City of Thornton, hereinafter referred to as "this code."

Chapter 1 Part 2-Administration and Enforcement is hereby repealed in its entirety. Please refer to Thornton City Code Chapter 10 Article II.

9. Section 10-157 of the Thornton City Code is hereby repealed and reenacted to read as follows:

Sec. 10-157. International Fuel Gas Code adopted by reference.

The International Fuel Gas Code, 2018 edition, is published by the International Code Council, Inc. 500 New Jersey Avenue, NW, 6th Floor, Washington, D.C. 20001, is hereby adopted by this reference and incorporated in this Code as the Fuel Gas Code of the City. The purpose and subject matter of the International Fuel Gas Code includes the design and installation of fuel gas systems and gas-fired appliances. Except as otherwise provided in this Code, the International Fuel Gas Code, 2018 edition, is adopted in full, including the outline of contents and the index, but excluding all appendix chapters.

10. Section 10-158 of the Thornton City Code is hereby repealed and reenacted to read as follows:

Sec. 10-158. Amendments to the International Fuel Gas Code.

The International Fuel Gas Code adopted in Section 10-157 is amended to read as follows, with section numbers referring to section numbers of the International Fuel Gas Code:

Subsection [A] 101.1 is hereby amended by the deletion of the words stricken and addition of the words double-underlined to read as follows:

[A] 101.1 Title. These regulations shall be known as the *Fuel Gas Code* of ~~INAME OF JURISDICTION~~ the City of Thornton, hereinafter referred to as “this code.”

Chapter 1 Part 2-Administration and Enforcement is hereby repealed in its entirety. Please refer to Thornton City Code Chapter 10 Article II.

Subsection 404.12 is hereby amended by the deletion of the words stricken and the addition of the words double-underlined to read as follows:

404.12 Minimum burial depth. Underground *pipng systems* shall be installed a minimum depth of 12 inches (305 mm) below grade, ~~except as provided for in Section 404.12.1. Underground plastic piping systems shall be installed a minimum depth of 18 inches (457 mm) below grade.~~

Subsection 404.12.1 is hereby repealed in its entirety.

Subsection 406.4.1 is hereby repealed and reenacted to read as follows:

406.4.1 Test pressure. The minimum test pressure for a low-pressure gas system shall be 20 pounds per square inch (137.9 kPa) for 15 minutes. Low-pressure gas shall be defined as 14 inches of water column or less. The minimum test pressure for any other gas system shall be 60 pounds per square inch (413.7 kPa) for 30 minutes.

Subsection 406.4.2 is hereby repealed in its entirety.

Subsection 503.4.1 is hereby amended by the addition of the words double-underlined to read as follows:

503.4.1 Plastic piping. Where plastic piping is used to vent an appliance, the appliance shall be listed for use with such venting materials and the appliance manufacturer’s installation instructions shall identify the specific plastic piping material. The plastic pipe venting materials shall be labeled in accordance with the product standards specified by the appliance manufacturer or shall be listed and labeled in accordance with UL 1738. Plastic cellular core or foam core pipe shall not be used to vent fuel burning appliances.

- 11. Section 10-162 of the Thornton City Code is hereby repealed and reenacted to read as follows:

Sec. 10-162. National Electrical Code adopted by reference.

The National Electrical Code, 2017 edition, copyright 2016 by the National Fire Protection Association, is adopted by reference thereto and incorporated into this Code as the Electrical Code of the City. The purpose and subject matter of the National Electrical Code includes minimum regulations for the practical safeguarding of persons and property from the hazards arising from the use of electricity. Except as otherwise provided in Section 10-163, the National Electrical Code, 2017 edition, is adopted in full, including the outline of contents and index contained therein.

- 12. Section 10-163 of the Thornton City Code is hereby repealed and reenacted to read as follows:

Sec. 10-163. Amendments to National Electrical Code.

The National Electrical Code adopted in Section 10-162 is amended to read as follows, with article numbers referring to article numbers of the National Electric Code.

Article 110.5 is hereby amended by the addition of the words double underlined to read as follows:

110.5 Conductors. Conductors normally used to carry current shall be of copper or aluminum unless otherwise provided in this Code. Where the conductor material is not

specified, the sizes given in this Code shall apply to copper conductors. Where other materials are used, the size shall be changed accordingly. Aluminum conductors number 10 AWG or smaller are prohibited from use in the City of Thornton.

Article 210.50 is hereby amended by the addition of the words double-underlined to read as follows:

210.50 General. Receptacle outlets shall be installed as specified in 210.52 through 210.64.

(A) Cord Pendants. A cord connector that is supplied by a permanently connected cord pendant shall be considered a receptacle outlet.

(B) Cord Connections. A receptacle outlet shall be installed wherever flexible cords with attachment plugs are used. Where flexible cords are permitted to be permanently connected, receptacles shall be permitted to be omitted for such cords.

(C) Appliance Receptacle Outlets. Appliance receptacle outlets installed in a dwelling unit for specific appliances, such as laundry equipment, shall be installed within 1.8 m (6 ft) of the intended location of the appliance.

(D) Required Outlet for Sump Pit. A receptacle outlet shall be required within 6 feet (1828.8 mm) of the bottom of all sump pits.

Article 220.14(I) is hereby amended by the addition of the words double-underlined to read as follows:

220.14(I) Receptacle Outlets. Except as covered in 220.14(J) and (K), receptacle outlets shall be calculated at not less than 180 volt-amperes for each single or for each multiple receptacle on one yoke. A single piece of equipment consisting of a multiple receptacle comprised of four or more receptacles shall be calculated at not less than 90 volt-amperes per receptacle. This provision shall not be applicable to the receptacle outlets specified in 210.11(C)(1) and (C)(2). For dwellings, the number of general purpose outlets shall not exceed 8 on a 15-ampere circuit and 10 on a 20-ampere circuit.

Article 250.50 is hereby amended by the addition of the words double-underlined to read as follows:

250.50 Grounding Electrode System. All grounding electrodes as described in 250.52(A)(1) through (A)(7) that are present at each building or structure served shall be bonded together to form the grounding electrode system. Where none of these grounding electrodes exist, one or more of the grounding electrodes specified in 250.52(A)(4) through (A)(8) shall be installed and used. Where a metal underground

water pipe does not exist, there shall be provided two (2) electrodes of rods of iron or steel installed in accordance with Article 250.56.

Article 250.118 is hereby amended by the addition of the words double-underlined to read as follows:

250.118 Types of Equipment Grounding Conductors. The equipment grounding conductor run with or enclosing the circuit conductors shall be one or more or a combination of the following except that items 2-14 may not be used as the equipment grounding conductor for panel feeders:

13. Section 10-164 of the Thornton City Code is hereby repealed and reenacted to read as follows:

Sec. 10-164. International Residential Code adopted by reference.

The International Residential Code, 2018 edition, published by the International Code Council, Inc. 500 New Jersey Avenue, NW, 6th Floor, Washington, D.C. 20001., is hereby adopted by this reference and incorporated in this Code as the Residential Code of the City. The purpose and subject matter of the International Residential Code includes the design, construction, quality of materials, erection, installation, alteration, repair, location, relocation, replacement, addition to, use or maintenance of one and two-family dwellings and townhouses not more than three stories in height, and providing for the issuance of permits and collection of fees therefore. Except as otherwise provided in this Code, the International Residential Code, 2018 edition, is adopted in full including the outline of contents and the index, but excluding all appendix chapters, except Appendix H and Appendix K.

14. Section 10-165 of the Thornton City Code is hereby repealed and reenacted to read as follows:

Sec. 10-165. Amendments to the International Residential Code.

The International Residential Code adopted in Section 10-164 is amended to read as follows, with section numbers referring to section numbers of the International Residential Code:

Subsection R101.1 is hereby amended by the deletion of the words stricken and addition of the words double-underlined to read as follows:

R101.1 Title. These provisions shall be known as the *Residential Code for One- and Two-family Dwellings* of ~~[NAME OF JURISDICTION]~~City of Thornton, and shall be cited as such and will be referred to herein as “this code.”

Subsection R102.7 is hereby amended by the deletion of the words stricken and addition of the words double-underlined to read as follows:

R102.7 Existing structures. The legal occupancy of any structure existing on the date of adoption of this code shall be permitted to continue without change, except as is specifically covered in this code, the International Existing Building Code ~~International Property Maintenance Code~~ or the *International Fire Code*, or as is deemed necessary by the *building official* for the general safety and welfare of the occupants and the public.

Chapter 1 Part 2-Administration and Enforcement is hereby repealed in its entirety. Please refer to Thornton City Code Chapter 10 Article II.

