



CITY of FORT COLLINS
1997
UNIFORM CODES
AMENDMENTS

(REVISED JUNE 1, 1998)

ORDINANCE NO. 84, 1998
OF THE COUNCIL OF THE CITY OF FORT COLLINS
REPEALING AND REENACTING CHAPTER 5, DIVISION 2
OF THE CODE OF THE CITY OF FORT COLLINS
FOR THE PURPOSE OF ADOPTING THE
1997 UNIFORM BUILDING CODE, WITH AMENDMENTS

WHEREAS, the current building code adopted by City is based on the Uniform Building Code, 1991 Edition, published by the International Conference of Building Officials (ICBO), as enacted in March 1994; and

WHEREAS, ICBO members from across the country and around the world, who meet annually for the express purpose of developing a completely revised model building code every three years, have published the 1997 Uniform Building Code as the most recent edition; and

WHEREAS, the communities of Berthoud, Fort Collins, Loveland and Wellington, and the Larimer County government, for the first time have undertaken a joint review of the new model building code for the express purpose of exploring opportunities for developing county-wide standardized amendments, where possible, to be enacted contemporaneously; and

WHEREAS, a Code Review Task Group comprised of code officials from the participating jurisdictions, builders and architects from the Larimer County region, the Home Builders' Association of Northern Colorado, Building Review Board members and Commission on Disability members, has completed a six-month review of the 1997 Uniform Building Code and the proposed amendments; and

WHEREAS, the Affordable Housing Board, the Building Review Board, and the Commission on Disability have made certain recommendations with respect to the adoption of the 1997 Uniform Building Code and the proposed amendments; and

WHEREAS, the Council of the City of Fort Collins has determined that it is in the best interest of the health, safety, and welfare of the City and its citizens that the 1997 Uniform Building Code, as amended, be adopted.

NOW, THEREFORE BE IT ORDAINED BY THE COUNCIL OF THE CITY OF FORT COLLINS that Chapter 5, Article II, Division 2 of the Code of the City of Fort Collins be repealed and reenacted to read as follows:

Sec. 5-26. Adoption of standards.

(a) There is hereby adopted by reference as the building code of the city, the 1997 Uniform Building Code, Volumes 1, 2, and 3, published by the International Conference of Building Officials, as if set forth in full herein. The subject matter of the codes adopted herein includes comprehensive provisions and standards regulating the erection, construction, enlargement, alteration, repair, moving, removal, conversion, demolition, occupancy, equipment, use, height, area and maintenance

of buildings and structures for the purpose of protecting the public health, safety and general welfare.

(b) The Fort Collins Energy Code for Commercial, Industrial, and High-Rise Buildings, based on the Codification of ASHRAE/IES 90.1-1989, Energy Efficient Design of New Buildings Except Low-Rise Residential Buildings, 1993, promulgated by the American Society of Heating, Refrigerating, and Air-Conditioning Engineers, Inc. and the Illuminating Engineering Society of North America, and as amended by the city, is hereby adopted by reference.

(c) The Model Energy Code, 1995 Edition, promulgated by the Council of American Building Officials, as amended by the city, is hereby adopted by reference.

Sec. 5-27. Amendments and deletions to code.

The 1997 Uniform Building Code, adopted herein is hereby amended in the following respects:

(1) *Sections 105.1 and 105.2* are amended to read in their entirety as follows:

"105.1 General. The Building Review Board (hereafter "Board") as established in Section 2-117 of the Code of the City of Fort Collins is hereby empowered in accordance with the procedures set forth in this Section to hear and to decide appeals of orders, decisions, or determinations made by the building official relative to the application and interpretation of this code and to the suitability of alternate materials or alternate methods of construction. The building official shall be an ex-officio member of the Board without vote and shall serve as the Secretary of the Board. The Board shall adopt rules of procedure for conducting its business, and shall render all decisions and findings in writing.

"105.2 Applications/Hearings. When a building permit applicant or a holder of a building permit desires relief from any decision of the building official related to the enforcement of this code, except as is otherwise limited in Section 105.4, such building permit applicant, building permit holder, or representative thereof may appeal the decision of the building official to the Board stating that such decision by the building official was based on an erroneous interpretation of the building regulations or that an alternate design, alternate materials and/or the alternate methods of construction proposed by the appellant are equivalent to those prescribed by this code considering structural strength, effectiveness, fire resistance, durability, safety and any other pertinent factors.

"The Board shall hear and decide all appeals made to it and shall have the authority to rule in favor of the appellant when the Board determines that the interpretation of the building regulations of the city by the building

official was erroneous, or when the Board determines an alternate design, alternate materials and/or the alternate methods proposed by the appellant are equivalent to those prescribed by this code considering structural strength, effectiveness, fire resistance, durability, safety and any other pertinent factors. The Board shall require that sufficient evidence be submitted to substantiate any claims made regarding the proposed alternate design, alternate materials and/or alternate methods of construction. A quorum of four (4) members shall be necessary for any meeting of the Board.

- (2) New sections, *Section 105.3* and *Section 105.4*, are added to read as follows:

"105.3 Fees and Notification. Persons desiring to appeal to the Board any decision of the building official as provided in this section 105, shall, at the time of filing such appeal, pay to the city a filing fee in the amount of fifty dollars (\$50.). Written notice of hearings shall be given to the Appellant and, with respect to requests for exceptions or variances authorized pursuant to Section 1101.1 of this code, to the secretary to the Commission on Disability, at least three (3) days prior to the hearing by mailing the same to such party's last known address by regular U.S. mail.

"105.4 Limitations. The Building Review Board shall have no authority with respect to any the following functions:

1. the administration of this code;
2. waiving requirements of this code, except as provided for pursuant to this Section 105;
3. modifying the applicable provisions of, or granting variances to this code, or approving the use of alternate designs, alternate materials and/or alternate methods of construction except as provided for in this Section 105 and based upon a specific appeal from a determination or decision of the building official on an individual case basis; and
4. modifying, interpreting, or ruling on the applicability or intent of the zoning and land-use regulations or other laws of the city except as expressly empowered otherwise."

- (3) *Section 106.2* is amended in the following respects:

- (a) *Item 1* thereof is amended to read in its entirety as follows:

- "12. Detached accessory buildings used for playhouses, lawn and garden equipment storage, tool storage and similar uses provided such buildings do not exceed one hundred twenty (120) square feet of floor area nor eight (8) feet in height, do not house flammable liquids in quantities exceeding ten (10) gallons per building and are constructed entirely of noncombustible materials when located less than three (3) feet from an adjoining property line."
- (b) *Item 8* thereof is amended to read in its entirety as follows:
- "8. Painting, repairing, wallpapering, texturing, cabinetry and similar finish or cosmetic work."
- (c) *Item 10* thereof is amended to read in its entirety as follows:
- "10. Window awnings on *Group R, Division 3 and Group U Occupancies* projecting not more than 54 inches (1372 mm), window replacement requiring no structural alteration and when such work is determined not to be historically significant, storm window, storm door and rain gutter installation."
- (d) *Item 11* thereof is amended to read in its entirety as follows:
- "11. Prefabricated portable swimming or wading pools, hot tubs or spas accessory to a *Group R, Division 3 Occupancy* when the walls are entirely above grade and contain water no more than twenty-four (24) inches deep."
- (e) *Items 12 through 15* are added to read as follows:
- "12. Exterior walks, driveways, parking lots except as required for facility accessibility by Chapter 11.
- "13. Roofing repair or replacement work not exceeding one square of covering per building.
- "14. Replacement of nonstructural siding on buildings classified as *Group R Division 3 and Group U Occupancies*.
- "15. Minor work valued at less than five hundred dollars (\$500.) and not involving alteration of bearing walls, structural or fire-rated assemblies, plumbing, electrical or mechanical components or fire-extinguishing systems."

