



## Fort Collins Amendments to the 2009 International Building Code

**Bold underline text represents Green Code Amendments which become effective  
January 1, 2012**

### Municipal Code Sec. 5-27. **Amendments** and **deletions** to code.

The 2009 *INTERNATIONAL BUILDING CODE* adopted herein is hereby amended in the following respects:

**101.1. Title.** These regulations shall be known as the **General Building Code of the City of Fort Collins**, hereinafter referred to as 'this code'.

**Section 101.4.1 through 101.4.9 Referenced codes**, is amended to read as follows:

**101.4.1 Electrical.** All references to the *Electrical Code* shall mean the electrical code currently in effect as enacted by the State of Colorado.

**101.4.2 Gas.** All references to the *International Fuel Gas Code* shall mean the fuel gas code currently in effect as enacted by the City.

**101.4.3 Mechanical.** All references to the *International Mechanical Code* shall mean the mechanical code currently in effect as enacted by the City.

**101.4.4 Plumbing.** All references to the *International Plumbing Code* shall mean the plumbing code currently in effect as enacted by the State of Colorado.

**101.4.5 Property Maintenance.** All references to the *International Property Maintenance Code* shall mean the property maintenance code currently in effect as enacted by the City.

**101.4.6 Fire Prevention.** All references to the *International Fire Code* shall mean the fire code currently in effect as enacted by the City.

**101.4.7 Energy.** All references to the *International Energy Conservation Code* shall mean the energy code currently in effect as enacted by the City.

**101.4.8 Residential.** All references to the *International Residential Code* shall mean the residential code currently in effect as enacted by the City.

**101.4. 9 Areas prone to flooding.** All references to ‘flood hazard’ and ‘areas prone to flooding’ in this code and appendices adopted therewith shall be as specified in the Code of the City, “Chapter 10, Flood Prevention and Protection.

*Section 103 Department of Building Safety* is amended in its entirety to read as follows:

### **SECTION 103 CODE ADMINISTRATION**

**103.1 Entity charged with code administration.** The Community Development and Neighborhood Services Department as established by the Code of the City, is hereby charged with the administration and enforcement of this code.

The building official, appointed by the City Manager, is charged with the direct overall administration and enforcement of this code; and, in the performance of said duties, may delegate the necessary authority to the appropriate technical, administrative, and compliance staff under the supervision the building official.

*Section 105.2 Work exempt from permits*, items 1, 4, 6, 14, 15, 16, 17 under the heading of, *Building*, are amended to read as follows:

#### **Building:**

1. One-story 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
4. Retaining walls that are not over 4 feet (1219 mm) in height measured from the low side grade to the top of the wall provided the horizontal distance to the next uphill retaining wall is at least equal to the total height of the lower retaining wall, unless supporting a surcharge or impounding Class I, II or IIIA liquids.
6. Platforms and decks intended for human occupancy or walking, sidewalks and driveways not more than 30 inches (762 mm) above adjacent grade, and not over any basement window or story below and are not part of an accessible route.
14. Roofing repair or replacement work not exceeding one square of covering per building.
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.
16. Window replacement requiring no structural alteration and when such work is determined not to be historically significant or effecting a building more than 50 years old, storm window, storm door and rain gutter installation.

17. Decorative ponds, fountains and pools which cannot contain water more than twenty-four (24) inches (610 mm) deep.

**Delete** all headings and references under Electrical, Gas, Mechanical, Plumbing.

**Section 105.5 Expiration** is hereby amended by adding a second paragraph to read as follows:

Both prior to and subsequent to the effective date of this code, any work authorized by a permit regulated by this code, or under any other building construction code administered by the building official, that involves the construction or alteration of an exterior building component, assembly or finish material, such as the foundation, wall and roof framing, sheathing, siding, fenestration, and roof covering, shall be fully completed for permanent outdoor exposure within 24 months of the date of issuance of such permit, regardless of when the permit was issued. Failure to comply with the foregoing time period shall constitute a violation of this code, resulting in revocation of the permit, and shall subject the permit holder and property owner to all penalties provided by the Code of the City.

**Section 105.8 Premises Identification** is added to read as follows:

**105.8 Premises Identification.** The approved permit number and street address number shall be displayed and be plainly visible and legible from the public street or road fronting the property on which any new building is being constructed.

**Section 105.9 Transfer of permits,** is added to read as follows:

**105.9 Transfer of permits.** A current valid building permit may be transferred from one party to another upon written application to the building official. When any changes are made to the original plans and specifications that substantially differ from the plans submitted with the permit, as determined by the building official, a new plan review fee shall be paid as calculated in accordance with Section 109. A fee of \$50 shall be paid to cover administrative costs for all building permit transfers. No change shall be made in the expiration date of the original permit.

**Section 107.2.5.2 Information for construction in areas prone to flooding** is hereby amended by adding the following to read as:

**107.2.5.2 Information for construction in areas prone to flooding.** For buildings or structures regulated under the scope of this code that are in whole or in part located in flood hazard areas, construction documents shall be submitted as established in accordance with the Code of the City, Chapter 10, Flood Prevention and Protection.

**Section 107.3.1 Approval of construction documents,** is hereby amended to read as;

**107.3.1 Approval of construction documents.** When the building official issues a permit, the construction documents shall be approved in writing or by a stamp ~~which states "REVIEWED FOR CODE COMPLIANCE."~~ One set of construction documents so reviewed shall be retained by the building official. The other set shall be returned to the

applicant, shall be kept at the site of work and shall be open to inspection by the building official or his or her authorized representative.

*Section 108 Temporary Structures and Uses* is **deleted** in its entirety.

*Section 109, FEES*, is hereby amended in its entirety to read as follows:

#### **SECTION 109 FEES**

**109.1 Payment of fees.** No permit with any amendments and related construction plans therefore shall be valid until the fees prescribed by the City Manager pursuant to Chapter 7.5, ARTICLE I of the Code of the City, entitled, ADMINISTRATIVE FEES, have been paid.

**109.2 Related fees.** The payment of the fee for the construction, alteration, removal or demolition for work done in connection with or concurrently with the work authorized by a building permit shall not relieve the applicant or holder of the permit from the payment of other fees that are prescribed by law.