Subsection R202 Definitions is hereby amended by the addition of the following definition inserted after the definition for Zone:

SLEEPING ROOM. A habitable space that meets the minimum area requirements of the building code, and, contains a closet or an area that is readily convertible to a closet. An adjacent area fitted with permanently affixed floor to ceiling shelving and no clothes rod may be defined as a storage room in a non-sleeping room.

Table R301.2(1) is hereby amended by the addition of the words double-underlined to read as follows:

**Table R301.2(1)
CLIMATIC AND GEOGRAPHIC DESIGN CRITERIA**

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

- a. 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 (i.e., "negligible," "moderate" or "severe") for concrete as determined from the Weathering Probability Map [Figure R301.2(3)]. The grade of masonry units shall be determined from ASTM C 34, C 55, C 62, C 73, C 90, C 129, C 145, C 216 or C 652.
- b. 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.

- c. The jurisdiction shall fill in this part of the table to indicate the need for protection depending on whether there has been a history of local subterranean termite damage.
- d. The jurisdiction shall fill in this part of the table with the wind speed from the basic wind speed map [Figure R301.2(4)A]. Wind exposure category shall be determined on a site-specific basis in accordance with Section R301.2.1.4.
- e. The outdoor design dry-bulb temperature shall be selected from the columns of 97¹/₂-percent values for winter from Appendix D of the *International Plumbing Code*. Deviations from the Appendix D temperatures shall be permitted to reflect local climates or local weather experience as determined by the building official.
- f. The jurisdiction shall fill in this part of the table with the seismic design category determined from Section R301.2.2.1.
- g. The jurisdiction shall fill in this part of the table with (a) the date of the jurisdiction's entry into the National Flood Insurance Program (date of adoption of the first code or ordinance for management of flood hazard areas), (b) the date(s) of the Flood Insurance Study and (c) the panel numbers and dates of all currently effective FIRMs and FBFMs or other flood hazard map adopted by the authority having jurisdiction, as amended.
- h. In accordance with Sections R905.2.7.1, R905.4.3.1, R905.5.3.1, R905.6.3.1, R905.7.3.1 and R905.8.3.1, where there has been a history of local damage from the effects of ice damming, the jurisdiction shall fill in this part of the table with "YES." Otherwise, the jurisdiction shall fill in this part of the table with "NO."
- i. The jurisdiction shall fill in this part of the table with the 100-year return period air freezing index (BF-days) from Figure R403.3(2) or from the 100-year (99 percent) value on the National Climatic Data Center data table "Air Freezing Index-USA Method (Base 32°F)" at www.ncdc.noaa.gov/fpsf.html.
- j. The jurisdiction shall fill in this part of the table with the mean annual temperature from the National Climatic Data Center data table "Air Freezing Index- USA Method (Base 32°F)" at www.ncdc.noaa.gov/fpsf.html.
- k. In accordance with Section R301.2.1.5, where there is local historical data documenting structural damage to buildings due to topographic wind speed-up effects, the jurisdiction shall fill in this part of the table with "YES." Otherwise, the jurisdiction shall indicate "NO" in this part of the table.
- l. In accordance with Figure R301.2(4)A, 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 R301.2.1.2.1, 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 Figure R301.2(6)
- p. Wind speed design may be based on 90 mph (145 km/h) 3 second gust or 80 mph (129km/h) sustained.
- q. Design to be 6 inches (152 mm) below the frost line depth per Section 403.1.4.1 This information is available in the Development Engineering Division.

Subsection R302.1 is hereby amended by the addition of the words double-underlined to read as follows:

**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 or UL 263 or section 703.3 of the <i>International Building Code</i> with exposure from both sides	0 feet <u>±</u>
	Not fire-resistance rated	0 hours	≥ 5 feet
Projections	Not allowed	N/A	<2

	Fire-resistance rated	1 hour on the underside, or heavy timber, or fire-retardant-treated wood ^{a,b}	≥2 feet to < 5 feet
	Not fire-resistance rated	0 hours	≥ 5 feet
Openings	Not allowed	N/A	< 3 feet
	25% Maximum of Wall Area	0 hours	3 feet
	Unlimited	0 hours	5 feet
Penetrations	All	Comply with Section R302.4	< 3 feet
		None required	3 feet

For SI: 1 foot = 304.8 mm.

N/A = 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.

c. Fire separation distance of 3 feet (914 mm) can be used if the exterior wall cladding and trim is of non-combustible material. No fire-resistance-rating required.

Subsection R302.3 is hereby amended by the addition of the words double-underlined to read as follows:

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 703.3 of the *International Building Code*. 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.

Exceptions:

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 NFPA 13.
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.
3. Dwelling units in two-family dwellings divided by a legal property line shall be separated by fire-resistance-rated wall assemblies meeting the requirements of Section R302.2 for Townhouses.

Subsection R302.5.1 is hereby amended by the addition of the words double-underlined to read as follows:

R302.5.1 Opening protection. Openings from a private garage directly into a room used for sleeping purposes shall not be permitted. Other openings between the garage and residence shall be equipped with solid wood doors not less than 1 3/8 inches (35 mm) in thickness, solid or honeycomb core steel doors not less than 1 3/8 inches (35 mm) thick, or 20-minute fire-rated doors, equipped with self-closing or automatic-closing device and a self-latching device.

Subsection R302.13 is hereby repealed in its entirety.

Subsections R305.1 and R305.1.1 are hereby repealed and reenacted to read:

R305.1 Minimum height. Habitable space shall have a ceiling height of not less than 7 feet 6 inches (2286 mm) measured to the lowest projection from the ceiling except as otherwise permitted in this section. Hallways, bathrooms, toilet rooms, and laundry rooms shall have a ceiling height of not less than 7 feet (2134 mm) measured to the lowest projection from the ceiling. The required height shall be measured from the finish floor to the lowest projection from the ceiling. Any basement with a finished floor of wood, concrete or other permanent material shall have a rough ceiling height of 7 feet 6 inches (2286 mm).

Exceptions:

1. For rooms with sloped ceilings, at least 50 percent of the required floor area of the room must have a ceiling height of at least 7 feet (2134 mm) and no portion of the required floor area may have a ceiling height of less than 5 feet (1524 mm).
2. Beams, girders and ductwork spaced not less than 4 feet (1219 mm) on center may project not more than 6 inches (152 mm) below the required ceiling height.

Subsection R306.2 is hereby amended by the addition of the words double-underlined to read as follows:

R306.2 Kitchen. Each *dwelling* unit shall be provided with a kitchen area and every kitchen area shall be provided with a sink and garbage disposal.

Subsection R310.1 is hereby amended by the deletion of the words stricken and the addition of the words double-underlined to read as follows:

R310.1 Emergency escape and rescue opening required. Basements, habitable attics and every sleeping room shall have not less than one operable emergency escape and rescue opening. Where basements contain one or more sleeping rooms,

an emergency escape and rescue opening shall be required in each sleeping room. Emergency escape and rescue openings shall open directly into a public way, or to a yard or court that opens to a public way.

Exceptions:

1. Storm shelters and *basements* used only to house mechanical *equipment* and not exceeding total floor area of 200 square feet (18.58 m²) and having ceiling heights less than that required by Section 305.1.
- ~~2. Where the dwelling or townhouse is equipped with an automatic sprinkler system installed in accordance with Section P2904, sleeping rooms in basements shall not be required to have emergency escape and rescue openings provided that the basement has one of the following:
 - ~~2.1 One means of egress complying with Section R311 and one emergency escape and rescue opening.~~
 - ~~2.2 Two means of egress complying with Section R311.~~~~

Subsection R310.2.1 is hereby amended by the deletion of the words stricken to read as follows:

R310.2.1 Minimum opening area. Emergency escape and rescue openings shall have a minimum net clear opening of not less than 5.7 square feet (0.530 m²). The net clear opening dimensions required by this section shall be obtained by the normal operation of the emergency escape and rescue opening from the inside. The net clear height opening shall be not less than 24 inches (610 mm) and the net clear width shall be not less than 20 inches (508mm).

~~**Exception:** Grade floor openings or below-grade openings shall have a minimum net clear opening area of not less than 5 square feet (0.465 m²).~~

Subsection R310.2.3 is hereby amended by the addition of the words double-underlined to read as follows:

R310.2.3 Window wells. All below grade windows in unfinished basements shall meet the size requirements of an egress window and shall be provided with a window well meeting the following requirements. The horizontal area of the window well shall be not less than 9 square feet (0.9 m²), with a horizontal projection and width of not less than 36 inches (914 mm). The area of the window well shall allow the emergency escape and rescue opening to be fully opened.

Exception: The ladder or steps required by Section R310.2.3.1 shall be permitted to encroach not more than 6 inches (152 mm) into the required dimensions of the window well.