- (4) *Section 107.3* is amended by adding three exceptions to the first paragraph thereof to read as follows:

"EXCEPTIONS:

- "1. After a plan review fee is collected as specified above for a building or structure to be constructed by a contractor licensed by the city and plans are subsequently submitted for another, essentially identical building or structure as determined by the building official, a complete plan review need not be performed on said subsequent plans. Such identical sets of plans submitted for each building permit shall be accompanied by a plan verification fee equal to one dollar (\$1.) per one thousand dollars (\$1,000.) of valuation or fraction thereof for each building valued up to and including ten million dollars (\$10,000,000). For each building valued more than ten million dollars (\$10,000,000.), such fee shall be equal to ten thousand dollars (\$10,000.) plus five cents (\$0.05.) for each additional thousand dollars (\$1,000.) of valuation or fraction thereof.
- "2. Plan review as required herein may be performed by an approved qualified individual or firm, provided that such individual or firm submits satisfactory proof of performance. A plan verification fee shall be assessed equal to that specified in the preceding Exception 1 in lieu of the plan review fee as prescribed in this Section.
- "3. Plans submitted for projects which do not involve significant structural work, electrical systems, plumbing systems, mechanical systems, or which do not exceed three thousand dollars (\$3,000.) in valuation are exempt from the plan review fee as specified herein."

- (5) *Section 108.5.5* is amended to read in its entirety as follows:

"108.5.5 Lath or gypsum board inspection. To be made only on walls which are part of a fire-resistive assembly or structural diaphragm after all lathing and gypsum board, exterior and interior, is in place, but before any plastering is applied or before gypsum board joints and fasteners are taped and finished."

- (6) *Section 109.1* is amended by revising the exception thereto to read as follows:

"EXCEPTION: U Occupancies"

(7) Table No. 1-A, Building permit fees, is amended to read in its entirety as follows:

"The building permit fee prescribed herein shall be calculated according to the following schedule except that no such fee shall be less than fifteen dollars (\$15.):

TABLE NO. 1-A
BUILDING PERMIT FEES

<i>Total Valuation</i>	<i>Fee^{1,2}</i>
\$1 to \$500	\$15.
\$501 to \$2,000	\$10 for the first \$500 plus \$1.50 for each additional \$100 or fraction thereof to and including \$2,000.
\$2,001 to \$25,000	\$32.50 for the first \$2,000 plus \$6 for each additional \$1,000 or fraction thereof to and including \$25,000.
\$25,001 to \$50,000	\$170.50 for the first \$25,000 plus \$4.50 for each additional \$1000 or fraction thereof to and including \$50,000.
\$50,001 to \$100,000	\$283 for the first \$50,000 plus \$3 for each additional \$1,000 or fraction thereof to and including \$100,000.
\$100,001 to \$10,000,000	\$433 for the first \$100,000 plus \$2.50 for each additional \$1,000 or fraction thereof.
\$10,000,001 and greater	\$25,183 for the first \$10,000,000 plus \$0.10 for each additional \$1000 or fraction thereof.

Other Inspections and Fees

Inspections outside of normal business hours	\$50 per hour; minimum business hours
Reinspection fee assessed under the provisions of Section 108.8	\$50 each
Inspections for which no fee is specifically indicated	\$50 per hour; minimum charge of one hour
Additional plan review required by changes, additions or revisions to approved plans	\$50 per hour; minimum charge of one hour

¹ The permit fees stated in the above table shall be increased thirty-five percent (35%) for those projects which also include any of the plumbing, electrical or mechanical permits issued under a single combined permit. Such increases shall be considered to be full payment of permit fees described in other regulations adopted by the city for issuance of individual plumbing, electrical and mechanical permits.

² The permit fees stated in the above table for the construction of a residential building shall be reduced by \$75 when an approved total energy systems analysis method is utilized to demonstrate that such building is in compliance with the energy code adopted by the city."

- (8) *Section 203-B* is amended by replacing the definition of "BUILDING OFFICIAL" with the following:

"BUILDING OFFICIAL is the person designated by the City Manager who is charged with the administration and enforcement of this code, or the building official's authorized representative."

- (9) *Section 207-F* is amended by replacing the definition of "FAMILY" with the following:

"FAMILY is defined as set forth in the zoning regulations of the city."

- (10) *Section 219-R* is amended by adding a new definition to read as follows:

"ROOM, SLEEPING (BEDROOM) is a habitable room within a dwelling unit designed primarily for the purpose of sleeping. Built-in features such as closets and similar storage facilities shall not be considered as relevant factors in determining whether or not a room is a sleeping room."

- (11) *Section 310.6.1* is amended by adding an exception to the first paragraph thereof to read as follows:

"EXCEPTION: A habitable basement room which is accessory to a dwelling unit located above may have a ceiling height of seven (7) feet (2134 mm) as measured from the floor to finish ceiling. Projections such as beams, piping and ducts shall not reduce the ceiling height to less than seventy-eight (78) inches (1981 mm)."

- (12) *Section 310.9.1.2* is amended to read in its entirety as follows:

"310.9.1.2 Additions, alterations or repairs to Group R Occupancies. When one (1) or more sleeping rooms are added or created in existing Group R Occupancies, the entire dwelling unit shall be provided with smoke detectors located and installed as required for new Group R Occupancies described herein."

- (13) *Section 310.10* is amended by revising the first sentence thereof in entirety to read as follows:

"Group R, Division 1 Occupancies shall be provided with a manual and automatic fire alarm system in apartment houses three or more stories in height or containing more than 16 dwelling units, in hotels three or more

stories in height or containing 20 or more guest rooms and in congregate residences three or more stories in height or having an occupant load of 20 or more."

- (14) *Table No. 3-B -- Required Separation in Buildings of Mixed Occupancy (Hours)*, is amended in the following respects:

- (a) A new footnote "6", is added to read as follows:

"6 For licensed home occupations as defined in the zoning regulations of the city that are located in a Group R Occupancy, no separation is required."

- (b) The entry in the "B" row under the "R-3" column and the entry in the "R-3" row under the "S-2" column are amended to read as follows:

"16"

- (15) *Section 503.1* is amended by adding a third paragraph to read as follows:

"Lines or walls which are established solely to delineate individual portions of a building or of a planned unit development (PUD) need not be considered as property lines for the purposes of this code, provided that such building is entirely located on property which is under common ownership and further provided that required distances, set forth in Section 503.3 for assumed property lines between buildings located on the same property, are maintained."

- (16) *Section 505.3* is amended by adding a paragraph thereto to read as follows:

"The provisions of this subsection for area increases may apply to residential buildings under the conditions specified in Section 907 of this code."

- (17) *Section 506* is amended by revising the last sentence thereof to read as follows:

"See Chapters 3 and 4 and Section 907 for special occupancy provisions."

- (18) *Section 508* is amended in the following respects:

- (a) An exception is added to the first sentence thereto to read as follows:

"EXCEPTION: An automatic sprinkler system installed as an alternate to providing fire containment areas as specified in Chapter

9 may be used as a substitution for one-hour fire-resistive construction throughout."

- (b) New text is added to the beginning of the second sentence thereof to read as follows:

"Except as otherwise provided in Section 907 of this code,"

- (19) *Section 509.1* is amended by adding a second paragraph to read as follows:

"All area wells, stair wells and light wells attached to any building that are located less than thirty-six (36) inches from the nearest intended walking surface and deeper than thirty-six (36) inches below the surrounding ground level, creating an opening with a horizontal dimension greater than twenty-four (24) inches measured perpendicular from the building, with the side walls of such well having a slope steeper than 2 horizontal to 1 vertical, shall be protected with guardrails conforming to this section around the entire opening, or be provided with an equivalent barrier.

"EXCEPTIONS:

1. The access side of stairways need not be barricaded.
2. Area wells provided for emergency escape and rescue windows may be protected with approved grates or covers that comply with Section 310.4 of this code.
3. Covers and grates may be used over stairways and other openings used exclusively for service access or for admitting light or ventilation."

- (20) *Section 711.6* is amended by adding an exception thereto to read as follows:

"EXCEPTION:

"Concealed laundry chutes located within individual dwelling units need not be enclosed as specified above provided all of the following conditions are met:

1. The chute is no more than four (4) square feet in cross-sectional area, and
2. The chute is constructed of not less than No. 26 gauge, corrosion-resistant sheet steel, and
3. Openings are protected with self-closing doors constructed of not less than No. 26 gauge corrosion-resistant sheet steel, 1 3/8-inch thick solid-core wood or equivalent material, and
4. The chute does not pass through more than two (2) floors."