**109.3 Fee refunds.** Any fee paid hereunder that is erroneously paid or collected shall be refunded. The building official may authorize the refunding of 90 percent of a plan review fee or building permit fee to the applicant who paid such fee provided the plan review is withdrawn or cancelled and the plan review and/or work authorized under a permit issued in accordance with this code has not commenced; and further provided that such plan review or permit is valid and not expired as set forth in Section 105.5. Prior to authorizing the refunding of any fee paid to the original applicant or permittee, a written request from such party must be submitted to the City within 180 days of the date of the fee payment.

*Section 113, Board of Appeals*, is hereby amended in its entirety to read as follows:

#### **SECTION 113 BOARD OF APPEALS**

**113.1 General.** The Building Review Board (hereafter "Board") as established in Section 2-117 of the Code of the City 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; to the suitability of alternative materials or alternative methods of construction; and the granting of permit extensions and reinstatements as prescribed by Section 105.5. 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.

**113.2 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 113.4, 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 alternative design, alternative

materials and/or the alternative 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 alternative design, alternative materials and/or the alternative 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 alternative design, alternative materials and/or alternative methods of construction. A quorum of 4 members shall be necessary for any meeting of the Board.

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

**113.4 Limitations.** The Building Review Board shall have no authority with respect to any of the following functions:

1. The administration of this code except as expressly provided otherwise;
2. Waiving requirements of this code, except as provided pursuant to this section;
3. Modifying the applicable provisions of, or granting variances to, this code, or approving the use of alternative designs, alternative materials and/or alternative methods of construction except as provided for in this section 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.

*Section 114.4, Violation penalties* is amended to read as follows:

**114.4 Violation penalties.** Any person who violates a provision of this code or fails to comply with any of the requirements thereof or who erects, constructs, alters or repairs a building or structure in violation of the approved construction documents or directive of the building official, or of a permit or certificate issued under the provisions of this code, shall be guilty of a misdemeanor subject to the penalties and fines pursuant to Section 1-15 of the Code of the City, punishable by a fine of not more than \$1,000.00 dollars, or by imprisonment not exceeding 180 days, or both such fine and imprisonment. Each day that a violation continues after due notice has been served shall be deemed a separate offense.

*Section 114.5 Work commencing before permit issuance,* is added to read as follows:

**114.5 Work commencing before permit issuance.** In addition to penalties set forth in Section 114.4, any person or firm who, before obtaining the necessary permit(s), commences any construction of, or work on, a building, structure, electrical, gas, mechanical or plumbing system that is not otherwise exempted from obtaining a permit, shall be subject to a processing and penalty fee in addition to the standard prescribed permit fee. Such additional fee shall be equal to the permit fee, except that such fee shall not be less than \$50 nor more than \$1,000 for the first such violation. A person or firm committing the same such violation repeatedly is subject to processing and penalty fees equal to double the amount of the permit fee or double the amount of the preceding violation, whichever is greater, for every same such subsequent violation committed thereafter within any 180-day period. The foregoing fees may be appealed to the City Manager pursuant to Chapter 2, Article VI of the Code of the City.

*Section 202, DEFINITIONS*, terms are hereby amended or added in alphabetical sequence in the following respects:

**COMMISSIONING** **A process to verify and document that the selected building and systems have been designed, installed, and function in accordance with the construction documents, manufacturers' specifications, and minimum code requirements.**

**DWELLING** is defined as set forth in the Land Use Code.

**DWELLING UNIT** is defined as set forth in the Land Use Code.

**FAMILY** is defined as set forth in the Land Use Code.

**GRADE (ADJACENT GROUND ELEVATION).** The lowest point of elevation of the finished surface of the ground, paving or sidewalk with the area between the building and the property line or, when the property line is more than 5 feet (1.524 m) from the building, between the building and a line 5 feet (1.524 m) from the building.

**ROOM, SLEEPING (BEDROOM).** A habitable room within a dwelling or other housing unit designed primarily for the purpose of sleeping. The presence of a bed, cot, mattress, convertible sofa or other similar furnishing used for sleeping purposes is indicia for determining that such space or room qualifies as a sleeping room. The presence of closets and similar storage facilities are not considered as relevant factors in determining whether or not a room is a sleeping room.

**TOWNHOUSE.** A single-family dwelling unit constructed as part of a group of (2) two or more attached individual dwelling units, each of which is separated from the other from the foundation to the roof and is located entirely on a separately recorded and platted parcel of land (site) bounded by property lines, and which parcel is deeded exclusively for such single-family dwelling.

**VOLATILE ORGANIC COMPOUND (VOC)** **Any compound of carbon, excluding carbon monoxide, carbon dioxide, carbonic acid, metallic carbides or carbonates, and ammonium carbonate, which participates in atmospheric photochemical**

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**long-term adverse health effects emitted as gases from certain solids or liquids.**

**Section 419.1 General** is amended to read as follows:

**419.1 General.** A live/work unit is a dwelling unit or sleeping unit in which a significant portion of the space includes a nonresidential use that is operated by the tenant and shall comply with Sections 419.1 through 419.8.

**EXCEPTION:**

Dwelling or sleeping units that include an office that is less than (20) twenty percent of the area of the dwelling unit shall not be classified as a live/work unit.

**Section 505.2 Area Limitation** is amended by adding a new exception number 3 to read as follows:

3. Within individual dwelling units of Group R occupancies, the maximum aggregate area of a mezzanine may 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 505.3.

**Section 705.3 Buildings on the same lot** 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 503.1.2 for assumed property lines between buildings located on the same property, are maintained.

**Section 902.1 Definitions** is amended by adding a new definition to read as follows:

**FIRE CONTAINMENT AREA** is a portion of a story or basement which is totally enclosed by not less than one-hour fire-resistive construction and as prescribed in Section 709, entitled 'Fire Partitions' and Section 710, entitled 'Smoke Barriers.'

Openings other than doors and ducts shall be protected as specified in Section 715.5 and shall be limited to a maximum of 25 percent of any one (1) wall. Self-closing devices may be used in place of automatic closing devices on doors unlikely to be fixed open during normal conditions. Examples are doors at toilet rooms, closets and small storage rooms and similar areas.