Subsection R310.4 is hereby amended by the addition of the words double-underlined to read as follows:

R310.4 Bars, grilles, covers and screens. Where bars, grilles, covers, screens or similar devices are placed over emergency escape and rescue openings, area wells, or window wells, the minimum net clear opening size shall comply with Section R310.2.1 through R310.2.3, and such devices shall weigh no more than 30 lbs (13.6 kg), and be releasable or removable from the inside without the use of a key, tool, special knowledge or force greater than that required for normal operation of the escape and rescue opening.

Subsection R311.2 is hereby amended by the deletion of the words stricken and the addition of the words double-underlined to read as follows:

R311.2 Egress door. Not less than one egress door shall be provided for each *dwelling* unit. The egress door, and other exterior doors including the door from the dwelling to an attached garage, shall be side-hinged, and shall provide a clear width of not less than 32 inches (813 mm) where measured between the face of the door and the stop, with the door open 90 degrees (1.57 rad). The clear height of the door opening shall be not less than 7880 inches (~~4984~~2032 mm) in height measured from the top of the threshold to the bottom of the stop. Other doors shall not be required to comply with these minimum dimensions. Egress doors shall be readily openable from inside the *dwelling* without the use of a key or special knowledge or effort.

Exception: Sliding glass doors located in an exterior wall may be less than 32 inches (813 mm) minimum clear width but must be a minimum of 80 inches (2032 mm) in height.

Subsection R311.3.2 is hereby amended by the deletion of the words stricken to read as follows:

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 inches (196 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 the door does not swing over the stairway.~~

Subsections R311.7.7 is hereby amended by the addition of the words double-underlined to read as follows:

R311.7.7 Stairway walking surface. The walking surface of treads and landings of stairways shall be sloped not steeper than one unit vertical in 48 inches horizontal (2-

percent slope). The landing at the bottom of exterior stairways shall be a solid, durable surface.

Subsections R312.1.1 is hereby amended by the addition of the words double-underlined to read as follows:

R312.1.1 Where required. Guards shall be provided for those portions of open-sided walking surfaces, including stairs, ramps and landings, that are located within 36" of window wells, or more than 30 inches (762 mm) measured vertically to the floor or grade below at any point within 36 inches (914 mm) horizontally to the edge of the open side. Insect screening shall not be considered as a guard.

Subsection R313.1 is hereby amended by the deletion of the words stricken and the addition of the words double-underlined to read as follows:

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

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

Subsection 313.2 is hereby amended by the deletion of the words stricken and the addition of the words double-underlined to read as follows:

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

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

Subsection R315.2.2 is hereby amended by the deletion of the words stricken and the addition of the words double-underlined to read as follows:

R315.2.2 Alterations, repairs and additions. Where alterations, repairs or additions requiring a permit occur, or where one or more sleeping rooms are added or created in existing dwellings, 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 ~~or mechanical~~ systems.

Subsection R315.3 is hereby amended by the deletion of the words stricken and the addition of the words double-underlined to read as follows:

R315.3 Location. Carbon monoxide alarms in dwelling units shall be installed outside of each separate sleeping area ~~in the immediate vicinity~~ within 15 feet (4572 mm) of ~~the each~~ bedrooms. Where a fuel-burning appliance is located within a bedroom or its attached bathroom, a carbon monoxide alarm shall be installed within the bedroom.

Subsection R315.4 is hereby amended by the addition of the words double-underlined to read as follows:

R315.4 Combination alarms. Combination carbon monoxide and smoke alarms shall be permitted to be used in lieu of carbon monoxide alarms if the signals clearly differentiate between the two hazards.

Section R324.6.1 is hereby amended by the deletion of the words stricken and addition of words double-underlined to read as follows:

R324.6.1 Pathways. Not fewer than two pathways, on separate roof planes from lowest roof edge to ridge and not less than 36 inches (914 mm) wide, shall be provided on all buildings. Not fewer than one pathway shall be provided on the street or driveway side of the roof. For each roof plane with a photovoltaic array, a pathway not less than 36 inches wide (914 mm) shall be provided from the lowest roof edge to ridge on the same roof plane as the photovoltaic array, on an adjacent roof plane, or straddling the same and adjacent roof planes. Pathways shall be over areas capable of supporting fire fighters accessing the roof. Pathways shall be located in areas with minimal obstructions such as vent pipes, conduit, ~~or~~ mechanical equipment, and roof eaves less than 7 feet (2134 mm) above and within the required access aisle.

A new *Section R328* is hereby enacted to read as follows:

SECTION R328 SECURITY

R328.1 General. The purpose of this section is to establish minimum standards to make dwelling units resistant to unlawful entry and applies to all dwelling units.

R328.2 Door Requirements. All main or front entry doors to dwelling units shall be of solid core construction or metal and shall be arranged so that the occupant has a view of the area immediately outside the door without opening the door. Such view may be provided by a door viewer having a field of view of not less than 180 degrees.

R328.3 Strike plate installation. In wood frame construction an open space between trimmers and wood door jambs shall be solid shimmed by a single piece extending not less than 12 inches (305 mm) above and below the strike plate.

Strike plates shall be attached to wood with not less than four No. 8 by 3-inch (76 mm) screws, which have a minimum of $\frac{3}{4}$ inch (19 mm) penetration into the nearest stud. Strike plates when attached to metal shall be attached with not less than four No. 8 machine screws.

R328.4 Hinges. When hinges are exposed to the exterior, at least one of the three required hinges shall be equipped with nonremovable hinge pins or a mechanical interlock to preclude removal of the door from the exterior by removing the hinge pins. Not less than three $4\frac{1}{2}$ inch (114 mm) steel butt hinges shall be symmetrically fastened to both the door and the frame with not less than four No.9 by $\frac{3}{4}$ inch (19 mm) wood screws or to metal with not less than four No. 8 machine screws.

In wood construction, an open space between trimmers and wood door jambs shall be solid shimmed extending not less than 6 inches (152 mm) above and below the hinge.

R328.5 Locking hardware. Single swinging doors and the active leaf of doors in pairs shall be equipped with an approved exterior key operating deadbolt.

A new *Section R329* is hereby enacted to read as follows:

SECTION R329 MANUFACTURED HOMES

R329.1 General. All manufactured homes shall be installed and inspected in accordance with the State of Colorado Manufactured Home Installation Program and the provisions of this section. All manufactured home inspections shall be conducted by the Building Inspection Division.

R329.2 Existing Manufactured Homes

1. Whenever a manufactured home is in existence in the City on the effective date of the ordinance from which this section derives or was annexed to the City after the effective date and such manufactured home complies with all applicable codes and ordinances then in effect, the manufactured home shall be considered to be legally nonconforming and shall not be subject to the provisions of this section.
2. In the event that any such legally nonconforming manufactured home is removed from its location, the manufactured home shall not be replaced or relocated, except in conformance with all applicable provisions of the building code. In addition, if the use of such manufactured home is discontinued for a period of six consecutive months or more, the manufactured home shall not be reoccupied until it is in conformance with all applicable regulations in the building code.

R329.3 Additions, alterations and repairs. Additions, alterations and repairs to manufactured homes shall be designed and constructed in accordance with the currently adopted residential code. Additions and alterations shall be structurally independent from the manufactured home.

Exception: A structural separation need not be provided when the plans and specifications have been prepared and sealed by a design professional.

R329.4 Definition MANUFACTURED HOME PARK The terms manufactured home park (MHP) or manufactured home rental community (park) are interchangeable terms for the purposes of this section meaning a unified residential development of manufactured homes arranged on a lot under a single ownership.

R329.5 Skirting and permanent perimeter enclosures. Skirting and permanent perimeter enclosures shall be installed on all manufactured home within 60 days of approval of the utilities inspection. Skirting shall be of material suitable for exterior exposure and contact with the ground. Permanent perimeter enclosures shall be constructed of materials as required by this code for regular foundation construction.

Skirting shall be installed in accordance with the skirting manufacturer's installation instructions. Skirting shall be adequately secured to assure stability, to minimize vibration and susceptibility to wind damage, and to compensate for possible frost heave.

All skirting shall have one or more openings not less than 18 inches (457 mm) in any dimension and not less than 3 square feet (.2787 m²) in area so constructed and located to allow convenient access to all points of utilities connections. The location and design of such openings shall be approved by the Building Inspection Division.

R329.6 Smoke detectors. Manufactured homes built prior to March 2003 shall be equipped with battery powered smoke detectors with a battery rated for a 10-year life, provided the smoke detector is listed for use with a 10-year battery. The smoke detectors shall be placed as required by the currently adopted residential code.

Manufactured homes built in March 2003 and later shall have each smoke detector powered from either the electrical system of the home as the primary power source and a battery as a secondary power source; or a battery rated for a 10-year life, provided the smoke detector is listed for use with a 10-year battery. The smoke detectors shall be placed as required by the currently adopted residential code.

Regardless of the power source, smoke detectors are required to be interconnected such that the activation of any one smoke detector will cause the alarm to be triggered in all required smoke detectors in the home.