(21) ~~Section 712~~ is amended by revising ~~Exception F~~ to read as follows:

"1. Such enclosures need not be provided in Group R, Division 3 and Group U Occupancies; and in individual dwelling units of Group R, Division 1, occupancies."

(22) *Section 903* is amended by the addition of three new definitions to the list of terms therein in alphabetical sequence of such list to read as follows:

"**ADJACENT DWELLING UNIT** is a dwelling unit which adjoins another dwelling unit at some point or along a common line.

"**APPROVED RESIDENTIAL-TYPE FIRE SPRINKLER SYSTEM** is an automatic fire protection system capable of applying water to fire in accordance with the performance criteria of Poudre Fire Authority for design, installation and maintenance.

"**FIRE CONTAINMENT AREA** is a portion of a story or basement which is totally enclosed by a smoke and draft barrier of not less than 1-hour fire-resistive construction and as prescribed herein. All door openings penetrating such fire-containment areas shall be protected by tight-fitting smoke and draft control assemblies as specified in Section 1004.3.4.3.2.1 except that such doors shall be automatic closing by actuation of a smoke detector in accordance with Section 713.2. All duct penetrations shall be protected by dampers complying with Section 1004.3.4.3.2.3 with a minimum leakage classification of III, except that such dampers shall be automatic closing by actuation of a smoke detector. Openings other than doors and ducts shall be protected as specified in Section 1004.3.4.3.2 and shall be limited to a maximum of twenty-five (25) percent of any one (1) wall. Self-closing devices may be used in lieu of automatic closing devices on doors unlikely to be fixed open during normal conditions. Examples are doors at toilet room, vertical stairways, closets and small storage rooms and similar areas."

(23) *Section 904.1.3*, is amended to read in its entirety as follows:

"**Modifications.** When residential sprinkler systems as set forth in UBC Standard 9-3 are provided, exceptions to, or reductions in, code requirements based on the installation of an automatic fire-extinguishing system shall not be allowed except as otherwise provided."

(24) *Section 904.2.2* is amended in the following respects:

(a) The first sentence thereof is revised to read as follows:

"Except for Group R, Division 3 and Group U, Divisions 1 and 2 Occupancies, an automatic sprinkler system shall be installed in all buildings which are not divided into fire containment areas as specified in Table 9-B; and as follows:"

- (b) *Item 1* is amended by adding an exception to the first paragraph thereof to read as follows:

"EXCEPTION:

An automatic fire extinguishing system shall not be required in a Group R, Division 1 basement, provided that the following conditions exist:

1. The basement area is accessory to and incorporated within an individual dwelling unit.
2. The individual basement area does not exceed one thousand five hundred (1,500) square feet of floor area.
3. The individual dwelling unit is separated by one-hour fire-resistive construction."

- (25) *Section 904.2.9* is amended by revising the first sentence thereof to read as follows:

"An automatic sprinkler system shall be installed throughout every apartment house three or more stories in height or containing more than 16 dwelling units, every congregate residence three or more stories in height or having an occupant load of 20 or more, and every hotel three or more stories in height or containing 20 or more guest rooms."

- (26) A new section, *Section 907*, is added to *Chapter 9* to read as follows:

"SECTION 907--RESIDENTIAL-TYPE FIRE SPRINKLER SYSTEMS

"907.1 General. The purpose of this section is to provide alternate equivalent fire protection for residential occupancies by the use of fast response fire sprinkler technology. When approved residential-type fire sprinklers are installed in accordance with Poudre Fire Authority design criteria in residential buildings, the design and construction modifications of this Section may be applied. Occupancies eligible for review under this Section are those occupancies defined as R-1 or R-3 and their accessory U occupancies. Provisions of this Section shall not be applicable to residential buildings of four (4) or more stories or more than fifty-five (55) feet in height.

"907.2 Increases in Maximum Allowable Building Dimensions and Fire-resistive or Specialized Construction Substitutions. Allowable building dimensions may be increased and fire-resistive and specialized construction in eligible buildings as specified in Section 907.1 may be substituted with an approved residential-type fire sprinkler system in the following cases:

1. For an increase in allowable floor area as permitted in Section 505.3.
2. For an increase in allowable building height or in the number of stories as permitted in Section 506.
3. For type of construction as permitted in Section 508.
4. In lieu of fire-resistive construction in dwelling unit separations and storage and laundry rooms as specified in Section 310.2.2.
5. To allow the one-story increase permitted in Section 506 to be compounded with increases for either allowable area or fire-resistive construction.
6. In lieu of a fire alarm system as specified in the Uniform Fire Code, provided each dwelling unit has its primary exit directly to the exterior, to an exterior exit balcony, to an exterior exit stairway, or to an exterior exit ramp.
7. To allow non-rated construction of Group R, Division 1 occupancies more than two (2) stories in height or having more than three thousand (3,000) square feet of floor area above the first story and as limited in Section 907.1.
8. To allow the maximum aggregate area of a mezzanine to be equal to one-half of the area of the room in which it is located, without being considered an additional story; and to allow the mezzanine to be closed to the room in which it is located, provided exits from the mezzanine are in conformance with Section 507.
9. In lieu of Fire Containment Areas as specified in Section 904.2.2 and Table 9-B.
10. To allow non-rated exterior walls, exterior openings, and exterior projections in lieu of protection of such elements which are otherwise restricted due to proximity to property lines as specified in Chapter 5.
11. In lieu of the one-hour fire-resistive separation of boiler or central heating plant rooms in Group R, Division 1 occupancies from the rest of the building.

"907.3 Exits and Corridors. Every building or portion thereof shall be provided with exits as required by Chapter 10; except that in an eligible building as specified in Section 907.1 in which an approved residential-type fire sprinkler system is installed, the following conditions are permitted:

1. The second story may be provided with one (1) exit when the occupant load does not exceed fifteen (15) or the number of dwelling units does not exceed five (5), whichever is least restrictive.

2. Occupants on the third story may have access to one (1) conforming exit when all exits are exterior and continue directly to grade level and when a single exit serves no more than two (2) dwelling units on the third story.
3. Walls, ceilings and floors of corridors in Group R, Division 1 occupancies shall be required to be one-hour, fire-resistive construction when serving an occupant load of thirty (30) or more.
4. Door openings in corridors serving an occupant load of more than ten (10), but less than thirty (30), may be provided with either a noncombustible door or a solid core, 1-3/8-inch thick door; provided such doors are self-closing and equipped with a smoke gasket to provide a seal where the door meets the top and sides."

(27) *Table 9-B, Maximum Allowable Fire-Containment Area*, is added to read as follows:

TABLE 9-B

MAXIMUM ALLOWABLE FIRE-CONTAINMENT AREA
(IN SQUARE FEET)

Occupancy	Types of Construction								
	I-FR	II-FR	II-1HR	II-N	III-1HR	III-N	IV-HT	V-1HR	V-N
A1	10,000	10,000	NP	NP	NOT PERMITTED	NP	NP	NP	NP
A2, 2.1	10,000	10,000	5,000	NP	5,000	NP	5,000	5,000	NP
A3, 4	10,000	10,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000
B, F1, M, S1, S3 S4, S5, U3	10,000	10,000	7,000	5,000	7,000	5,000	7,000	7,000	5,000
F2, S2	20,000	20,000	10,000	7,000	10,000	7,000	10,000	10,000	5,000
E	10,000	10,000	7,000	5,000	7,000	5,000	7,000	7,000	5,000
R1	10,000	10,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000

(28) *Section 1003.3.1.1* is amended by adding a fourth paragraph thereto to read as follows:

"Other doors which are provided for access only and are neither required nor used for exit purposes need not conform to this Chapter, provided such doors cannot be readily construed as exits by building occupants. Such doors may be rendered permanently inoperable, provided such doors do not

have grasping hardware, closers or exit signs installed thereon and are made to appear inconspicuous or resemble the adjacent wall construction or are provided with an obvious barricade."

(29) *Section 1003.3.1.6* is amended in the following respects:

(a) A new *Item 1.4* is added under *Exception 1* to read as follows:

"1.4. Exterior doors, other than the main entrance door to a dwelling unit, may open at one intervening exterior step that is equally spaced between the interior floor level above and exterior landing below, provided the step has a minimum tread depth of twelve (12) inches, a maximum riser height of eight (8) inches, and a minimum width equal to the door width; and provided the door does not swing over the step."