**Section 903.2 Where required,** is amended by adding an exception number 2 to read as follows:

2. Except for Occupancies with a Group R fire area in accordance with Section 903.2.8, an automatic sprinkler system shall be installed in all buildings which are not divided into fire containment areas as specified in Table 903.1.

**Section 903.2.7 Group M Item #4** is amended to read as follows:

4. A Group M occupancy with a total combined floor area of more than 5,000 square feet and is used for the display and sale of upholstered furniture.”

**Table 903.1 Maximum Allowable Fire-Containment Area** is added as follows:

**TABLE 903.1  
MAXIMUM ALLOWABLE FIRE-CONTAINMENT AREA  
(IN SQUARE FEET)**

*Types of Construction*

<i>Occupancy</i>	<i>I A</i>	<i>I B</i>	<i>II A</i>	<i>II B</i>	<i>III A</i>	<i>III B</i>	<i>IV-HT</i>	<i>VA</i>	<i>VB</i>
A1	10,000	10,000	NP	NP	NP	NP	NP	NP	NP
A2,	10,000	10,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000
A3, 4	10,000	10,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000
B, F1, S1, S2 M, U	10,000	10,000	7,000	5,000	7,000	5,000	7,000	7,000	5,000
F2	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

NP = Not Permitted

**EXCEPTION:**

S2 Open parking garages in accordance with Section 406.3.

**Section 907.2.11 Single- and multiple-station smoke alarms** is amended by adding a second paragraph thereto to read as follows:

When one 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.

**Section 907.9 through 907.11 Carbon monoxide detection** is amended by adding three new sections to read as follows:

**907.9 Carbon monoxide alarms.** For new construction, an approved carbon monoxide alarm shall be installed outside of each separate sleeping area in the immediate vicinity of the bedrooms in dwelling units within which fuel-fired appliances are installed and in dwelling units that have attached garages.

**907.10 Where required in existing dwellings.** Where work requiring a permit occurs in existing dwellings that have attached garages or in existing dwellings within which fuel-fired appliances exist, carbon monoxide alarms shall be provided in accordance with Section R315.1.

**907.11 Alarm requirements.** Single station carbon monoxide alarms shall be listed as complying with UL 2034 and shall be installed in accordance with this code and the manufacturer's installation instructions.

*Section 1007.3 Stairways, Exceptions 1, 2 & 3* are amended to read as follows:

**EXCEPTIONS:**

1. The area of refuge is not required at open exit access or exit stairways as permitted by Sections 1016.1 and 1022.1 in buildings not more than 4 stories above grade plane, that are equipped throughout with an automatic sprinkler system installed in accordance with Section 903.3.1.1 or 903.3.1.2.
2. The clear width of 48 inches (1219 mm) between handrails is not required at exit access stairway as permitted by Section 1016.1 or exit stairways in buildings not more than 4 stories above grade plane, equipped throughout with an automatic sprinkler system installed in accordance with Section 903.3.1.1 or 903.3.1.2.
3. Areas of refuge are not required at exit stairways in buildings not more than 4 stories above grade plane, equipped throughout with an automatic sprinkler system installed in accordance with Section 903.3.1.1 or 903.3.1.2.

*Section 1007.4 Elevators* is amended by adding a new exception #5 to read as:

5. Elevators in buildings not more than 4 stories above grade plane are not required to be considered an accessible means of egress when the building is equipped throughout with an automatic sprinkler system installed in accordance with Section 903.3.1.1 or 903.3.1.2.

*Section 1007.8 Two-way communication exception #1* is amended to read as follows:

**EXCEPTION:**

1. Two-way communication systems are not required at the elevator landing of buildings not required to provide areas of refuge in accordance with Section 1007.6.3.

*Section 1008.1.5 Floor elevation* is amended by adding a second paragraph 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.

**Section 1008.1.5 Floor elevation** is amended by adding a new, *Exception 6*, to read as follows:

6. Exterior doors serving individual dwelling units, 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 that the step has a minimum tread depth of 12 inches, a maximum riser height of 7 ¾ inches (7.75”), and a minimum width equal to the door width, and further provided that the door does not swing over the step.

**Section 1009.12 Handrails** is amended to read as follows:

**1009.12 Handrails.** Stairways of more than one riser shall have handrails on each side and shall comply with Section 1012. Where glass is used to provide the handrail, the handrail shall also comply with Section 2407.

**Section 1013.7 Below grade openings** is amended by adding a new section read as follows:

**1013.7 Below grade openings.** All area wells, stair wells and light wells attached to any building that are located less than 36 inches from the nearest intended walking surface and deeper than 36 inches below the surrounding ground level, creating an opening with a horizontal dimension greater than 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 1029.4 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.

**Section 1029.1 General Exceptions** 1 and 2 are hereby deleted, exceptions 3 through 7 are renumbered and amended to read as follows:

~~1. In other than Group R-3 occupancies, buildings equipped throughout with an approved automatic sprinkler system in accordance with Section 903.3.1.1 or 903.3.1.2.~~

~~2. In other than Group R-3 occupancies, sleeping rooms provided with a door to a fire-resistance-rated corridor having access to two remote exits in opposite directions.~~

1. The emergency escape and rescue opening is permitted to open onto a balcony within an atrium in accordance with the requirements of Section 404, provided the balcony provides

access to an exit and the dwelling unit or sleeping unit has a means of egress that is not open to the atrium.

2. Basements with a ceiling height of less than 72 inches (1829 mm) shall not be required to have emergency escape and rescue windows.

3. High-rise buildings in accordance with Section 403.

4. 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.

5. Basements without habitable spaces and having no more than 200 square feet (18.6m<sup>2</sup>) in floor area shall not be required to have emergency escape windows.

**Section 1029.5.1 Window Wells** is amended by adding a new exception to read as follows:

**EXCEPTION:**

With the window in the full open position, the bottom window well step may encroach a maximum of 12 inches (304 mm) into the minimum horizontal projection, provided the well meets the following criteria:

1. The bottom of the well is not less than 36 inches wide (914 mm), centered horizontally on the openable portion of the emergency escape and rescue door or window, and

2. An unobstructed clear horizontal projection of 36 inches (914 mm) is maintained at the centerline of the openable portion of the emergency escape and rescue door or window.

