

# **Houston Amendments to the *2015 International Residential Code for One- and Two-Family Dwellings***



Adopted by Ord. No. 2021-1037<sup>1</sup>

Passed December 1, 2021<sup>2</sup>

Effective April 1, 2022<sup>3</sup>

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1. The City Secretary shall insert the number of the adopting ordinance.
  2. The City Secretary shall insert the date passage and approval of the adopting ordinance.
  3. The City Secretary shall insert the effective date of the adopting ordinance.



# CHAPTER 1

## SCOPE AND ADMINISTRATION

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

The City of Houston Construction Code collectively includes this volume and certain other codes, pamphlets, specifications and documents that are adopted in or by reference through the adopting ordinance, City of Houston Ordinance No. 2021-1037.<sup>4</sup>

**R101.2 Scope.** The provisions of the ~~International Residential Code for One- and Two-Family Dwellings~~ this code shall set forth apply the minimum requirements and standards applicable to the construction, alteration, movement, enlargement, replacement, repair, equipment, use and occupancy, location, removal and demolition, disassembly and reuse of materials associated with ~~of detached one- and two-family dwellings and townhouses not more than three stories above grade plane in height with a separate means of egress system and their accessory structures not more than three stories above grade plane in height. Buildings, systems and other construction not specifically defined or addressed in this code shall comply with all applicable provisions of the Construction Code. One- and two-family dwellings and townhouses shall be classified as Group R-3 occupancies, and accessory structures shall be classified as Group U occupancies.~~

### Exceptions:

1. Live/work units located in *townhouses* and complying with the requirements of Section 419 of the ~~International Building Code~~ shall be permitted to be constructed in accordance with ~~the International Residential Code for One- and Two-Family Dwellings~~ this code. Fire suppression required by Section 419.5 of the ~~International Building Code~~ where constructed under this code ~~the International Residential Code for One- and Two-family Dwellings~~ shall conform to Section P2904.
2. Owner-occupied lodging houses with five or fewer guestrooms shall be permitted to be constructed in accordance with this code ~~the International Residential Code for One- and Two-family Dwellings~~ where equipped with a fire sprinkler system in accordance with Section P2904.

**R102.1 General.** Where there is a conflict between a general requirement and a specific requirement, the specific requirement shall prevail. Where, in any specific ~~instance case, different sections of provisions of this code, including adopted appendices,~~ specify different materials, different methods of construction or other requirements that differ from those provided in the City Code or other volumes of the Construction Code, including adopted appendices, other than the Fire Code and its adopted appendices and standards, the most restrictive shall prevail. Where, in any specific instance, provisions of this code, including adopted appendices, specify different materials, different methods of construction, or other requirements that differ from those provided in the Fire Code, including its adopted appendices and standards, and the building official and the fire marshal are unable to mutually reconcile the requirements by issuing a written interpretation, then either of them may refer the matter to the General Appeals Board created

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4. City Secretary shall insert number of adopting ordinance.

under the *Building Code*, which shall conduct a review of the matter and issue a written code interpretation based upon the apparent intent of the codes involved. Notwithstanding any other provision, interpretations that are issued by the General Appeals Board shall not be subject to further appeal.

**R102.5 Appendices.** Provisions in the appendices shall not apply unless specifically referenced in the adopting ordinance this section. Appendices A, B, C, H, K, L, M, Q, T, U, and V are hereby adopted and made part of this code.

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

**R102.8 Special piping and storage systems.** See Chapter 57 of the *Fire Code* regarding flammable and combustible liquids.

**R102.9 Electrical Code.** Part VIII-Electrical (Chapters 34-43) of the 2015 *International Residential Code* is not adopted. All electrical work and licensing shall comply with the *Electrical Code*.

**R102.10 Mechanical Code.** The licensing of air-conditioning contractors shall be as required by the *Mechanical Code* and applicable State laws. This code includes numerous references to the *International Mechanical Code*. For the sake of convenience and cost savings to the public in the preparation of Houston Supplement pages to this code, those references have not been revised unless the text of the provision in which they appear has otherwise been revised by this *jurisdiction*. Any such references shall be regarded as references to the corresponding code as adopted by this *jurisdiction* from time to time. The *jurisdiction* reserves the right to adopt codes based upon promulgations of organizations other than the International Code Council, including, but not limited to, the Uniform Series Codes, to the extent permitted by State law. Any reference to a specific chapter, section, or provision of a code that has not been adopted by this *jurisdiction* shall be construed to mean the corresponding provision of the corresponding code as adopted by this *jurisdiction*.