(b) A second paragraph is added at the end of this section to read as follows:

"All exterior steps, slabs, walks, decks and patios serving as exterior door landings or exterior stairs shall be adequately and permanently secured in place by approved methods to prevent such landings or stairs from being undermined or subject to significant displacement due to improper placement of supporting backfill or due to inadequate anchoring methods."

(30) The first paragraph of *1003.3.1.8* is amended by adding a third exception to read as follows:

"3. In other than individual dwelling units, Group R, Division 1 guest rooms and congregate residences, exit doors from buildings or rooms having an occupant load of ten (10) or less may have a night latch, dead bolt, security chain or other security device which can be readily inactivated provided a sign is posted conforming to exception 1 above."

(31) *Section 1003.3.3.6* is amended by revising the first sentence of the second paragraph thereof to read as follows:

"The top of handrails and handrail extensions shall be placed not less than thirty-two (32) inches nor more than thirty-eight (38) inches above landings and the nosing of treads."

(32) *Section 1101.1* is amended by adding third and fourth paragraphs respectively thereto to read as follows:

"Nothing in this code shall be construed as relieving or waiving compliance with Colorado law as set forth in Section 9-5-101 et seq., C.R.S. thereof, which prescribes that for any property containing more than seven (7) dwelling units in one or more multiple housing-unit buildings, the standards for making such buildings and facilities accessible and usable by persons with disabilities shall be as specified in American National Standards

** Institute pamphlet number A117.1-1980. Said standards shall apply to the construction of one (1) accessible dwelling unit for every seven (7) dwelling units of the total constructed on any such property described herein in the incremental quantities listed as follows:

<i>Total Number of Units</i>	<i>Accessible Units Required</i>
7	0
8 to 14	1
15 to 21	2
22 to 28	3
29 to 35	4
36 to 42	5
Etc.	Etc.

"When the Building Review Board considers granting exceptions or variances either to this chapter pursuant to Section 105 of this code or to Colorado Statutes pursuant to Section 9-5-102, C.R.S., it shall require the applicant requesting the exception or variance to demonstrate that the application of a particular standard or specification relating to access for persons with disabilities would impose an extraordinary hardship on the subject property. For the purposes of this section, an extraordinary hardship shall mean a substantial and unusual hardship which is the direct result of unique physical site conditions such as terrain, topography or geology; or, which is the direct result of other unique or special conditions encountered on the subject property, but which are not typically encountered elsewhere in the city. Constraints, complications or difficulties that may arise by complying with this chapter and/or with the statutory standards for accessibility but that do not constitute an extraordinary hardship shall not serve to justify the granting of an exception or variance."

(33) *Section 1103.1.9.1* is amended by adding new paragraphs after the last paragraph thereof to read as follows:

"When any building or buildings, classified as Group R, Division 1 Occupancy, are constructed as a single building project (or any phase thereof) on any one site and such building project (or phase) contains one or more accessible dwelling units as required by this chapter or Colorado law, said building project (or phase) shall be constructed such that all such required accessible dwelling units in such building project (or phase)

provide the same functional features as are provided in the nonaccessible units in such building project (or phase). Furthermore, such functional features except for dwelling unit bedroom-types shall be provided in the same proportion as in the nonaccessible units. Not less than 50% of the required accessible dwelling units shall be constructed with the distribution of accessible dwelling unit bedroom-types being proportionally the same as the distribution of non-accessible dwelling unit bedroom-types, provided that at least one of each dwelling unit bedroom-type constructed in the building project (or phase) shall be an accessible dwelling unit.

"For purposes of this section, the following definitions shall apply: 'Dwelling unit bedroom-type' shall mean the number of bedrooms within the dwelling unit. 'Functional feature' shall mean: a closet, a garage, a carport, a patio, a deck, additional rooms (such as a bedroom, bathroom, den, storeroom, laundry or similar room) and any other significant feature built at the time of original construction that offers occupants improved convenience or comfort. Aesthetic or decorative features such as colors, architectural design elements, trim and finish materials, decorative heating appliances not providing the primary comfort heat source, lighting fixture style, cabinet and hardware style, plumbing fixture style, the type and location of windows and glazed lights, or any similar miscellaneous features shall not be construed as functional features."

- (34) *Section 1103.1.9.2* is amended by revising the first sentence thereof to read as follows:

"Hotels, lodging houses and congregate residences shall be provided with accessible units complying with the standards promulgated by the American National Standards Institute pamphlet number A117.1-1992. ** Said standards shall apply to the construction of one (1) accessible unit for every seven (7) units of the total constructed in buildings containing the uses as described above in the incremental quantities listed as follows:

<i>Total Number of Units</i>	<i>Accessible Units Required</i>
7	0
8 to 14	1
15 to 21	2
22 to 28	3
29 to 35	4
36 to 42	5
Etc.	Etc."

- (35) *Section 1202.2.1* is amended by adding a new paragraph thereto to read as follows:

"In rooms or portions of buildings where tobacco smoking is permitted, the mechanically operated ventilation system shall be capable of either supplying thirty (30) cubic feet per minute of outside air per occupant or as specified in Table A-12-A of *Appendix Chapter 12* for smoking lounges when such places are occupied. "

(36) *Section 1203.1* is amended by adding a third exception thereto to read as follows:

"3. Light and ventilation for an interior room may be supplied from an adjoining exterior room, provided the following conditions are met:

3.1. The common wall is provided with operable openings having an aggregate area of not less than one-twentieth (1/20) of the floor area of the interior room.

3.2. The adjoining exterior room has openable exterior openings for light and ventilation as required in this section, plus additional such openings not less in area than the amount required for the interior room."

(37) *Section 1203.2* is amended by deleting the exception in its entirety and replacing it with two new exceptions to read as follows:

"EXCEPTIONS:

1. Artificial light may be substituted for natural light for all habitable rooms in basements other than in sleeping rooms, provided such rooms are not a part of dwelling unit located in a basement.
2. Kitchens in Group R Occupancies may be provided with artificial light."

(38) A new section, *Section 1210* is added to the end of *Chapter 12* to read as follows:

"SECTION 1210 - RADON REDUCTION SYSTEMS

"1210.1 General. The standards set forth in this section shall apply to the design and installation of radon reduction systems in new Group R, Division 3 single-family homes, when such systems are provided. The provisions of this section are not intended as requiring such systems.

"1210.2 Definitions. For the purpose of this section, certain terms are defined as follows:

"DIFFUSION RETARDER MEMBRANE is a continuous film of minimum 6 mil polyethylene or other approved equivalent material with a maximum permeability rating of 1 perm; and, which entirely covers all exposed earth in a crawl space or similar space within a building. Any joint or seam created where more than one section of material is used, is overlapped a minimum of 12 inches (305 mm).

"SUB-MEMBRANE SYSTEM is a radon collection system designed to be used with a crawl space foundation or other similar, exposed, earthen area within a structure to provide method for the collection of soil gases from beneath an approved diffusion retarder membrane prior their entry into the air space of the building and vent them to the outside. The venting of the collected gases may be achieved in one of two methods as follows:

1. **Passive Sub-membrane Systems.** Such systems include a radon vent pipe routed through the conditioned space of a building and connecting the sub-membrane area with outdoor air, thereby relying on the convective flow of air upward in the vent to draw air from beneath the membrane.
2. **Active sub-membrane systems.** Such systems include all components of a passive system with a fan-powered depressurization vent drawing air from beneath the membrane.

"SUB-SLAB SYSTEM is a radon collection system designed to be used with concrete slab-on-grade or concrete basement floor foundations to provide a method for the collection of gases immediately below the slab prior to the gases entry into the air space of the building via openings in the slab and to vent them to the outside. The venting of the collected gases may be achieved in one of two methods as follows:

1. **Passive sub-slab systems.** Such systems include a radon vent pipe routed through the conditioned space of a building and connecting the sub-slab area with outdoor air, thereby relying on the convective flow of air upward in the vent to draw air from beneath the slab.
2. **Active sub-slab systems.** Such systems include all components of a passive system with a fan-powered depressurization vent drawing air from beneath the slab.