**Section 1101.2 Design** is amended to read as follows:

**1101.2 Design.** Buildings and facilities shall be designed and constructed to be accessible in accordance with this code and the most recently published edition of ANSI A117.1 as referenced by the building official.

**Section 1103.1 Where required** is amended by adding a second and third paragraphs 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.

When the Building Review Board considers granting exceptions or variances either to this chapter pursuant to Section 113 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.

**Section 1107.2 Design** is amended by adding a second and third paragraph to read as follows:

When any building or buildings, classified as Group R, Division 1 or Group R, Division 2 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 percent 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 nonaccessible 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.

**Section 1203.3 Under-floor ventilation** is amended by adding two new paragraphs to read as follows:

The ground surface of the under floor space shall be covered with a vapor retarder material. The vapor retarder shall be a minimum 10-mil non-reinforced polyethylene sheet when tested in accordance with ASTM E154-99. The sheet shall be continuously sealed in an approved manner to the foundation walls, to the interior caissons or footing pads, plumbing lines and at all laps of multiple sheets.

Mechanical ventilation systems for spaces under below grade floors shall be designed by a professional engineer; addressing moisture controls and by approved methods considering the impact of negative pressures created by exhaust fans, clothes dryers and similar appliances.

**Section 1211 Radon-resistant construction** is amended by adding a new section to read as follows:

## **SECTION 1211 – RADON-RESISTANT CONSTRUCTION**

**1211.1 Scope.** The provisions of this code shall apply to new R-2 Occupancies, multi-family dwellings.

**1211.1 Purpose.** The purpose of this code is to provide minimum requirements to enhance the public safety, health and general welfare, through construction methods designed and installed to resist entry of radon gas into the occupied spaces of buildings regulated by this code.

### **SECTION 1211.2 - DEFINITIONS**

**1211.2.1 General.** For the purpose of these requirements, the terms used shall be defined as follows:

**FOUNDATION DRAIN SYSTEM.** A continuous length of drain tile, perforated pipe, or filter mat extending around all or part of the internal or external perimeter of a basement or crawl space footing designed to collect and drain away excess subsurface water.

**RADON.** A naturally occurring, chemically inert, radioactive gas that is not detectable by human senses and can move readily through particles of soil and rock and can accumulate under the slabs and foundations of homes where it can easily enter the living space through construction cracks and openings.

**SOIL-GAS-RETARDER.** A continuous membrane of 3-mil (0.075 mm) cross-linked polyethylene or other equivalent material used to retard the flow of soil gases into a building.

**SUBFLOOR.** A concrete slab and other approved permanent floor system that directly contacts the ground and is within the walls of the living spaces of the building.

**SUB-MEMBRANE DEPRESSURIZATION SYSTEM.** A system designed to achieve lower sub-membrane air pressure relative to crawl space air pressure by use of a vent drawing air from beneath the soil-gas-retarder membrane.

**SUB-SLAB DEPRESSURIZATION SYSTEM (Passive).** A system designed to achieve lower sub-slab air pressure relative to indoor air pressure by use of a 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.

### **SECTION 1211.3 - REQUIREMENTS**

**1211.3.1 General.** The following required construction methods are intended to resist radon entry and prepare the building for post-construction radon mitigation.

**1211.3.2 Subfloor preparation.** A layer of gas-permeable material shall be placed under all subfloors. The gas-permeable layer shall consist of one of the following methods except that where fills of aggregate size less than that described in Method 1 are used beneath a slab, Method 2,3, 4, or 5 must be used.

1. A uniform layer of clean aggregate, a minimum of 4 inches (102 mm) thick. The aggregate shall consist of material that will pass through a 2-inch (51 mm) sieve and be retained by a ¼ -inch (6.4 mm) sieve. 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 m<sup>2</sup>) per 10 feet (3.048 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 1211.5.2 in place of penetrations through the barrier.

2. A foundation drain pipe system installed under concrete floor slab areas less than 2,000 square feet (186 m<sup>2</sup>), consisting of 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 (25.4 mm) 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 cm<sup>2</sup>/m<sup>2</sup>) 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 such interior footings or barriers. For slab areas greater than 2,000 square feet (186 m<sup>2</sup>) but less than 4,000 square feet (372 m<sup>2</sup>), 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 (372 m<sup>2</sup>) shall have under them separate loops for every additional 2,000 square feet (186 m<sup>2</sup>) of slab area when 3-inch (76 mm) diameter pipe is used; or, slabs may have separate loops provided for each additional increment in area between 2,000 square feet (186 m<sup>2</sup>) and 4,000 square feet (372 m<sup>2</sup>) when 4-inch (102 mm) diameter pipe is used.

3. A foundation drain soil gas collection mat system installed under concrete floor slab areas of 2,000 square feet (186 m<sup>2</sup>) or less, consisting of 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 (25.4 mm in height x 305 mm in width) and a nominal cross-sectional air flow area of 12 square inches (0.0078 m<sup>2</sup>) 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 (305 mm) 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 (186 m<sup>2</sup>) but less than 4,000 square feet (372 m<sup>2</sup>) shall have under them 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 (372 m<sup>2</sup>) shall have separate loops for each 2,000 (186 m<sup>2</sup>) square feet; or, increased to 4,000 square feet (372 m<sup>2</sup>) when a loop is bisected as specified in the preceding configuration.

4. A uniform layer of sand (native or fill), a minimum of 4 inches (102 mm) thick, overlain by a layer or strips of geo-textile drainage matting designed to allow the lateral flow of soil gases.

5. Other materials, systems or floor designs with demonstrated capability to permit depressurization across the entire sub-floor area.

**1211.3.3 Entry routes.** Potential radon entry routes shall be closed in accordance with Sections 1211.3.4.1 through 1211.3.4.8

**1211.3.3.1 Floor openings.** Openings around bathtubs, showers, water closets, pipes, wires or other objects that penetrate concrete slabs or other floor assemblies shall be filled with a polyurethane caulk or equivalent sealant applied in accordance with the manufacturer's recommendations.

**1211.3.3.2 Concrete joints.** All control joints, isolation joints, construction joints and any other joints in concrete slabs or between slabs and foundation walls shall be sealed with a caulk or sealant. Gaps and joints shall be cleared of loose material and filled with polyurethane caulk or other elastomeric sealant applied in accordance with the manufacturer's recommendations.