R329.7 Carbon monoxide detectors. Carbon monoxide detectors shall be installed in accordance with the provisions of section R315 of this code.

R329.8 Accessory buildings and structures. The following general requirements apply to all mobile home accessory buildings and structures:

1. Location on space. Accessory buildings and structures shall not obstruct required openings for light and ventilation of the mobile home and shall not prevent inspection of mobile home equipment and utility connections.
2. Construction. Every accessory building or structure shall be designed and constructed in accordance with the applicable provisions of all City building and construction codes, laws and ordinances.

All awnings and carports within manufactured home parks shall conform with the following specific requirements:

1. Generally. An awning or carport may be erected, constructed or maintained on a manufactured home space only as an accessory to a manufactured home located on the same space. An awning shall not be enclosed with rigid materials or walls or converted for use as a habitable room or cabana, unless the completed construction complies with all the requirements for a cabana.
2. Location. Awnings or carports may be attached to the manufactured home when in compliance with section R328.3
3. Exits from awning enclosure. An awning with enclosures of non-rigid materials shall have at least one door in the enclosure opening directly to the outside of the enclosure. The opening shall be not less than 28 inches (711 mm) in width nor less than six feet, two inches in height (1880 mm). Two such door openings shall be provided from the enclosure when the enclosure encloses two doors of the manufactured home.

Cabanas within manufactured home parks shall conform with the following specific requirements:

1. Design and construction. A cabana shall be designed and constructed as a structurally independent structure. A cabana may be attached to a manufactured home with appropriate flashing or sealing materials to provide a weather seal.
2. Dimensions.
 - a. The height of a cabana shall not exceed the height of the manufactured home.
 - b. A cabana shall have a minimum ceiling height of seven feet (2134mm) from the finished floor. If the ceiling or roof is sloped, one-half of the sloped ceiling area shall meet the minimum ceiling height. No portion of any room having

a ceiling height of less than five feet (1524 mm) shall be considered as contributing to the minimum area required in this subsection.

- c. Habitable rooms shall be not less than seven feet (2134 mm) in any horizontal dimension.

Section R403.1 is hereby amended by the addition of words double-underlined to read as follows:

R403.1 General. All exterior walls shall be supported on continuous solid or fully grouted masonry or concrete footings, crushed stone footings, wood foundations, or other approved structural systems that shall be of sufficient design to accommodate all loads according to Section R301 and to transmit the resulting loads to the soil within the limitations as determined from the character of the soil. Footings shall be supported on undisturbed natural soils or engineered fill. Concrete footing shall be designed and constructed in accordance with the provisions of Section R403 or in accordance with ACI 332.

Exception: Premanufactured one-story detached accessory structures used as tool and storage sheds, playhouses and similar uses, provided the floor area does not exceed 200 square feet (18.58 m²) may be supported on skids incorporated into the floor system. Such structures shall be anchored to the ground with approved materials to resist all applicable loads.

Subsection R403.1.4.1 is hereby amended by the addition of the words double-underlined to read as follows:

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 6 inches (152 mm) below the frost line specified in Table R301.2.(1).
2. Constructed in accordance with Section R403.3.
3. Constructed in accordance with ASCE 32.
4. Erected on solid rock.

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

Exceptions:

1. Protection of free-standing *accessory structures* with an area of 600 square feet (56 m²) or less, of light-frame construction, with an eave height of 10 feet (3048 mm) or less shall not be required.
2. Protection of free-standing *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 (3048 mm) or less shall not be required.
3. Decks not supported by a dwelling need not be provided with footings that extend below the frost line.

Subsection R405.1 is hereby amended by the deletion of the words stricken and the addition of the words double-underlined to read as follows:

R405.1 Concrete or masonry foundations. Drains shall be provided around concrete or masonry foundations that retain earth and enclose habitable or usable spaces located below grade. Drainage tiles, gravel or crushed stone drains, perforated pipe or other approved systems or materials shall be installed at or below the top of the footing or below the bottom of the slab and shall be designed to collect in a sump and discharge by gravity or mechanical means into an approved drainage system. Gravel or crushed stone drains shall extend not less than 1 foot (305 mm) beyond the outside edge of the footing and 6 inches (152 mm) above the top of the footing and be covered with an approved filter membrane material. The top of open joints of drain tiles shall be protected with strips of building paper. Except where otherwise recommended by the drain manufacturer, perforated drains shall be surrounded with an approved filter membrane or the filter membrane shall cover the washed gravel or crushed rock covering the drain. Drainage tiles or perforated pipe shall be placed on not less than 2 inches (51 mm) of washed gravel or crushed rock not less than one sieve size larger than the tile joint opening or perforation and covered with not less than 6 inches (152 mm) of the same material.

~~**Exception:** A drainage system is not required where the foundation is installed on well-drained ground or sand-gravel mixture soils according to the Unified Soil Classification System, Group I soils, as detailed in Table R405.1.~~

Subsection R408.4 is hereby amended by the deletion of the words stricken and the addition of the words double-underlined, to read as follows:

R408.4 Access. Access shall be provided to all under-floor spaces. Access openings through the floor shall be not smaller than ~~18~~22 inches by ~~24~~30 inches (~~457~~559 mm by ~~610~~762 mm). Openings through a perimeter wall shall be not less than 16 inches by 24 inches (407 mm by 610 mm). Where any portion of the through-wall access is below *grade*, an areaway not less than 16 inches by 24 inches (407 mm by 610 mm) shall be provided. The bottom of the areaway shall be below the threshold of the access opening. Through wall access openings shall not be located under a door to the residence. See Section M1305.1.4 for access requirements where mechanical *equipment* is located under floors.

Subsection R703.4 is hereby amended by the addition of the words double-underlined to read as follows:

R703.4 Flashing. Approved corrosion-resistant flashing shall be applied shingle-fashion in a manner to prevent entry of water into the wall cavity or penetration of water to the building structural framing components. Self-adhered membranes used as flashing shall comply with AAMA 711. Fluid-applied membranes used as flashing in exterior walls shall

comply with AAMA 714. The flashing shall extend to the surface of the exterior wall finish. Approved corrosion-resistant flashings shall be installed at the following locations:

1. Exterior window and door openings. Flashing at exterior window and door openings shall extend to the surface of the exterior wall finish or to the water-resistive barrier complying with Section 703.2 for subsequent drainage. Mechanically attached flexible flashings shall comply with AAMA 712. Flashing at exterior window and door openings shall be installed in accordance with one or more of the following:
 - 1.1. The fenestration manufacturer's installation and flashing instructions, or for applications not addressed in the fenestration manufacturer's instructions, in accordance with the flashing manufacturer's instructions. Where flashing instructions or details are not provided, pan flashing shall be installed at the sill of exterior window and door openings. Pan flashing shall be sealed or sloped in such a manner as to direct water to the surface of the exterior wall finish or to the water-resistive barrier for subsequent drainage. Openings using pan flashing shall incorporate flashing or protection at the head and sides.
 - 1.2. In accordance with the flashing design or method of a registered design professional.
 - 1.3. In accordance with other approved methods.
2. At the intersection of chimneys or other masonry construction with frame or stucco walls, with projecting lips on both sides under stucco copings.
3. Under and at the ends of masonry, wood or metal copings and sills.
4. Continuously above all projecting wood trim.
5. Where exterior porches, decks or stairs attach to a wall or floor assembly of wood-frame construction.
6. At wall and roof intersections. Siding, plaster, masonry and similar cladding materials shall be lapped over the flashing and installed a minimum of 2 inches (51 mm) above the surface of the roof.
7. At built-in gutters.

Subsection R703.7.2.1 is hereby amended by the addition of the words double-underlined to read as follows:

R703.7.2.1 Weep screeds. A minimum 0.019-inch (0.5 mm) (No. 26 galvanized sheet gage), corrosion-resistant or plastic weep screed, with a minimum vertical attachment flange of 3 1/2 inches (89 mm) shall be provided at or below the foundation plate line on exterior stud walls in accordance with ASTM C926. The weep screed shall be placed not less than 4 inches (102 mm) above the earth or 2 inches (51 mm) above paved areas, roof surfaces, or other areas of transition; and shall be of a type that will allow trapped water to drain to the exterior of the building. The weather-resistant barrier shall lap the attachment flange. The exterior lath shall cover and terminate on the attachment flange of the weep screed.

Subsection R905.2.4 is hereby amended by the addition of the words double-underlined to read as follows:

R905.2.4 Asphalt shingles. Asphalt shingles shall comply with ASTM D3462. Asphalt shingles shall be approved and carry a manufacturer's national wind warranty for a minimum nominal windspeed of 80 mph (128.7 km/h).