"1210.3 Sealing of Openings, Penetrations, and Joints; and Surface Dampproofing. Where a radon collection system is installed, openings, penetrations, joints, and porous surfaces shall be sealed in accordance with this section. Gaps and joints shall be cleared of loose material and filled with polyurethane caulk or other compatible elastomeric sealant approved for such use, applied in accordance with the manufacturer's

recommendations. The following specific locations are required to be sealed:

1. At control joints, isolation joints, construction joints, and any other joints in concrete slabs or between slabs and foundation walls.
2. At joints, cracks, or other openings around all penetrations of both exterior and interior surfaces of masonry block or wood foundation walls below exterior grade level.
3. At any hollow unit masonry foundation course immediately below a ledge for brick veneer or other masonry.
4. At openings around bathtubs, showers, water closets, pipes, wires, or other objects that penetrate concrete slabs.
5. In sump pits open to soil, exterior or interior drain loops. (These shall be covered with a gasket or a re-sealable cover.)

"1210.4 Combination Foundation Systems. In buildings with both slab-on-grade and space foundations, a combined radon reduction system may be provided for both foundation types interconnected to a common radon vent pipe, either above or below the foundation.

"1210.5 Sub-membrane Systems. When a radon reduction system is provided in buildings with crawl-space foundations or similar exposed earthen areas within such buildings, a passive or active sub-membrane system as defined in Section 1210.2 shall be connected to a radon vent pipe in accordance with Section 1210.7. The diffusion retarder membrane described in Section 1210.2 shall be sealed with an approved sealant in the following manner:

1. at the edges of the diffusion retarder membrane to the above grade surface of the interior of the foundation walls, and
2. between the overlapping seams, and sealing around plumbing lines and other penetrations through the diffusion retarder membrane.

"1210.6 Sub-slab Systems. When a radon reduction system is provided in buildings with basements or concrete slabs-on-grade, a passive or active sub-slab collection system as prescribed herein shall be connected to a radon vent pipe installed in accordance with Section 1210.7. A means for allowing the collection of sub-grade soil gas shall be placed under all concrete slabs that directly contact the ground and are within the living space using either one of the following two options:

1. Aggregate Option. A uniform layer 4 inches (102 mm) thick of clean aggregate which passes through a 2-inch (51 mm) sieve and is retained by a 1/4-inch (6.4 mm) sieve shall be placed beneath all such concrete slabs. In buildings where interior footings or other barriers separate sub-grade areas, penetrations through the interior footing or barrier equal to a minimum of 12 square inches (0.094 m²) per 10 feet (3 m) of barrier length shall be provided. A minimum of two penetrations shall be provided per separation and be evenly spaced along the separation.

EXCEPTION: In buildings where interior footings or other barriers separate the sub-grade area, separate radon vent pipes may be installed for each sub-grade area as specified in section 1210.7 in lieu of penetrations through the barrier.

2. Mechanical Collection Option. Where fills of aggregate size less than that described in the preceding option are used beneath a slab, a mechanical means for augmenting the flow of sub-grade air shall be used by either of the following methods.
 - a. Perforated Pipe Method: For slab areas less than 2,000 square feet (186 m²), a continuous loop of minimum 3-inch (76 mm.) diameter perforated pipe shall be laid in the sub-grade with the top of pipe located 1 inch below the concrete slab. The pipe may be rigid or flexible but shall have perforations fully around the circumference with a free air space equal to 1.83 square inches per square foot (127 cm²/ m²) of exterior pipe surface area. Such pipe shall be wrapped with approved filter material to prevent blocking of pipe perforations. The pipe loop shall be located inside of the exterior perimeter foundation walls not more than 12 inches (305 mm) from the perimeter foundation walls. In buildings where interior footings or other barriers separate the sub-grade area, the loop of pipe shall penetrate, or pass beneath, these interior footings or barriers. For slab areas greater than 2,000 square feet (186 m²) but less than 4,000 square feet (372 m²), the preceding configuration may be used provided a minimum of 4-inch diameter (102 mm) pipe is installed. Slabs in excess of 4,000 square feet shall have separate loops for every additional 2,000 square feet when 3-inch diameter pipe is used; or, slabs may have separate loops provided for each additional increment in area between 2,000 square feet and 4,000 square feet when 4-inch diameter pipe is used.
 - b. Soil gas Collection Mat Method: For slab areas of 2,000 square feet or less a continuous rectilinear loop of soil gas collection

mat or drainage mat having minimum dimensions of 1 inch in height by 12 inches in width and a nominal cross-sectional air flow area of 12 square inches may be laid on top of the sub-grade. The mat shall be constructed of a matrix that allows for the movement of air through it and be capable of supporting the concrete placed upon it. The matrix shall be covered by approved filter material on all four sides to prevent dirt or concrete from entering the matrix. All breaches and joints in the filter material shall be repaired prior to the placement of the slab. The loop shall be located inside the exterior perimeter foundation walls and within 12 inches from the perimeter foundation walls. In buildings where interior footings or other barriers separate the sub-grade area, the mat shall penetrate these interior footings or barriers to form a continuous loop around the exterior perimeter. Slabs larger than 2,000 square feet but less than 4,000 square feet shall have an additional strip of mat that bisects the loop forming two areas approximately equally divided by the two halves of the rectilinear loop. Slabs larger than 4,000 square feet shall have separate loops for each 2,000 square feet; or, increased to 4,000 square feet when a loop is bisected as specified in the preceding configuration.

A diffusion retarder membrane shall be placed on top of the gas permeable layer covering the entire floor area prior to casting the slab. The membrane shall fit closely around any pipes, wires or other penetrations. All punctures or tears shall be sealed or covered with additional membrane material.

EXCEPTION:

Such membrane may be omitted where all joints, seams, penetrations, and other openings in the concrete floor slab are sealed as prescribed in Section 1210.3.

"1210.7 Radon Vent Pipe. A radon vent pipe as specified herein shall be connected to every radon collection system in a manner that does not restrict air flow into the vent pipe. Every radon vent pipe shall be independent of any other vent system."

"1210.7.1 Size and materials. The radon vent pipe shall be a minimum of a cross-sectional area equal to 0.0063 square inches per square foot (0.44 cm²/m²) of foundation floor area vented and be a minimum pipe diameter size of 3-inch (76 mm). The radon vent pipe shall be made of schedule 40 ABS, PVC, DWV, or other approved gas-tight pipe."

"1210.7.2 Connection to sub-slab aggregate. Where a sub-slab collection system complying with Option 1 of section 1210.6 is utilized, the radon vent pipe shall be embedded vertically into the gas permeable layer of the sub-slab system by means of the termination being connected to a Tee fitting of equal size whose horizontal legs are parallel and within the layer of aggregate. Furthermore, perforated pipes 5 feet (1.53 m) in length shall be connected to each of the open ends of the Tee and laid into the aggregate layer of gravel as a means for restricting the entry of aggregate into the Tee, or equivalent method, shall be provided.

"1210.7.3 Connection to sub-slab mechanical collection systems. Where a sub-slab system complying with Option 2 of section 1210.6 is utilized, the radon vent pipe shall be connected directly to the sub-slab perforated pipe or soil gas collection systems as described therein. The connector shall have a free flow area equal to, or larger than, the nominal cross-sectional area of the mechanical collection system or the radon vent pipe, whichever is greater.

"1210.7.4 Connection to sub-membrane collection systems. Where a sub-membrane collection system complying with section 1210.5 is utilized, the radon vent pipe shall penetrate beneath the membrane vertically and connected to a Tee fitting of equal size whose horizontal legs are parallel and between the membrane and the earthen floor. Furthermore, perforated pipes 5 feet (1.53 m) in length shall be connected to each of the open ends of the Tee and laid into the aggregate layer of gravel as a means for restricting the entry of aggregate into the Tee, or equivalent method, shall be provided.

"1210.7.5 Accessibility. The radon vent pipe shall be accessible through an attic or other area outside the habitable space for future installation of a fan.

"1210.7.6 Identification. All exposed and visible interior radon vent pipes shall be permanently marked and identified in an approved manner with a minimum of one label per floor and in the accessible attic. The label shall read: "Radon Reduction System.