**1211.3.3.3 Condensate drains.** Condensate drains shall be trapped or routed through non-perforated pipe to daylight.

**1211.3.3.4 Sumps.** Sump pits open to soil or serving as the termination point for sub-slab or exterior drain tile loops shall be covered with a gasketed or otherwise sealed lid. Sumps used as the suction point in a sub-slab depressurization system shall have a lid designed to accommodate the vent pipe. Sumps used as a floor drain shall have a lid equipped with a trapped inlet and view port.

**1211.3.3.5 Foundation walls.** Hollow block masonry foundation walls shall be constructed with either a continuous course of solid masonry, one course of masonry grouted solid, or a solid concrete beam at or above finished ground surface to prevent passage of air from the interior of the wall into the living space. Where a brick veneer or other masonry ledge is installed, the course immediately below that ledge shall be sealed. Joints, cracks or other openings around all penetrations of both exterior and interior surfaces of masonry block or wood foundation walls below the ground surface shall be filled with polyurethane caulk or equivalent sealant. Penetrations of concrete walls shall be filled.

**1211.3.3.6 Dampproofing.** The exterior surfaces of portions of concrete and masonry block walls below the ground surface shall be damp-proofed in accordance with Section 1805.

**1211.3.3.7 Air-handling units.** Air-handling units in crawl spaces shall be sealed to prevent air from being drawn into the unit.

**EXCEPTION:**

Units with gasketed seams or units that are otherwise sealed by the manufacturer to prevent leakage.

**1211.3.3.8 Ducts.** Ductwork passing through or beneath a slab shall be of seamless material unless the air-handling system is designed to maintain continuous positive pressure within such ducting. Joints in such ductwork shall be sealed to prevent air leakage. Ductwork located in crawl spaces shall have all seams and joints sealed by closure systems in accordance with the *International Mechanical Code*.

**1211.3.4 Sub-membrane depressurization system.** In buildings with interior structural floors directly above under-floor spaces containing exposed soil surfaces that are not protected by a sub-slab depressurization system, the following components of sub-membrane depressurization system shall be installed during construction.

**EXCEPTION:**

Buildings in which an approved mechanical ventilation system complying with Section 1203 or such other equivalent system that provides equivalent depressurization across the entire sub-membrane area as determined by the building official is installed in the under-floor spaces.

**1211.3.4.1 Ventilation.** Crawl spaces and similar under-floor spaces shall be provided with ventilation complying with Section 1203.

**1211.3.4.2 Soil-gas-retarder.** The exposed soil in under-floor spaces shall be covered with a continuous layer of soil-gas-retarder. Such groundcover joints

shall overlap 6 inches (152 mm) and be sealed or taped. The edges of the groundcover shall extend a minimum of 6 inches (152 mm) up onto all foundation walls enclosing the under-floor space and shall be attached and sealed to foundation walls in an approved manner.

**1211.3.4.3 Vent pipe riser.** A plumbing tee or other approved connection shall be inserted horizontally beneath the sheeting and connected to a 3- or 4-inch-diameter (76 mm or 102 mm) fitting with a vertical vent pipe installed through the sheeting. The vent pipe shall be extended up through the building floors, terminate at least 12 inches (305 mm) above the roof in a location at least 10 feet (3.048 m) away from any window or other opening into the conditioned spaces of the building that is less than 2 feet (0.610 m) below the exhaust point, and 10 feet (3.048 m) from any window or other opening in adjoining or adjacent buildings.

**1211.3.5 Sub-slab depressurization system.** The following components of a sub-slab depressurization system shall be installed during construction under basement or slab-on-grade floors.

**1211.5.1 Vent pipe riser.** A minimum 3-inch-diameter (76 mm) ABS, PVC or equivalent gas-tight pipe shall be embedded vertically into the sub-slab aggregate or other permeable material before the slab is cast. A 'T' fitting or equivalent method shall be used to ensure that the pipe opening remains within the sub-slab permeable material. Alternatively, the 3-inch (76 mm) pipe shall be inserted directly into an interior perimeter drain tile loop or through a sealed sump cover where the sump is exposed to the sub-slab aggregate or connected to it through a drainage system.

All vent pipes shall be extended up through the building floors, terminate at least 12 inches (305 mm) above the surface of the roof in a location at least 10 feet (3.048 m) away from any window, air intake, or other opening into the conditioned spaces of the building that is less than 2 feet (0.610 m) below the exhaust point, and 10 feet (3.048 m) from any window or other opening in adjoining or adjacent buildings. The discharge end of vent pipe terminations shall be unobstructed and protected from small animal entry with a corrosion-resistant screen having openings between ¼ inch (6.4 mm) and ½ inch (12.7 mm).

**1211.3.5.2 Multiple vent pipes.** In buildings where interior footings or other barriers separate the sub-slab aggregate or other gas-permeable material, each area shall be fitted with an individual vent pipe. Vent pipes shall connect to a single vent that terminates above the roof or each individual vent pipe shall terminate separately above the roof.

**1211.3.6 Vent pipe drainage.** All components of the radon vent pipe system shall be installed to provide positive drainage to the ground beneath the slab or soil-gas retarder.

**1211.3.7 Vent pipe accessibility.** Radon vent pipes shall be accessible for fan installation through an attic or other area outside the habitable space.

**EXCEPTION:**

The radon vent pipe need not be accessible in an attic space where an approved roof-top electrical supply is provided.

**1211.3.8 Vent pipe identification and notification.** All exposed and visible interior radon vent pipes shall be conspicuously identified with at least one label on each floor and in attics provided with access openings. The label shall read substantially as follows: 'Radon Reduction System.' In addition to the preceding label, a notice shall be placed in a conspicuous area near the vent pipe that includes the following statement:

'THIS RADON REDUCTION SYSTEM IS NOT REQUIRED TO BE TESTED AND IS A 'PASSIVE' SYSTEM, RELYING ENTIRELY ON NATURAL VENTILATION. OCCUPANTS ARE ADVISED TO TEST FOR RADON AND TAKE REMEDIAL ACTION AS NECESSARY BY INSTALLING A CONTINUOUSLY OPERATING FAN LOCATED IN THE VENT PIPE (ACCESS TYPICALLY PROVIDED IN THE ATTIC) AND CONNECTED TO THE NEARBY PROVIDED ELECTRICAL OUTLET. CALL 1-800-767-RADON FOR MORE INFORMATION.'