Subsection R905.2.6 is hereby amended by the addition of the words double-underlined to read as follows:

R905.2.6 Attachment. Asphalt shingles shall have the minimum number of fasteners required by the manufacturer's approved installation instructions, but not less than four fasteners per strip shingle or two fasteners per individual shingle. Where the roof slope exceeds 21 units vertical in 12 units horizontal (21:12, 175-percent slope), shingles shall be installed in accordance with the manufacturer's approved installation instructions. Asphalt shingles shall be fastened with a minimum of six fasteners between September 15 and April 15. Shingles that have not sealed at the time of final inspection shall be hand sealed in accordance with the manufacturer's installation instructions.

Subsection R908.1 is hereby amended by the addition of the words double-underlined to read as follows:

R908.1 General. Materials and methods of application used for recovering or replacing an existing roof covering shall comply with the requirements of Chapter 9.

Exceptions:

1. Reroofing shall not be required to meet the minimum design slope requirement of one-quarter unit vertical in 12 units horizontal (2-percent slope) in Section R905 for roofs that provide positive roof drainage, and have been evaluated by a registered design professional for the increase in loading due to potential ponding of water.
2. For roofs that provide positive drainage, re-covering or replacing an existing roof covering shall not require the secondary (emergency overflow) drains or scuppers of Section R903.4.1 to be added to an existing roof.

A new *Subsection R908.1.1* is hereby enacted to read as follows:

R908.1.1 Extent of replacement. When more than one square of asphalt shingles are required to be replaced over the aggregate area of the roof and a permit is required, every slope containing damaged shingles shall be replaced in its entirety. The interface of different types of shingles shall only occur at a ridge, hip or open valley.

Subsection R908.3.1.1 is hereby amended by the addition of the words double-underlined to read as follows:

R908.3.1.1 Roof recover not allowed. A roof re-cover shall not be permitted where any of the following conditions occur:

1. Where the existing roof or roof covering is water soaked or has deteriorated to the point that the existing roof or roof covering is not adequate as a base for additional roofing.
2. Where the existing roof covering is asphalt shingles, slate, clay, cement or asbestos-cement tile.
3. Where the existing roof has two or more applications of any type of roof covering.

Part IV Energy Conservation is hereby repealed in its entirety. Please refer to the International Energy Conservation Code Residential Provisions.

Subsection M1602.2 is hereby amended by the addition of the words double-underlined to read as follows:

M1602.2 Return air openings. Return air openings for heating, ventilation and air-conditioning systems shall be provided from each story and finished basement and shall comply with all of the following:

1. Openings shall not be located less than 10 feet (3048 mm) measured in any direction from an open combustion chamber or draft hood of another appliance located in the same room or space.
2. The amount of return air taken from any room or space shall be not greater than the flow rate of supply air delivered to such room or space.
3. Return and transfer openings shall be sized in accordance with the appliance or equipment manufacturer's installation instructions, Manual D or the design of the registered design professional.
4. Return air shall not be taken from a closet, bathroom, toilet room, kitchen, garage, mechanical room, boiler room, furnace room or unconditioned attic.

Exceptions:

1. Taking return air from a kitchen is not prohibited where such return air openings serve the kitchen only, and are located not less than 10 feet (3048 mm) from the cooking appliances.
2. Dedicated forced-air systems serving only the garage shall not be prohibited from obtaining return air from the garage.
5. For other than dedicated HVAC systems, return air shall not be taken from indoor swimming pool enclosures and associated deck areas except where the air in such spaces is dehumidified.

6. Taking return air from an unconditioned crawl space shall not be accomplished through a direct connection to the return side of a forced-air furnace. Transfer openings in the crawl space enclosure shall not be prohibited.
7. Return air from one dwelling unit shall not be discharged into another dwelling unit.

Subsection G2406.2 (303.3) is hereby amended by the deletion of the words stricken to read as follows:

G2406.2 Prohibited locations. Appliances shall not be located in sleeping rooms, bathrooms, toilet rooms, storage closets or surgical rooms, or in a space that opens ~~only~~ into such rooms or spaces, except where the installation complies with one of the following:

1. The appliance is a direct-vent appliance installed in accordance with the conditions of the listing and the manufacturer's instructions.
2. Vented room heaters, wall furnaces, vented decorative appliances, vented gas fireplaces, vented gas fireplace heaters and decorative appliances for installation in vented solid fuel-burning fireplaces are installed in rooms that meet the required volume criteria of Section G2407.5.
3. A single wall-mounted unvented room heater is installed in a bathroom and such unvented room heater is equipped as specified in Section G2445.6 and has an input rating not greater than 6,000 Btu/h (1.76 kW). The bathroom shall meet the required volume criteria of Section G2407.5.
4. A single wall-mounted unvented room heater is installed in a bedroom and such unvented room heater is equipped as specified in Section G2445.6 and has an input rating not greater than 10,000 Btu/h (2.93 kW). The bedroom shall meet the required volume criteria of Section G2407.5.
5. The appliance is installed in a room or space that opens only into a bedroom or bathroom, and such room or space is used for no other purpose and is provided with a solid weather-stripped door equipped with an approved self-closing device. Combustion air shall be taken directly from the outdoors in accordance with Section G2407.6.
6. A clothes dryer is installed in a residential bathroom or toilet room having a permanent opening with an area of not less than 100 square inches (0.06 m²) that communicates with a space outside of a sleeping room, bathroom, toilet room or storage closet.

Subsection G2415.12 (404.12) is hereby amended by the deletion of the words stricken and the addition of the words double-underlined to read as follows:

G2415.12 (404.12) Minimum burial depth. Underground *pip*ing systems shall be installed a minimum depth of 12 inches (305 mm) below grade, ~~except as provided for in Section G2415.10.1~~ Underground plastic piping systems shall be installed a minimum depth of 18 inches (457 mm) below grade.

Subsection G2415.12.1 (404.12.1) is hereby repealed in its entirety.

Subsection G2417.4.1 (406.4.1) is hereby repealed and reenacted to read as follows:

G2417.4.1 (406.4.1) Test pressure. The minimum test pressure for a low-pressure gas system shall be 20 pounds per square inch (138 kPa) for 15 minutes. Low-pressure gas shall be defined as 14 inches of water column or less. The minimum test pressure for any other gas system shall be 60 pounds per square inch (413.7 kPa) for 30 minutes.

Subsection G2417.4.2 (406.4.2) is hereby repealed in its entirety.

Subsection G2427.4.1 is hereby amended by the addition of the words double-underlined to read as follows:

G2427.4.1 (503.4.1) Plastic piping. Where plastic piping is used to vent an appliance, the appliance shall be listed for use with such venting materials and the appliance manufacturer's installation instructions shall identify the specific plastic piping material. The plastic pipe venting materials shall be labeled in accordance with the product standards specified by the appliance manufacturer or shall be listed in accordance with UL 1738. Plastic cellular core or foam core pipe shall not be used to vent fuel burning appliances.

A new *Subsection P2601.4* is hereby enacted to read as follows:

P2601.4 Separate connections required. A separate water service and sanitary sewer connection is required for each dwelling unit in 2-family Dwellings and Townhomes.

Subsection P2603.5 is hereby amended by the deletion of the words stricken and the addition of the words double-underlined to read as follows:

P2603.5 Freezing. In localities having a winter design temperature of 32°F (0°C) or lower as shown in Table R301.2 (1) of this code, a water, soil or waste pipe shall not be installed outside of a building, in exterior walls, in *attics* or crawl spaces, or in any other place subjected to freezing temperature unless adequate provision is made to protect it from freezing by insulation or heat or both. Water service pipe shall be installed not less than 12 48 inches (~~305 1299~~ mm) below finish grade ~~deep and not less than 6 inches (152 mm) below the frost line.~~

Subsection P2603.5.1 is hereby amended by the deletion of the words stricken and the addition of the words double-underlined to read as follows:

P2603.5.1 Sewer depth. ~~Building sewers that connect to private sewage disposal systems shall be a not less than [NUMBER] inches (mm) below finished grade at the~~

~~point of septic tank connection.~~ Building sewers shall be not less than 12[NUMBER] inches (305 mm) below grade.

Subsection P2708.3 is hereby amended by the addition of the words double-underlined to read as follows:

P2708.3 Water supply riser. Water supply risers from the shower valve to the shower head outlet, whether exposed or concealed, shall be attached to the structure using support devices designed for use with the specific piping material or fittings anchored with screws. The rough-in height shall be not less than 75 inches (1,905 mm) above the shower or tub drain.

Subsection P2801.6 is hereby amended by the addition of the words double-underlined to read as follows:

P2801.6 Required pan. Where a storage tank-type water heater or a hot water storage tank is installed in a location where water leakage from the tank will cause damage, the tank shall be installed in a pan constructed of one of the following:

1. Galvanized steel or aluminum of not less than 0.0236 inch (0.6010 mm) in thickness.
2. Plastic not less than 0.036 inch (0.9 mm) in thickness.
3. Other approved materials.