"1210.7.7 Drainage. All components of the radon vent pipe system shall be installed in such a manner so as to provide positive drainage of moisture to the ground beneath the slab or diffusion retarder membrane.

"1210.7.8 Multiple vent pipes. In buildings where interior footings or other barriers separate the sub-slab or sub-membrane collection systems and interconnection of these systems below the foundation is not feasible, each system shall be provided with an individual radon vent pipe. In buildings with more than one radon vent pipe, each radon vent pipe may

interconnect to a common single vent pipe sized as specified in section 1210.7.1.

"1210.7.9 Termination. The radon vent pipe shall terminate as follows:

1. A minimum of 12 inches (305 mm) above the roof.
2. Not less than 10 feet (3.05 m) from any window or other opening into the conditioned space of the building that is less than 2 feet (0.61 m) below the exhaust point.
3. Not less than 10 feet (3.05 m) from any window or other opening in an adjoining or adjacent building; or 2 feet (0.61m) above any window.
4. Not less than 10 feet (3.05 m) away from any mechanically powered vent that supplies air to the interior of the building.
5. With a corrosion-resistant screen having openings between 1/4 inch (6 mm) and 1/2 inch (12 mm) installed on the discharge end of the pipe to prevent the entry of small animals.
6. Without rain caps and located to allow exhaust gases to be directed away from the building.

"1210.8 Requirements for Future Fan-Depressurization System Activation. Permanent provisions shall be made for the installation of an in-line fan to be connected to every radon vent pipe. Such designated fan locations shall be outside of the conditioned envelope of the building, such as in the attic, or garage. Furthermore, designated fan locations shall not be in the crawl space beneath the structure. Designated locations shall accommodate a permanent cylindrical space with the following minimum dimensions: 12 inches (305 mm) measured radially around the radon vent pipe along a vertical distance of 30 inches (0.76 m). Designated fan locations shall be permanently accessible for servicing and maintenance. An electrical circuit shall be provided within 4 feet (1.22 m) of and within sight from designated fan locations. Such circuit shall have a means of positive disconnection and be terminated in an approved electrical outlet in accordance with the National Electric Code.

"1210.9 Activation of Passive System. When a passive system as constructed in accordance with this section is to be converted to an active system, an approved in-line fan shall be installed in designated fan locations as specified in section 1210.8. A readily accessible manometer or other approved warning device that notifies occupants of a fan malfunction by a visible or audible signal shall be installed."

(39) ~~Section 1501.2~~ is amended by adding an item to subsection *I*, *Roof coverings*, thereunder to read as follows:

" 1.10 ASTM D 225, Asphalt Shingles Surfaced with Mineral Granules."

(40) *Section 1503* is amended to read in its entirety as follows:

"SECTION 1503-ROOFING REQUIREMENTS

"1503.1 New Construction. The roof-covering classification on any new structure regulated by this code shall be Class A.

EXCEPTIONS:

1. Noncombustible roof coverings as defined in Section 1504.2 may be applied in accordance with the manufacturer's specifications in lieu of a fire-retardant roofing assembly.
2. Any Class B or Class C roof covering may be applied on any new construction that is added to an existing building classified as a Group R, Division 3 Occupancy, provided the roof extremities of such existing building and new construction are located a minimum distance of five (5) feet to the nearest adjacent property line and are a minimum distance of ten (10) feet to another building."

"1503.2 Reroofing. Except as otherwise provided hereunder, reroofing shall be applied in accordance with this chapter and Appendix Chapter 15; and subject to the following conditions:

1. No portion of an existing nonrated roof covering may be permanently replaced or covered with more than one square of nonrated roof covering.
2. Any existing roof covering system may be replaced with a roof covering of the same materials and classification, provided the replacement roof covering has a minimum rating of Class C."

(41) *Section 1507.5* is amended to read in its entirety as follows:

"Asphalt shingles shall be installed in accordance with manufacturers' instructions for high wind areas and with Table 15-B-1."

(42) *Table No. 15-A Minimum Roof Classes*, is deleted in its entirety.

(43) The first paragraph of *Section 1614* is amended to read in its entirety as follows:

"Buildings and other structures and all portions thereof that are subject to snow loading shall be designed to resist such snow loads in accordance with Appendix Chapter 16, Divisions I, wherein the 'ground snow load' P_g shall be 30 psf."

(44) *Section 1618* is amended to read in its entirety as follows:

"Basic wind speed. The minimum basic wind speed for determining design wind pressure shall be one hundred (100) miles per hour."

(45) *Table 18-1-C, Foundations for Stud Bearing Walls, Minimum Requirements*, is amended to read as follows:

TABLE 18-1-C
FOUNDATIONS FOR STUD BEARING WALLS-MINIMUM REQUIREMENTS^{7,9}
UNDER CONDITIONS NOT REQUIRING SPECIAL DESIGN

<i>Number of floors supported by the foundation</i>	<i>Thickness of foundation wall (inches)</i>		<i>Height of wall (inches)</i>	<i>Width of footing (inches)⁸</i>	<i>Thickness of footing (inches)</i>	<i>Depth of foundation below finished grade (inches)¹⁰</i>
	<i>Concrete</i>	<i>Unit masonry (nominal)</i>				
1	6	6 ²	36 or less ³	16	8	30
	8	8 ²	more than 36 to 108 ^{4,5,6}			
2	Same as for 1 story	Same as for 1 story	Same as for 1 story	20	10	30
3	10	10	Same as for 1 story	24	12	30

Footnotes:

¹ Foundations may also support a roof. A foundation supporting a roof only, shall be considered as supporting one (1) floor.

² The minimum reinforcement for masonry foundations shall be as follows:

(a) Foundation walls three (3) feet or less in height shall be reinforced with #4 vertical bars spaced a maximum of thirty-two (32) inches on center. All cells containing the vertical reinforcement shall be filled solidly with grout.

(b) Foundation walls greater than three (3) feet, to nine (9) feet in height shall be reinforced with #5 vertical bars spaced a maximum of thirty-two (32) inches on center. Vertical bars shall be bent so as to form a minimum horizontal extension of six (6) inches imbedded a

- minimum of three (3) inches below the top of the footing. All cells containing the vertical reinforcement shall be filled solid with grout.
- (c) Horizontal reinforcement shall consist of approved wire reinforcement with a minimum of 9-gauge side and cross runs. Such reinforcement shall be laid continuously in alternate bed joints.
 - (d) The top course of foundation walls shall be a bond beam course. Bond beam courses for walls three (3) feet or less in height shall be reinforced with one (1) #4 bar. Bond beam courses for walls three (3) to nine (9) feet in height shall be reinforced with two (2) #4 bars. Vertical bars shall be tied to the bond beam longitudinal bars.
- ³ Concrete foundation walls three (3) feet or less in height shall be reinforced with one (1) #4 bar located not less than three (3) inches nor more than six (6) inches from the top of the wall and one (1) #4 bar located not less than three (3) inches nor more than six (6) inches from the bottom of the wall. The bars shall be centered within the width of the wall.
 - ⁴ Concrete foundation walls more than three (3) feet and less than five (5) feet in height shall be reinforced with three (3) #4 bars equally spaced with the top and bottom bar not less than three (3) inches nor more than six (6) inches from the top and bottom of the wall. The bars shall be placed not less than one and one-half (1½) inches from the vertical edges of the wall.
 - ⁵ Concrete foundation walls five (5) feet and less than seven (7) feet in height shall be reinforced with four (4) #4 bars equally spaced with the top and bottom bar not less than three (3) inches nor more than six (6) inches from the top and bottom of the wall. The bars shall be placed not less than one and one-half (1½) inches from the vertical edge.
Concrete foundation walls between seven (7) feet and nine (9) feet in height shall be reinforced with five (5) #4 bars equally spaced with the top and bottom bar not less than three (3) inches nor more than six (6) inches from the top and bottom of the wall. The bars shall be placed not less than one and one-half (1½) inches from the vertical edge.
 - ⁷ Concrete foundation walls greater than nine (9) feet in height shall be designed by a licensed professional engineer.
 - ⁸ Minimum requirements for conditions not requiring an engineered foundation design or when an engineered foundation design is not provided. Foundations subject to excessive surcharge loads or lateral pressures created by unstable soil or groundwater conditions or where expansive soil swelling pressures exceed five hundred (500) pounds per square foot, shall be designed by an engineer licensed in this State to practice as such and in accordance with Section 1804.
 - ⁹ An acceptable method to prevent movement of the foundation wall on the footing shall be provided.
 - ¹⁰ Except for an approved 'Frost-protected' foundation design, for which the minimum depth shall be determined by the Building Official.