**1211.3.9 Combination foundations.** Combination basement/crawl space or slab-on-grade/crawl space foundations shall have separate radon vent pipes installed in each type of foundation area. Each radon vent pipe shall terminate above the roof or shall be connected to a single vent that terminates above the roof.

**1211.3.10 Building depressurization.** Joints in air ducts and plenums in unconditioned spaces shall be substantially air tight and permanently sealed with an approved sealant, mastic, or other approved methods. Thermal envelope air infiltration requirements shall comply with the energy conservation provisions in the energy conservation code currently enacted by the City. Firestopping shall be in conformance with the most recent general building code enacted by the City.

**1211.3.11 Provisions for future depressurization fan installation.** Permanent provisions shall be made for the future 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, garage and similar locations, excluding crawl spaces and other interior under-floor spaces. Designated locations shall accommodate an unobstructed 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 (760 mm). Designated fan locations shall be permanently accessible for servicing and maintenance. An electrical circuit shall be provided within 4 feet (1.219 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 applicable current electric code.

**1211.3.11.1 Depressurization fan system activation.** When a passive system as constructed in accordance with this code is to be converted to an active system, an approved in-line fan shall be installed in a designated fan location as specified in Section 1211.11.1. Additionally, an approved permanent electric light fixture and in-line pipe couplings that facilitate fan replacement shall be provided. The in-line fan shall be designed to operate continuously for a period of not less than 5 years and have a minimum air-flow rating as established by the building official. 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 within the dwelling unit.

*Section 1405.13.3 Fenestration installation* is amended by adding a new section to read as follows:

**1405.13.3 Fenestration installation. For all new construction, all fenestration installations shall be in accordance with American Architectural Manufacturers Association (AAMA) Standards/Specifications for Windows, Doors and Skylights and shall be supervised and inspected by an individual certified as an Installation Master by Architectural Testing, Inc. (ATI), or other approved agency.**

*Section 1505.1 General* is amended in its entirety to read as follows.

**1505.1 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 1507.3, 1507.4, 1507.5 may be applied in accordance with the manufacturer's specifications in place 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 5 feet to the nearest adjacent property line and are a minimum distance of 10 feet to another building.

*Table 1505.1, Minimum Roof Covering Classifications For Types of Construction*, is hereby deleted.

*Section 1507.2.9.4 Sidewall flashing* is amended by adding a new section read as follows:

**1507.2.9.4 Sidewall flashing.** Flashing against a vertical sidewall shall be by the step-flashing method. The flashing shall be a minimum of 4 inches (102 mm) high and 4 inches (102 mm) wide. At the end of the vertical sidewall the step flashing shall be turned out in a

manner that directs water away from the wall and onto the roof and/or gutter.

**EXCEPTION:**

For re-roofing where step flashing would require removal of siding material, provided adequate flashing is installed.

*Section 1507.2.9.5 Other flashing* is amended by adding a new section read as follows:

**1507.2.9.5 Other flashing.** Flashing against a vertical front wall, as well as soil stack, vent pipe and chimney flashing shall be applied according to the asphalt shingle manufacturer's printed instructions.

*REROOFING, Section 1510.1* is amended by adding two paragraphs at the end to read as follows:

No portion of an existing nonrated roof covering may be permanently replaced or covered with more than one square of nonrated roof covering.

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.

*Section 1608.2 Ground snow load*, the first sentence is amended to read as follows:

**1608.2 Ground Snow Loads.** The ground snow loads to be used in determining the design snow loads for roofs shall be shall be 30 psf, as determined in accordance with ASCE 7 or Figure 1608.2 for the contiguous United States and Table 1608.2 for Alaska.

*Section 1609.3 Basic wind speed*, the first sentence is amended to read as follows:

**1609.3 Basic wind speed.** The basic wind speed, in mph, for the determination of the wind loads shall be one hundred (100) miles per hour (161 kph) as determined by Figure 1609.

*Section 1804.3.1 Final Grading* is amended by adding a new section to read as follows:

**1804.3.1 Final Grading.** Final grading adjacent to the foundation shall be compacted sufficiently and in such a manner that it is not undermined or subject to significant settlement or displacement due to improper placement of backfill.

*Section 2406.4 Hazardous locations Item 5* is amended to read as follows:

5. Glazing in doors and enclosures for hot tubs, whirlpools, saunas, steam rooms, bathtubs and showers. Glazing in any portion of a building wall enclosing these compartments where the bottom exposed edge of the glazing is less than 60 inches (1524 mm) above a standing surface and where any portion of such glazing is within 48 inches of an interior surface of hot tubs, whirlpools, saunas, steam rooms, bathtubs and showers.

*Section 2902.1 Touch-free toilet facilities* is amended by adding a new section read as follows:

**2902.1.3 Touch-free toilet facilities.** Toilet facilities installed for occupancies associated with food preparation or food service to the public shall be provided with:

1. Automatic touch-free water control valves on lavatories.
2. Automatic touch-free paper towel dispensers.
3. Toilet facilities exit doors that allow exiting without requiring touching by hand, any door hardware, such as knobs, levers, sliding bolts, latches and similar devices.

**EXCEPTION:**

Toilet facilities designed as a single occupant use may be provided with exit door locking hardware to afford privacy.

*Section 3109.6 Barriers around decorative pools, fountains, and ponds* is hereby added to read as follows:

**3109.6 Barriers around decorative pools, fountains, and ponds.** Decorative pools, fountains, and ponds which can contain water deeper than 24 inches (610 mm), shall be protected by barriers installed in accordance with section 3109.4.

*Chapter 36 SUSTAINABLE BUILDING CONSTRUCTION PRACTICES* is amended by adding a new chapter read as follows:

**CHAPTER 36 SUSTAINABLE BUILDING CONSTRUCTION PRACTICES**

**SECTION 3601 GENERAL**

**3601.1 Scope.** The provisions of this chapter shall govern sustainable building construction practices for new construction and additions that require a building permit, unless otherwise noted.