A plastic pan beneath a gas-fire water heater shall be constructed of material having a flame spread index of 25 or less and a smoke-developed index of 450 or less when tested in accordance with ASTM E84 or UL 723.

Exception: Where the Building Official deems it impractical to install a pan for a replacement water heater due to space restrictions, a water alarm device may be used in lieu of the pan.

Subsection P2903.3.1 is hereby amended by the deletion of the words stricken and the addition of the words double-underlined to read as follows:

P2903.3.1 Maximum pressure. The maximum static water pressure shall be not greater than 80 psi (551 kPa). ~~Where the main pressure exceeds 80 psi (551 kPa), an~~ An approved pressure-reducing valve conforming to ASSE 1003 or CSA B356 shall be installed on all domestic water branch mains or risers at the connection to the water-service pipe.

Subsection P3003.9.2 is hereby amended by the deletion of the words stricken to read as follows:

P3003.9.2 Solvent cementing. Joint surfaces shall be clean and free from moisture. A purple primer, ~~or other approved primer,~~ that conforms to ASTM F656 shall be

applied. Solvent cement not purple in color and conforming to ASTM D2564, CSA B137.3, or CSA B181.2 shall be applied to all joint surfaces. The joint shall be made while the cement is wet and shall be in accordance with ASTM D2855. Solvent-cement joints shall be installed above or below ground.

~~**Exception:** A primer shall not be required where all of the following conditions apply:~~

~~1. The solvent cement used is third-party certified as conforming to ASTM D2564.~~

~~2. The solvent cement is used only for joining PVC drain, waste and vent pipe and fittings in non-pressure applications in sizes up to and including 4 inches (102 mm) in diameter.~~

Subsection P3005.1.1 is hereby amended by the deletion of the words stricken to read as follows:

P3005.1.1 Horizontal to vertical (multiple connection fittings). Double fittings such as double sanitary tees and tee-wyes or *approved* multiple connection fittings and back-to-back fixture arrangements that connect two or more branches at the same level shall be permitted as long as directly opposing connections are the same size and the discharge into directly opposing connections is from similar fixture types or fixture groups. Double sanitary tee patterns shall not receive the discharge of back-to-back water closets and fixtures or appliances with pumping action discharge.

~~**Exception:** Back-to-back water closet connections to double sanitary tee patterns shall be permitted where the horizontal developed length between the outlet of the water closet and the connection to the double sanitary tee is 18 inches (457 mm) or greater.~~

Table P3201.7 is hereby amended by the deletion of the words stricken and the addition of the words double-underlined to read as follows:

**TABLE P3201.7
SIZE OF TRAPS FOR PLUMBING FIXTURES**

PLUMBING FIXTURE	TRAP SIZE MINIMUM (inches)
Bathtub (with or without shower head and/or whirlpool attachments)	1 ½
Bidet	1 ¼
Clothes washer standpipe	2
Dishwasher (on separate trap)	1 ½
Floor drain	2

Kitchen sink (one or two traps, with or without dishwasher and food waste disposer)	1 ½
Laundry tub (one or more compartments)	1 ½
Lavatory	1 ¼
Shower (based on the total flow rate through showerheads and body sprays) Flow rate: 5.7 gpm and less More than 5.7 gpm up to 12.3 gpm More than 12.3 gpm up to 25.8 gpm More than 25.8 gpm up to 55.6 gpm	1 ½ <u>2</u> 2 3 4

For SI: 1 inch = 25.4 mm, 1 gallon per minute =

Subsection P3302.1 is hereby amended by the addition of the words double-underlined to read as follows:

P3302.1 Subsoil drains. Subsoil drains shall be open-jointed, horizontally split or perforated pipe conforming to one of the standards indicated in Table P3302.1. Such drains shall be not less than 4 inches (102 mm) in diameter. Where the building is subject to backwater, the subsoil drain shall be protected by an accessibly located backwater valve. Subsoil drains shall discharge to a trapped area drain, sump, dry well or approved location above ground. Discharge into the sanitary sewer drainage system is prohibited. The subsoil sump shall not be required to have either a gas-tight cover or a vent. The sump and pumping system shall comply with Section P3303.

Subsection E3704.4 is hereby amended by the addition of the words double-underlined to read as follows:

E3704.4 Lighting and general use receptacle load. A unit load of not less than 3 volt-amperes shall constitute the minimum lighting and general use receptacle load for each square foot of floor area (33 VA for each square meter of floor area). The floor area for each floor shall be calculated from the outside dimensions of the building. The number of general purpose outlets shall not exceed 8 on a 15-ampere circuit and 10 on a 20-ampere circuit. The calculated floor area shall not include open porches, garages, or unused or unfinished spaces not adaptable for future use. [220.12, Table 220.12, and 220.14(J)]

A new *Subsection E3902.5.1* is hereby enacted to read as follows:

E3902.5.1 Sump pit receptacle. A GFCI protected receptacle shall be installed within 6 ft. (1828.8 mm) of the bottom of the sump pit.

Subsection AK101.1 is hereby amended by the addition of the words double-underlined to read as follows:

AK101.1 General. Wall and floor-ceiling assemblies separating *dwelling units* including those separating adjacent *townhouse* units and separating dwelling units from Group A, B, E, F, H, I, M, R, S and U Occupancies shall provide airborne sound insulation for walls, and both airborne and impact sound insulation for floor-ceiling assemblies.

15. Section 10-174 of the Thornton City Code is hereby repealed and reenacted to read as follows:

Sec. 10-174. International Energy Conservation Code adopted by reference.

The International Residential Code, 2018 edition, published by the International Code Council, Inc. 500 New Jersey Avenue, NW, 6th Floor, Washington, D.C. 20001, is hereby adopted by this reference and incorporated in this Code as the Energy Conservation Code of the City. The purpose and subject matter of the International Energy Conservation Code includes the design and installation of energy-efficient building envelopes and energy efficient mechanical, lighting and power systems. Except as otherwise provided in this Code, the International Energy Conservation Code, 2018 edition, is adopted in full, including the outline of contents and the index, but excluding all appendix chapters.

16. Section 10-175 of the Thornton City Code is hereby repealed and reenacted to read as follows:

Sec. 10-175. Amendments to the International Energy Conservation Code.

The International Energy Conservation Code adopted in Section 10-174 is amended to read as follows, with section numbers referring to section numbers of the International Energy Conservation Code:

Subsection C101.1 is hereby amended by the deletion of the words stricken and addition of the words double-underlined to read as follows:

C101.1 Title. This code shall be known as the *International Energy Conservation Code of the City of Thornton, [NAME OF JURISDICTION]* and shall be cited as such. It is referred to herein as “this code.”

Chapter 1 Part 2 Commercial Provisions Administration and Enforcement is hereby repealed in its entirety. Please refer to Thornton City Code Chapter 10 Article II.

Subsection C302.1 Interior design conditions is hereby amended by the deletion of the words stricken and addition of the words double underlined to read as follows:

C302.1 Interior design conditions. The interior design temperatures used for heating and cooling load calculations shall be a maximum of 7072°F (2122°C) for heating and minimum of 75°F (24°C) for cooling.

Subsection C401.2 Application is hereby amended by the deletion of the words stricken to read as follows:

C401.2 Application. Commercial buildings shall comply with one of the following:

1. The requirements of ANSI/ASHRAE/IESNA 90.1.
2. The requirements of Sections C402 through C405 and C408. ~~In addition, commercial buildings shall comply with Section C406 and tenant spaces shall comply with Section C406.1.1.~~
3. The requirements of Sections C402.5, C403.2, C403.3 though C403.3.2, C403.4 through C403.4.2.3, C403.5.5, C403.7, C403.8.1 through C403.8.4, C403.10.1 through C403.10.3, C403.11, C403.12, C404, C405, C407, and C408. ~~The building energy cost shall be equal to or less than 85 percent of the standard reference design building.~~

Subsection C402.2.6 is hereby amended by the deletion of the words stricken and addition of the words double-underlined to read as follows:

C402.2.6 Insulation of radiant heating systems. Radiant heating system panels, and their associated components that are installed in interior or exterior assemblies shall be insulated to an R-value of not less than R-5 ~~R-3.5~~ on all surfaces not facing the space being heated. Radiant heating system panels that are installed in the building thermal envelope shall be separated from the exterior of the building or unconditioned or exempt spaces by not less than the R-value of insulation installed in the opaque assembly in which they are installed or the assembly shall comply with Section C402.1.4.

Exception: Heated slabs on grade insulated in accordance with Section C402.2.4.