(46) *Section 2306.7* is amended to read in its entirety as follows:

"2306.7 Under-floor ventilation and vapor barrier. Exterior ventilation openings installed in under-floor areas (excluding combustion air supply openings or ducts required by the Fort Collins mechanical code) shall qualify such spaces as being unheated and unconditioned for energy conservation purposes, requiring the floor system above and any other surfaces separating the space from adjoining conditioned spaces to be insulated as prescribed in Appendix Chapter 53. All exposed ground surfaces within buildings shall be covered and effectively separated from the atmosphere in the building in an approved manner with a barrier or retarder having a maximum permeability rating of 1 perm."

(47) *Item 5 of Section 2406.4* is amended to read in its entirety as follows:

- "5. Glazing in doors and enclosures of any shower; bathtub, sauna, steam room and spa; and in any portion of a building wall enclosing such compartments when either one of the following conditions exist:
 1. Where any portion of such glazing is less than sixty (60) inches above the drain inlet and standing surface, or
 2. Where any portion of such glazing is within forty-eight (48) inches of an interior surface of a tub."

(48) *Section 2409.3* is amended in the following respects:

- (a) The first sentence of the first paragraph thereof is amended in its entirety to read as follows:

"Annealed and ordinary glass shall be protected by screens installed below the glazing."

- (b) The last sentence of the first paragraph thereof is amended in its entirety to read as follows:

"When multiple-layer glazing systems are used and the layer facing the interior is laminated, wired or tempered glass, a protective screen need not be installed below the skylight."

(49) *Section 2603.7.1, Item 6* is amended by adding a third exception thereto to read as follows:

- "3. In Group R, Division 1, apartment houses and Division 3 Occupancies, the minimum separation may be eighteen (18) inches."

(50) *Chapter 30* is amended by adding a new section thereto to read as follows:

"SECTION 3008 - EMERGENCY OPERATION

"3008.1 **General.** For purposes of this subsection, reference to "ANSI Code: is the "ANSI/ASME A17.1 Code, latest edition "Safety Code for Elevators and Escalators," published by the American Society of Mechanical Engineers.

"3008.2 **Commandeering Switch.** In other than dwelling units, all elevators shall be provided with emergency recall switches near their entrances on main floors of each building and in the cars as specified in Section 211.3(a) of the ANSI Code.

"3008.3 **Smoke Detection.** Smoke detectors and automatic return shall be provided as specified in Section 211.3(a) of the ANSI Code.

~~"3008:4 Emergency Operation Keys: Keys for emergency operation shall be provided as specified in Section 211.3(a) of the ANSI Code."~~

- (51) *Appendix Chapter 3, Division I - DETENTION AND CORRECTIONAL FACILITIES* is adopted in its entirety.
- (52) *Appendix Chapter 3, Division II - AGRICULTURAL BUILDINGS* is adopted in its entirety and amended by adding an exception to *Item "4"* of *Section 326* to read as follows:

"EXCEPTION:

Greenhouses and similar structures attached to Group R Occupancies for the purpose of providing light and ventilation that do not exceed twenty-five (25) percent of the floor area of the dwelling unit may be classified as Group R Occupancies."

- (53) *Appendix Chapter 3, Division IV - REQUIREMENTS FOR GROUP R, DIVISION 4 OCCUPANCIES*, is adopted in its entirety and amended by adding a new paragraph to *Section 334.2, Special Provisions* thereunder to read as follows:

"Group R, Division 4 Occupancies shall be provided with automatic fire sprinkler systems installed in accordance with Appendix III-E of the Uniform Fire Code as adopted and amended by the city."

- (54) *Appendix Chapter 4, Division I - BARRIERS FOR SWIMMING POOLS, SPAS, AND HOT TUBS*; and *Division II - AVIATION CONTROL TOWERS*, are adopted in their entirety.
- (55) *Appendix Chapter 11, ACCESSIBILITY, Divisions I and II*, is adopted in its entirety.
- (56) *Appendix Chapter 13, ENERGY CONSERVATION IN NEW BUILDING CONSTRUCTION*, is adopted and amended in its entirety to read as follows:

"The Model Energy Code, 1995 Edition, promulgated by the Council of American Building Officials, is hereby adopted by reference with the following amendments:

- (a) *Section 102.1.2* is amended by deleting the first paragraph thereof, and by deleting the first word of the second paragraph, "Alternatively," by inserting a new sentence following the first sentence of such paragraph and by adding a second new sentence at

the end of said paragraph, which new sentences shall read, respectively, as follows:

"The certification shall also include a statement that the insulation described therein is installed in accordance with the applicable installation guidelines established by the Building Official.

"Such certification shall also be submitted to the Building Official by the builder or general contractor of record prior to issuance of a Certificate of Occupancy."

- (b) *Section 102.1.3* is amended by deleting the first word of the second paragraph, "Alternatively."
- (c) *Table 102.3a, U-VALUE DEFAULT TABLE FOR WINDOWS, GLAZED DOORS AND SKYLIGHTS*, is deleted in its entirety and replaced with a revised Table 102.3a as follows:

DEFAULT WINDOW U-VALUES (WHEN NOT OTHERWISE PROVIDED BY THE BUILDING OFFICIAL)

No. of glazings	Coating	Gas fill	Frame type	Default U-Value
1	None	N/A	Any	1.00
2	None	Air	Metal	0.87
2	None	Air	Wood or vinyl	0.52
2	Low-e	Air	Wood or vinyl	0.41
2	Low-e	Argon	Wood or vinyl	0.37

- (d) *Section 102* is amended by adding two new sections, respectively, to read as follows:

"102.4 Mechanical equipment installation. Prior to issuance of a Certificate of Occupancy, the builder or general contractor of record shall submit to the Building Official a certification, signed and dated by the mechanical contractor or installer. Such certification shall contain: (1) information on the mechanical equipment; (2) a statement that the equipment was installed in accordance with the manufacturer's instructions; (3) a statement that manufacturer's installation and operation manuals are provided for the end user; and (4) information on air sealing of the air distribution systems.

"102.5. Air leakage sealing measures. Prior to issuance of a Certificate of Occupancy, the builder or general contractor of record shall submit to the Building Official a signed and dated certification either (1) that the air sealing measures prescribed pursuant to Section 502.3 are installed in accordance with the applicable installation guidelines established by the Building Official; or (2) that an air-leakage test, verifying compliance with the performance level specified in Section 502.3.5, has been performed."

- (e) *Section 302.1* is amended by inserting in *Table 302.1, Exterior design conditions*, the following values:

"Winter Design Dry-bulb = 10 °F;
"Summer Design Dry-bulb = 91 °F;
"Design wet-bulb = 59 °F;
"Degree days, Heating = 6368"

- (f) *Section 402* is amended in its entirety to read as follows:

"SECTION 402 SYSTEMS ANALYSIS

"402.1 Energy analysis. As an alternative to following the compliance path prescribed in Chapter 5 of this code, compliance with this code may be demonstrated by performing an entire building system energy analysis that documents energy performance consistent with the provisions of Chapter 5. Any such analysis methodology, assumptions, calculation procedures, documentation and related requirements shall be approved by the Building Official."

- (g) *Section 501.1* is amended by adding a second sentence to read as follows:

"All materials and methods shall be in accordance with generally accepted minimum standards for installation and in accordance with applicable installation guidelines established by the Building Official."

- (h) *Section 502.2.1* is amended by rewording the first sentence thereof to read as follows:

"The combined thermal transmittance value (U^o) of the gross area of the exterior walls shall not exceed 0.132 in buildings heated by natural gas as the primary fuel source, nor exceed 0.120 in buildings heated by electricity as the primary energy source."