**SECTION 3602 RESOURCE EFFICIENCY**

**3602.1 Construction waste management.** For new buildings, a construction waste management plan acceptable to the Building Official that includes recycling of concrete, wood, metals and cardboard, is required at the time of application for a building. The construction waste management plan shall be implemented and conspicuously posted on the construction site. Substantive changes to the plan shall be subject to prior approval by the Building Official

**3602.2 Certified tropical hardwood.** All tropical hardwoods used in new construction, additions and alterations requiring a building permit, shall be certified by the Forest Stewardship Council or other approved agency. Certification demonstrating compliance shall be required with delivery of such materials and shall be available for inspection.

**SECTION 3603 INDOOR ENVIRONMENTAL QUALITY (IEQ)**

### 3603.1 Indoor Air Quality (IAQ)

3603.1.1 Heating, Ventilating, and Air Conditioning Design. Prior to and during construction, reasonable efforts shall be made to minimize the release and accumulation of debris and particulates, and the specific requirements of this section shall apply.

3603.1.1.1 Air handling system access. The arrangement and location of air handling system components including, but not limited to, air handler units, fans, coils and condensate pans shall allow access for cleaning and repair of the air handling surfaces of such components. Piping, conduits, and other building components shall not be located so as to obstruct the required access.

3603.1.1.2 Durability of air handling surfaces. Surfaces exposed to airflow within air handling systems shall be constructed of materials that are resistant to deterioration and will not break away, crack, peel, flake off, or show evidence of delamination or continued erosion when tested in accordance with the erosion test in UL 181.

3603.1.1.3 Airstream surfaces. Materials exposed to airflow within ducts, within air plenums, or on top of suspended ceilings, shall not break away, crack, peel, flake off, or show evidence of delamination or continued erosion when tested in accordance with the erosion test in UL 181.

3603.1.2 Building pollutant flush-out. After all interior finishes are installed, the building shall be flushed-out by ventilating at a minimum rate of 0.30 cfm per ft<sup>2</sup> of outside air or the design outdoor airflow rate determined from Chapter 4 of the IMC, whichever is greater, for at least 14 days while maintaining an internal temperature of at least 60°F, and relative humidity not higher than 60 percent. Occupancy shall be permitted to start one day after start of the flush-out, provided that flush-out continues for the full 14 days. The building shall not be “baked out” by increasing the temperature of the space above the occupied set point. Where continuous ventilation is not possible, the aggregate of flush-out periods shall be equivalent to 14 days of continuous ventilation. Flush-out reports shall be provided to the Building Official prior to approval.

Exception: All residential buildings.

3603.2 Low-volatile organic compound (VOC) materials. Construction materials, floor coverings and site-applied finishes, including sealants and adhesives, resilient flooring, carpeting and pad, site-applied paints, stains and varnishes, structural wood panels, hardwood veneer plywood, particle board and fiber board building products, and insulation shall meet specified volatile organic compound (VOC) emissions limits in accordance with relevant standards California Department of Public Health (CDPH) 01350; GREENGUARD Environmental Institute GGPS.001 standard for building materials and finishes; and Green Seal® standards. Documentation demonstrating compliance shall be required with delivery of such materials and shall be available for inspection.

**Exception: For alterations to existing buildings, carpeting and pad, structural wood panels, hardwood, veneer plywood, particle board and fiber board building products and insulation are not subject to this requirement.**

**3603.3 Acoustical control. Minimum requirements for exterior-to-interior sound transmission, interior sound transmission, and background sound levels in new construction and additions thereto, except as noted hereunder, shall be provided as specified herein.**

**3603.3.1 Sound transmission. Buildings and tenant spaces shall comply with the following sound transmission requirements:**

**Exceptions:**

- 1. Portions of buildings or structures that have the interior environment open to the exterior environment.**
- 2. Concession stands and toilet facilities in Group A-4 and A-5 occupancies.**

**3603.3.1.1 Exterior sound transmission. Where a Group A1, A3, E and I occupancy building, a Group B occupancy building used for educational purposes, or a Group R occupancy building is constructed at a location listed herein, the wall and roof-ceiling assemblies making up the building thermal envelope shall have a composite sound transmission class (STC<sub>c</sub>) rating of 40 or greater in the following locations:**

- 1. within 500 feet (300 m) of a multi-lane highway (road) designed for high-speed travel by large numbers of vehicles, and having no traffic lights, stop signs, nor other regulations requiring vehicles to stop, fire station, heavy industrial or manufacturing zone or facilities, commercial storage facility with back-up alarms, outdoor music amphitheater, or sports arena or stadium;**
- 2. within 250 feet (150 m) of a truck route roadway containing four or more traffic lanes; or**
- 3. within 1,000 feet (900 m) of an active railway.**

**3603.3.1.2 Interior sound transmission. Interior wall and floor/ceiling assemblies, separating interior rooms and spaces shall be designed in accordance with the following requirements:**

- 1 Wall and floor-ceiling assemblies separating adjacent tenant spaces, tenant spaces and public places, hotel rooms, motel rooms, and patient rooms in nursing homes and hospitals and adjacent classrooms shall have a composite STC rating of 50 or greater.**
- 2 Wall and floor-ceiling assemblies separating classrooms from rest rooms and showers shall have a composite STC rating of 53 or greater.**

- 3 Wall and floor-ceiling assemblies separating classrooms from music rooms, mechanical rooms, cafeteria, gymnasiums, and indoor swimming pools shall have a composite STC rating of 60 or greater.

Exception: Residential Group R occupancies addressed in Section 1207 of this code.

3603.3.1.3 Background Sound. The average background sound levels within unoccupied rooms (from heating, ventilating and air conditioning and other building systems) shall be below the maximum A-weighted sound level for specific occupancies from Table 3603 below. This shall be confirmed by spot checks during the commissioning process.