Subsection R101.1 is hereby amended by the deletion of the words stricken and addition of the words double-underlined to read as follows:

R101.1 Title. This code shall be known as the *International Energy Conservation Code of the City of Thornton* ~~[NAME OF JURISDICTION]~~, and shall be cited as such. It is referred to herein as “this code.”

Chapter 1 Part 2 Residential Provisions Administration and Enforcement is hereby repealed in its entirety. Refer to Thornton City Code Chapter 10 Article II.

Subsection R302.1 is hereby amended by the deletion of the words stricken and addition of the words double underlined to read as follows:

R302.1 Interior design conditions. The interior design temperatures used for heating and cooling load calculations shall be a maximum of 7072°F (2122°C) for heating and minimum of 75°F (24°C) for cooling.

Subsection R402.3 is hereby amended by the addition of the words double-underlined to read as follows:

R402.3 Fenestration (Prescriptive). In addition to the requirements of Section R402, fenestration shall comply with Sections R402.3.1 through R402.3.5.

Exception: Replacement fenestration not requiring a building permit.

Subsection R403.3.3 is hereby repealed and reenacted to read as follows:

R403.3.3 Duct testing (Mandatory). Ducts shall be pressure tested to determine air leakage by a rough-in test. The total leakage shall be measured with a pressure differential of 0.1 inch w.g. (25 Pa) across the system, including the manufacturer's air handler enclosure if installed at the time of the test. All registers shall be taped or otherwise sealed during the test.

The total leakage shall be less than or equal to 4 cubic feet per minute (113.3 L/min) per 100 square feet (9.29 m²) of conditioned floor area where the air handler is installed at the time of the test. Where the air handler is not installed at the time of the test, the total leakage shall be less than or equal to 3 cubic feet per minute (85 L/min) per 100 square feet (9.29 m²) of conditioned floor area.

A written report of the results of the test shall be signed by the party conducting the test and provided to the code official.

Subsection R403.3.4 is hereby repealed in its entirety.

17. Section 10-176 of the Thornton City Code is hereby repealed and reenacted to read as follows:

Sec. 10-176. International Existing Building Code adopted by reference.

The International Existing Building Code, 2018 edition, is published by the International Code Council, Inc. 500 New Jersey Avenue, NW, 6th Floor, Washington, D.C. 20001. The purpose and subject matter of the International Existing Building Code includes regulating construction aspects of building and providing greater safety to the public and uniformity in building laws. The International Existing Building Code, 2018 edition, is hereby adopted by this reference and incorporated into this Code as the existing building construction code of the City. Except as otherwise provided in Section 10-178,

the International Existing Building Code, 2012 edition, is adopted in full including the outline of contents and the index, but excluding all appendix chapters.

18. Section 10-177 of the Thornton City Code is hereby repealed and reenacted to read as follows:

Sec. 10-177. Amendments to the International Existing Building Code.

The International Existing Building Code adopted in Section 10-176 is amended to read as follows, with section numbers referring to section numbers of the International Existing Building Code:

Subsection 101.1 is hereby amended by the deletion of the words stricken and by the addition of the words double-underlined to read as follows:

[A] 101.1 Title. These regulations shall be known as the *Existing Building Code of* ~~[NAME OF JURISDICTION]~~ the City of Thornton, hereinafter referred to as “this code.”

Subsection 101.2 is hereby amended by the addition of the words double-underlined to read as follows:

[A] 101.2 Scope. The provisions of this code shall apply to the repair, alteration, change of occupancy, addition to and relocation of existing buildings. The relocation of existing buildings shall also comply with City Code Section 18-458.

Exception: Detached one- and two-family dwellings and multiple single-family dwellings (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, shall comply with this code or the International Residential Code.

Chapter 1 Part 2 Administration and Enforcement is hereby repealed in its entirety. Please refer to Thornton City Code Chapter 10 Article II.

Section 202 General Definitions is hereby amended by the following definition inserted after the definition for Work Area:

COLD WEATHER CARE HOUSING. Places of religious worship within the City that allow the temporary housing of homeless persons during the months of October through March.

Section 202 General Definitions; [BS] DANGEROUS is hereby amended by addition of the words double-underlined to read as follows:

[BS] DANGEROUS. Any building, structure or portion thereof that meets any of the conditions described below or meets the definition of dangerous as stated in the Uniform Code for the Abatement of Dangerous Buildings shall be deemed *dangerous*:

1. The building or structure has collapsed, has partially collapsed, has moved off its foundation or lacks the support of the ground.
2. There exists a significant risk of collapse, detachment or dislodgement of any portion, member, appurtenance or ornamentation of the building or structure under service loads.

A new Subsection 301.6 is hereby enacted to read as follows:

301.6 Carbon monoxide alarms. Regardless of compliance method all dwelling units that undergo a repair, alteration, change of occupancy, addition or relocation shall be required to install carbon monoxide alarms in accordance with the provisions of either the International Building Code or the International Residential Code.

Section 705 is hereby repealed in its entirety. Refer to Section 1511 of the *International Building Code*.

Subsection 803.4.1 is hereby amended by the deletion of the words stricken and addition of the words double-underlined to read as follows.

803.4.1 Occupancy requirements. A fire alarm system shall be installed in accordance with Sections 803.4.1.1 through 803.4.1.76. Existing alarm-notification appliances shall be automatically activated throughout the building. Where the building is not equipped with a fire alarm system, alarm-notification appliances within the *work area* shall be provided and automatically activated.

Exceptions:

1. Occupancies with an existing, previously approved fire alarm system.
2. Where selective notification is permitted, alarm-notification appliances shall be automatically activated in the areas selected.

803.4.1.1 Group E. A fire alarm system shall be installed in work areas of Group E occupancies as required by the International Fire Code ~~for existing Group E occupancies~~.

803.4.1.2 Group I-1. A fire alarm system shall be installed in work areas of Group I-1 residential care/assisted living facilities as required by the International Fire Code ~~for existing Group I-1 occupancies~~.

803.4.1.3 Group I-2. A fire alarm system shall be installed in work areas of Group I-2 occupancies as required by the International Fire Code ~~for existing Group I-2 occupancies.~~

803.4.1.4 Group I-3. A fire alarm system shall be installed in work areas of Group I-3 occupancies as required by the International Fire Code ~~for existing Group I-3 occupancies.~~

803.4.1.5 Group R-1. A fire alarm system shall be installed in Group R-1 occupancies as required by the International Fire Code ~~for existing Group R-1 occupancies.~~

803.4.1.6 Group R-2. A fire alarm system shall be installed in work areas of Group R-2 apartment buildings as required by the International Fire Code ~~for existing Group R-2 occupancies.~~

803.4.1.7 Group R-4. A fire alarm system shall be installed in work areas of Group R-4 residential care/assisted living facilities as required by the International Fire Code.

Subsection 1011.2.1 is hereby amended by the addition of the words double-underlined to read as follows:

1011.2.1 Fire sprinkler system. Where a change in occupancy classification occurs or where there is a change of occupancy within a space where there is a different fire protection system threshold requirement in Chapter 9 of the International Building Code that requires an automatic fire sprinkler system to be provided based on the new occupancy in accordance with Chapter 9 of the International Building Code, such system shall be provided throughout the area where the change of occupancy occurs.

Exception: Group A-3 places of religious worship participating in the Cold Weather Care Housing, as defined in Chapter 2, in which the aggregate sleeping areas are less than ten percent (10%) of the building area for each story that is used as an aggregate sleeping area.

19. Section 10-179 of the Thornton City Code is hereby repealed and reenacted to read as follows:

Sec. 10-179. – International Swimming Pool and Spa Code adopted by reference.

The International Swimming Pool and Spa Code, 2018 edition, is published by the International Code Council, Inc. 500 New Jersey Avenue, NW, 6th Floor, Washington, D.C. 20001. The purpose and subject matter of the International Swimming Pool and Spa Code includes regulating construction aspects of building and providing greater safety to the public and uniformity in building laws. The International Swimming Pool and Spa Code, 2018 edition, is hereby adopted by this reference and incorporated into this Code

as the Swimming Pool and Spa Construction Code of the City. Except as otherwise provided in Section 10-180, the International Swimming Pool and Spa Code is adopted in full, including outline of contents and index, but excluding all appendix chapters.

20. Section 10-180 of the Thornton City Code is hereby repealed and reenacted to read as follows:

Sec. 10-180. - Amendments to International Swimming Pool and Spa Code.

The International Swimming Pool and Spa Code adopted in Section 10-179 is hereby amended to read as follows, with section numbers referring to section numbers of the International Swimming Pool and Spa Code, to read as follows:

Subsection 101.1 is hereby amended by the deletion of the words stricken and the addition of the words double-underlined to read as follows:

101.1 Title. These regulations shall be known as the *International Swimming Pool and Spa Code* of the City of Thornton~~[NAME OF JURISDICTION]~~, hereinafter referred to as “this code.”