- (I) *Section 502.2.2* is amended to read in its entirety as follows:

"502.2.2 Roof/ceiling. In any building where the total area of skylights does not exceed 2% of the roof area, the roof/ceiling assembly shall be insulated with materials having a minimum R-value of R-38 in roof/ceiling assemblies containing an attic space, or shall be insulated with materials having a minimum R-value of R-30 in roof/ceiling assemblies with enclosed rafter spaces, provided further that such skylights have glazing and frame thermal performance characteristics similar to those of the predominant window type used in such building.

"In any building where the total area of skylights exceeds 2% of the roof area, such excess skylight area shall be treated as additional window area in the exterior wall for purposes of complying with Section 502.2.1."

- (j) *Section 502.2.3* is amended to read in its entirety as follows:

"502.2.3 Floors over unheated spaces. Floors which project over outdoor air shall be insulated with materials having a minimum R-value of R-30 in buildings heated by natural gas as the primary fuel source, or shall be insulated with materials having a minimum R-value of R-38 in buildings heated by electricity as the primary energy source. The spaces between the floor joists of floors over unheated spaces that are within the building envelope, and are intended to be thermally separated from conditioned spaces, shall be insulated with materials having a minimum R-value of R-19 in buildings heated by natural gas as the primary fuel source, or shall be insulated with materials having a minimum R-value of R-30 in buildings heated by electricity as the primary energy source.

"EXCEPTION: Crawl spaces in which the walls are entirely insulated along the perimeter as prescribed in Section 502.2.5 need not be provided with an insulated floor above."

- (k) *Section 502.2.4* is amended to read in its entirety as follows:

"502.2.4 Slab-on-grade floors.

"502.2.4.1. Slab-on-grade floors in buildings heated by natural gas as the primary fuel source. Slab-on-grade floors in any building heated by natural gas as the primary fuel source shall be insulated along the perimeter with approved materials having a minimum R-value of R-5 from the top of the slab to a depth of 48 inches or a minimum R-value of R-7.5 to a depth of 24 inches. For heated slab-on-grade floors, such insulation shall have a minimum R-value of R-7.5 and extend from the top of the slab to a depth of 48 inches

or have a minimum R-value of R-10 and extend from the top of the slab to a depth of 24 inches. Approved frost-protected foundation systems in accordance with the applicable installation guidelines established by the Building Official may be used.

"502.2.4.2. Slab-on-grade floors in buildings heated by electricity as the primary energy source. Unheated or heated slab-on-grade floors in any building heated by electricity as the primary energy source shall be insulated along the perimeter of the floor with approved materials having a minimum R-value of R-10 from the top of the slab to a depth of 48 inches. Approved frost-protected foundation systems in accordance with the applicable installation guidelines established by the Building Official may be used."

- (l) *Section 502.2.5* is amended by replacing the first sentence thereof with a new sentence to read as follows:

"Crawl spaces which are included in the conditioned floor area, which have no exterior vents (excluding combustion air supply ducts required by the Fort Collins mechanical code) and which have exposed interior ground surfaces sealed in approved manner as specified in the Fort Collins building code, shall be insulated with materials having a minimum R-value of R-19."

- (m) *Section 502.2.6* is amended to read in its entirety as follows:

"502.2.6 **Basement walls.** Basement walls below uninsulated floors shall be insulated on either the exterior side or the interior side as specified in this section."

- (n) New sections, *Section 502.2.6.1* and *Section 502.2.6.2*, are added after *Section 502.2.6* to read as follows:

"502.2.6.1 **Interior insulation.** Insulation on the interior side shall have a minimum R-value of R-11 and shall extend from the top of such basement wall to the basement floor surface.

"502.2.6.2 **Exterior insulation.** Insulation on the exterior side shall have a minimum R-value of R-10 and shall extend from the top of such basement wall; down to a minimum of 48 inches below the exposed foundation level and not less than 42 inches below the finished grade."

- (o) A new *Section 502.3.5* is added to read as follows:

"502.3.5 Alternative performance testing. In lieu of the itemized requirements contained in Section 502.3.3, an approved air leakage test may be performed by a qualified agency, which results in a maximum air change rate of 5 air changes per hour (ACH) at 50 pascals pressure difference between the building interior and the outside."

- (p) *Section 503.8.2* is amended to read in its entirety as follows:

"503.8.2 Duct sealing. Any low-pressure supply and return ducts located outside conditioned spaces shall be permanently sealed using mastic with fibrous backing tape installed in accordance with the manufacturer's instructions; or using other approved materials. Standard duct tapes are not approved for such use."

- (q) *Section 503.7.1* is amended by rewording the first sentence to read as follows:

"Duct systems, or portions thereof, shall be insulated with materials having an R-value of R-8."

- (r) *Sections 504.2.1.1, 504.2.1.2 and 504.2.2* are deleted in their entirety.

- (s) *Section 504.7* is amended by renaming and renumbering such subsection to read as follows:

"504.7.1 Pipe insulation for recirculating systems."

- (t) A new *Section 504.7.2* is added to read as follows:

"504.7.2 Pipe insulation for nonrecirculating systems. The first eight (8) feet of inlet and outlet water piping from the hot water tank storage system shall be installed with insulation of one (1) inch minimum thickness with a thermal conductivity no greater than 0.30 Btu-in./(hr-ft²-°F). Alternatively, water heaters shall have heat traps installed on both the inlet and outlet piping.

"EXCEPTION: Provisions of this section do not apply to water heaters equipped with integral heat traps or to water heaters that do not have vertical risers."

- (u) *Chapter 6, Residential Building Design by Acceptable Practice*, is deleted in its entirety.

- (v) *Section 801, REFERENCED STANDARDS*, is amended by revising the standard listed under *Subsection 801.1, General*, as "RS-22," to read as follows:

"RS-22 *Fort Collins Energy Code for Commercial, Industrial, and High-Rise Buildings*, based on the *Codification of ASHRAE/IES 90.1-1989, Energy Efficient Design of New Buildings Except Low-Rise Residential Buildings, 1993, as amended.*"

- (57) *Appendix Chapter 15, REROOFING* is adopted in its entirety and amended in the following respects:

- (a) *Section 1515.1* is amended by revising the title thereof to read as follows:

"1515.1 *Conditions for Approval of Existing Roofing to Remain in Place.*"

- (b) *Section 1515.1* is amended by deleting the first sentence thereof.

- (c) *Section 1515.2.1* is amended by revising it in entirety to read as follows:

"1515.2.1 *Pre-roofing Inspection.* A pre-roofing inspection may be required prior to application of new roofing to verify the existing roofing is in compliance with Section 1515.1. The building official may accept an inspection report of such compliance by a qualified special inspector."

- (58) *Appendix Chapter 16, Division I - SNOW LOAD DESIGN* is adopted in its entirety with *Section 1638 - NOTATIONS*, amended by revising the " P_g " value as follows:

" P_g = basic ground snow load, is 30 psf."

- (59) *Appendix Chapter 18, WATERPROOFING AND DAMPPROOFING FOUNDATIONS*, is adopted in its entirety and amended in the following respects:

- (a) *Section 1838.2, of APPENDIX CHAPTER 18* is amended by adding a second paragraph thereto to read as follows:

"Final grading adjacent to the foundation shall be compacted sufficiently and in such a manner such that is not undermined or subject to significant settlement or displacement due to improper placement of backfill."

(60) *Appendix Chapter 21, PRESCRIPTIVE MASONRY CONSTRUCTION IN HIGH-WIND AREAS* is adopted in its entirety.

(61) *Appendix Chapter 29, MINIMUM PLUMBING FIXTURES* is adopted in its entirety.

(62) *Appendix Chapter 31, Division II- MEMBRANE STRUCTURES* is adopted in its entirety.

Introduced, considered favorably on first reading, and ordered published in summary form this 5th day of May, A.D. 1998, and to be presented for final passage on the 19th day of May, A.D. 1998.

Mayor

ATTEST:

City Clerk

Passed and adopted on final reading this 19th day of May, A.D. 1998.

Mayor

ATTEST:

City Clerk

** C.R.S. ,9-5-104. Design criteria. Design criteria shall comply with the most current version of the "American National Standard for Buildings and Facilities Providing Accessibility and Usability for Physically Handicapped People", promulgated by the American national standard institute, commonly cited as "ANSI A117.1". (1998)