**TABLE 3603 MAXIMUM ALLOWABLE BACKGROUND SOUND IN ROOMS**

<u>Occupancy</u>	<u>Maximum A-weighted sound level (dB<sub>a</sub>)</u>
<u>Small auditoriums (&lt;500 seats)</u>	<u>39</u>
<u>Large auditoriums, large live indoor theaters, and large churches (for very good speech articulation) (&gt;500 seats)</u>	<u>35</u>
<u>TV and broadcast studios (close microphone pickup only)</u>	<u>35</u>
<u>Small live indoor theaters (&lt; 500 seats)</u>	<u>35</u>
<u>Private residences:</u>	
<u>Bedrooms</u>	<u>39</u>
<u>Apartments</u>	<u>48</u>
<u>Family rooms and living rooms</u>	<u>48</u>
<u>Schools:</u>	
<u>Lecture and classrooms</u>	
<u>Core learning space with enclosed volume ≤ 20,000 cu ft (&lt;566 cu m)</u>	<u>35</u>
<u>Core learning space with enclosed volume &gt; 20,000 cu ft (&gt;566 cu m)</u>	<u>40</u>
<u>Open-plan classrooms</u>	<u>35</u>
<u>Hotels/motels:</u>	
<u>Individual rooms or suites</u>	<u>44</u>
<u>Meeting/banquet rooms</u>	<u>44</u>
<u>Service support areas</u>	<u>57</u>
<u>Office buildings:</u>	
<u>Offices</u>	
<u>executive</u>	<u>44</u>
<u>small, private</u>	<u>48</u>
<u>large, with conference tables</u>	<u>44</u>
<u>Conference rooms</u>	
<u>Large</u>	<u>39</u>
<u>Small</u>	<u>44</u>
<u>Open-plan areas</u>	<u>48</u>
<u>Business machines, computers</u>	<u>53</u>
<u>Public circulation</u>	<u>57</u>
<u>Hospitals and clinics</u>	
<u>Private rooms</u>	<u>39</u>
<u>Wards</u>	<u>44</u>
<u>Operating rooms</u>	<u>44</u>
<u>Laboratories</u>	<u>53</u>
<u>Corridors</u>	<u>53</u>

Public areas	52
Movie theaters ≤ 500 seats	48
Churches, small (≤500 seats)	44
Courtrooms	44
Libraries	48
Restaurants	52
Light maintenance shops, industrial plant control rooms, kitchens, and laundries	62
Shops and garages	67

## SECTION 3604 COMMISSIONING, OPERATIONS & MAINTENANCE

**3604.1 Building commissioning.** For new *buildings* and *additions* with a gross floor of greater than 15,000 ft<sup>2</sup> (1,395 m<sup>2</sup>), *commissioning* shall be performed in accordance with this section. A commissioning process shall be incorporated into the design and construction of the *building* project that verifies that the delivered *building* and its components, assemblies, and systems comply with the documented *owner project requirements* (OPR). Procedures, documentation, tools and training shall be provided to the *building* operating staff to sustain features of the *building* assemblies and systems for the service life of the *building*. This material shall be assembled and organized into a systems manual that provides necessary information to the *building* operating staff to operate and maintain all *commissioned* systems identified with the *building* project. The owner shall retain the system manual and final commissioning report described below. An electronic formatted copy of the final commissioning report shall be provided to the Building Official.

**The following commissioning activities shall be completed prior to approval:**

1. **Designate an *approved project commissioning authority* (CxA) to lead, review, and oversee completion of the *commissioning* process activities.**
2. **The owner, in conjunction with the design team as necessary, shall develop the *owner's project requirements* (OPR) to guide the CxA. The OPR will be distributed to all parties participating in the project programming, design, construction, and operations, and the *commissioning* team members.**
3. **The design team shall develop the *basis of design* (BOD).**
4. **The CxA shall review the both the OPR and BOD for clarity and completeness.**
5. **Construction phase *commissioning* requirements shall be incorporated into project specifications and other construction documents developed by the design team.**
6. **Develop and implement a *commissioning plan* containing all required forms and procedures for the complete testing of all equipment, systems, and controls included in Section 3604.1.1.**
7. **Verify the installation and performance of the systems to be *commissioned*.**
8. **Complete a final *commissioning* report satisfactory to the Building Official.**
9. **Verify the owner requirements for training operating personnel and *building* occupants are completed.**
10. **Verify that a system manual in a form satisfactory to the Building Official has been prepared. At a minimum, the system manual shall include operations and maintenance documentation and full warranty information, and shall provide**

commissioned systems as designed.

**3604.1.1 Systems. The following systems, if included in the *building* project, shall be commissioned:**

1. **heating, ventilating, air-conditioning, indoor-air-quality, and refrigeration systems and associated controls;**
2. **building thermal envelope systems, components, and assemblies to verify thermal, air, and moisture integrity;**
3. **all lighting controls and shading controls;**
4. **service water heating systems;**
5. **renewable energy systems; and**
6. **background sound levels.”**

*Chapter 35 REFERENCED STANDARDS* is hereby amended by adding the following additional referenced standard in alphabetical sequence:

**CDPH California Department of Public Health**  
**1615 Capitol Avenue**  
**Sacramento, CA 95814**

**CDPH 01350 Standard Method for Testing VOC emissions from indoor sources**  
**Referenced in Amended 09 IBC Section 3603.2 Maximum Allowable Background Sound in Rooms**

**FSC Forest Stewardship Council U.S. (FSC-US)**  
**212 Third Avenue North, Suite 504**  
**Minneapolis, MN 55401**

**GEI GREENGUARD Environmental Institute**  
**2211 Newmarket Parkway, Suite 110**  
**Marietta, GA 30067**

**GGPS.001.GREENGUARD IAQ Standard for *Building* Materials, Finishes and Furnishings**  
**Referenced in Amended 09 IBC Section 3603.2 Maximum Allowable Background Sound in Rooms**

**Green Seal®**  
**1001 Connecticut Avenue, NW**  
**Suite 827**  
**Washington, DC 20036-5525**

**GS-11 Paintings and Coatings**  
**GS-43 Recycled Content Latex Paints**  
**Referenced in Amended 09 IBC Section 3603.2 Maximum Allowable Background Sound in Rooms**

*Appendix C GROUP U AGRICULTURAL BUILDINGS* is adopted in its entirety.

*Appendix E SUPPLEMENTARY ACCESSIBILITY REQUIREMENTS*, is adopted in its entirety.

*Appendix I PATIO COVERS* is adopted in its entirety.