Chapter 1 Part 2-Administration and Enforcement is hereby repealed in its entirety. Please refer to Thornton City Code Chapter 10 Article II.

Subsection 202 Definitions is hereby amended by the deletion of the words stricken and the addition of the words double-underlined to read as follows:

Residential Swimming Pool (Residential Pool). A pool intended for use that is accessory to a One and Two Family Dwelling residential setting and available only to the household and its guests. Other pools shall be considered to be *public pools* for purposes of this code.

Types I–V. Residential pools suitable for the installation of diving equipment by type.

Type O. A nondiving residential pool.

Public Swimming Pool (Public Pool). A pool, other than a residential pool, that is intended to be used for swimming or bathing and is operated by an owner, lessee, operator, licensee or concessionaire, regardless of whether a fee is charged for use. Public pools shall be further classified and defined as follows:

Class A competition pool. A pool intended for use for accredited competitive aquatic events such as Federation Internationale De Natation (FINA), USA Swimming, USA Diving, USA Synchronized Swimming, USA Water Polo, National Collegiate Athletic Association (NCAA), or the National Federation of State High School Associations (NFHS).

Class B public pool. A pool intended for public recreational use that is not identified in the other classifications of public pools.

Class C semi-public pool. A pool operated solely for and in conjunction with lodgings such as hotels, motels, apartments, townhomes or condominiums.

Class D-1 wave action pool. A pool designed to simulate breaking or cyclic waves for purposes of general play or surfing.

Class D-2 activity pool. A pool designed for casual water play ranging from simple splashing activity to the use of attractions placed in the pool for recreation.

Class D-3 catch pool. A body of water located at the termination of a manufactured waterslide attraction. The body of water is provided for the purpose of terminating the slide action and providing a means for exit to a deck or walkway area.

Class D-4 leisure river. A manufactured stream of water of near-constant depth in which the water is moved by pumps or other means of propulsion to provide a river-like flow that transports bathers over a defined path that may include water features and play devices.

Class D-5 vortex pool. A circular pool equipped with a method of transporting water in the pool for the purpose of propelling riders at speeds dictated by the velocity of the moving stream of water.

Class D-6 interactive play attraction. A manufactured water play device or a combination of water-based play devices in which water flow volumes, pressures or patterns can be varied by the bather without negatively influencing the hydraulic conditions for other connected devices. These attractions incorporate devices or activities such as slides, climbing and crawling structures, visual effects, user-actuated mechanical devices and other elements of bather-driven and bather-controlled play.

Class E. Pools used for instruction, play or therapy and with temperatures above 86°F (30°C).

Class F. Class F pools are wading pools and are covered within the scope of this code as set forth in Section 405.

Public pools are either a diving or nondiving type. Diving types of public pools are classified into types as an indication of the suitability of a pool for use with diving equipment.

Types VI–IX. Public pools suitable for the installation of diving equipment by type.

Type O. A nondiving public pool.

Subsection 305.1 is hereby amended by the deletion of the words stricken and the addition of the words double-underlined to read as follows:

305.1 General. The provisions of this section shall apply to the design of barriers for restricting entry into areas having pools, hot tubs, and spas. Where residential spas or hot tubs are equipped with a lockable safety cover complying with ASTM F1346 ~~and swimming pools are equipped with a powered safety cover that complies with ASTM F1346~~, the areas where those spas, or hot tubs ~~or pools~~ are located shall not be required to comply with Sections 305.2 through 305.7.

Subsection 305.2.1 is hereby amended by the deletion of the words stricken and the addition of the words double-underlined to read as follows:

305.2.1 Barrier height and clearances. Barrier heights and clearances shall be in accordance with all of the following:

1. The top of the barrier shall be not less than 4872 inches (~~4249~~1829 mm) above grade where measured on the side of the barrier that faces away from the pool or spa. Such height shall exist around the entire perimeter of the barrier and for a distance of 3 feet (914 mm) measured horizontally from the outside of the required barrier. Residential swimming pools with a powered safety cover that complies with ASTM F 1346 may have a barrier 60 inches (1524 mm) in height.
2. The vertical clearance between grade and the bottom of the barrier shall not exceed 2 inches (51 mm) for grade surfaces that are not solid, such as grass or gravel, where measured on the side of the barrier that faces away from the pool or spa.
3. The vertical clearance between a surface below the barrier to a solid surface, such as concrete, and the bottom of the required barrier shall not exceed 4 inches (102 mm) where measured on the side of the required barrier that faces away from the pool or spa.
4. Where the top of the pool or spa structure is above grade, the barrier shall be installed on grade or shall be mounted on top of the pool or spa structure. Where the barrier is mounted on the top of the pool or spa, the vertical clearance between the top of the pool or spa and the bottom of the barrier shall not exceed 4 inches (102 mm).

Subsection 320.1 is hereby amended by the deletion of the words stricken to read as follows:

320.1 Backwash water or draining water. Backwash water or draining water shall be discharged to the sanitary ~~or storm~~ sewer, or into an *approved* disposal system on the premise, or shall be disposed of by other means approved by the ~~state or~~ local

authority. Direct connections shall not be made between the end of the backwash line and the disposal system. Drains shall discharge through an air gap.

Subsection 321.2 is hereby amended by the deletion of the words stricken and the addition of the words double-underlined to read as follows:

321.2 Artificial lighting required. ~~When a pool is open during periods of low natural illumination, a~~ Artificial lighting shall be provided so that all areas of the pool, including suction outlets on the bottom of the pool, will be visible. Illumination shall be sufficient to enable a lifeguard or other persons standing on the deck or sitting on a lifeguard stand adjacent to the pool edge to determine if a pool user is lying on the bottom of the pool and that the pool water is transparent and free from cloudiness.

These two conditions shall be met when all suction outlets are visible from the edge of the deck at all times when artificial lighting is illuminated and when an 8-inch-diameter (152 mm) black disk, placed at the bottom of the pool in the deepest point, is visible from the edge of the pool deck at all times when artificial lighting is illuminated.

Subsection 321.3 is hereby amended by the deletion of the words stricken to read as follows:

321.3 Emergency illumination. Public pools and public pool areas ~~that operate during periods of low illumination~~ shall be provided with emergency lighting that will automatically turn on to permit evacuation of the pool and securing of the area in the event of power failure. Emergency lighting facilities shall be arranged to provide initial illumination that is not less than 0.1 foot-candle (0.1 lumen per square foot) [1 lux] measured at any point on the water surface and at any point on the walking surface of the deck, and not less than an average of 1 foot-candle (1 lumen per square foot) [11 lux]. At the end of the emergency lighting time duration, the illumination level shall be not less than 0.06 foot-candle (0.06 lumen per square foot) [0.65 lux] measured at any point on the water surface and at any point on the walking surface of the deck, and not less than an average of 0.6 foot-candle (0.6 lumen per square foot) [6.46 lux]. A maximum-to-minimum illumination uniformity ratio of 40 to 1 shall not be exceeded.

21. If any portion of this ordinance is held to be unconstitutional or invalid for any reason, such decision shall not affect the constitutionality or validity of the remaining portions of this ordinance. City Council hereby declares that it would have passed this ordinance and each part hereof irrespective of the fact that any one part be declared unconstitutional or invalid.
22. All other ordinances or portions thereof inconsistent or conflicting with this ordinance or any portion hereof are hereby repealed to the extent of such inconsistency or conflict.

23. The repeal or amendment of any provision of the Code by this ordinance shall not release, extinguish, alter, modify, or change in whole or in part any penalty, forfeiture, or liability, either civil or criminal, which shall have been incurred under such provision, and each provision shall be treated and held as still remaining in force for the purpose of sustaining any and all proper actions, suits, proceedings, and prosecutions for the enforcement of the penalty, forfeiture, or liability, as well as for the purpose of sustaining any judgment, decree, or order which can or may be rendered, entered, or made in such actions, suits, proceedings, or prosecutions.
24. This ordinance shall take effect on September 16, 2019.

INTRODUCED, READ, PASSED on first reading, ordered posted in full, and title ordered published by the City Council of the City of Thornton, Colorado, on August 13, 2019.

PASSED AND ADOPTED on second and final reading on _____, 2019.

CITY OF THORNTON, COLORADO

Heidi K. Williams, Mayor

ATTEST:

Kristen N. Rosenbaum, City Clerk

THIS ORDINANCE IS ON FILE IN THE CITY CLERK'S OFFICE FOR PUBLIC INSPECTION.

APPROVED AS TO LEGAL FORM:

Luis A. Corchado, City Attorney

PUBLICATION:

Posted at City Hall, Margaret W. Carpenter Recreation Center, and Thornton Active Adult Center after first and second readings.

Published on the City's official website after first reading on August 14, 2019, and after second and final reading on _____, 2019.