**R102.11 Plumbing Code.** The licensing of plumbers and plumbing contractors shall be as required in the *Plumbing Code* and applicable State laws. This code includes numerous references to the *International Plumbing Code*. For the sake of convenience and cost savings to the public in the preparation of Houston Supplement pages to this code, those references have not been revised unless the text of the provision in which they appear has otherwise been revised by this *jurisdiction*. Any such references shall be regarded as references to the corresponding code as adopted by this *jurisdiction* from time to time. This *jurisdiction* reserves the right to adopt codes based upon promulgations of organizations other than the International Code Council, including but not limited to the Uniform Series Codes, to the extent permitted by State law. Any reference to a specific chapter, section, or provision of a code that has not been adopted by this *jurisdiction* shall be construed to mean the corresponding provision of the corresponding code as adopted by this *jurisdiction*.

**SECTION R103**  
**DEPARTMENT OF BUILDING SAFETY**  
**BUILDING CODE ENFORCEMENT**

**R103.1 Creation of enforcement agency.** The Building Code Enforcement Division department of building safety is hereby created within the jurisdiction's department known as Houston Public Works, and the official in charge thereof shall be known as the building official.

**R104.2 Applications and permits.** The building official shall receive applications, review construction documents and issue permits for the erection and alteration of buildings and structures, inspect the premises for which such permits have been issued and enforce compliance with the provisions of this code as identified in the *Building Code*.

**R104.8 Liability.** ~~The *building official*, member of the board of appeals or employee charged with the enforcement of this code, while acting for the *jurisdiction* in good faith and without malice in the discharge of the duties required by this code or other pertinent law or ordinance, shall not thereby be rendered civilly or criminally liable personally and is hereby relieved from personal liability for any damage accruing to persons or property as a result of any act or by reason of an act or omission in the discharge of official duties. Except as otherwise provided by law, the *building official* shall not personally be liable in damages for any act or omission arising out of any official action taken to implement and enforce the provisions of this code. Additionally, except as otherwise provided by law, the *building official* shall not personally be liable in damages for any act or omission taken in the course and scope of employment. Where and to the extent consistent with the provisions of Chapter 2, Article X, of the *City Code*, this *jurisdiction* shall provide legal representation and indemnification for any suit or claim brought against the *building official* or any deputies because of acts or omissions performed in the implementation or enforcement of this code.~~

This code shall not be construed to relieve from or lessen the responsibility of any person owning, operating, or controlling any building, structure or system or other construction for any damages to persons or property caused by defects, nor shall the code enforcement agency or the *jurisdiction* be held as assuming any such liability by reason of the inspections authorized by this code or any permits or certificates issued under this code.

~~**R104.8.1 Legal defense.** Any suit or criminal complaint instituted against an officer or employee because of an act performed by that officer or employee in the lawful discharge of duties and under the provisions of this code shall be defended by legal representatives of the *jurisdiction* until the final termination of the proceedings. The *building official* or any subordinate shall not be liable for cost in any action, suit or proceeding that is instituted in pursuance of the provisions of this code.~~

**R104.10 Modifications.** Where there are practical difficulties involved in carrying out the provisions of this code, the *building official* shall have the authority to grant modifications for individual cases, provided the *building official* shall first find that special individual reason makes the strict letter of this code impractical and the modification is in compliance with the intent and purpose of this code and that such modification does not lessen health, life and fire safety or structural requirements. The details of action granting modifications shall be recorded and entered in the files of Building Code Enforcement ~~the department of building safety~~.

{EDITORIAL NOTE: DELETE SECTION R104.10.1 IN ITS ENTIRETY.}

**R104.12 Stop orders.** The *building official* may order work stopped hereunder in the same manner provided in Section 115 of the *Building Code*.

**R105.2 Work exempt from permit.** Exemption from *permit* requirements of this code shall not be deemed to grant exemption from permits required by other codes or ordinances and shall not be deemed to grant authorization for any work to be done in any manner in violation of the provisions of this code or any other codes, laws or ordinances of this jurisdiction. *Permits* shall not be required for the following:

**Building:**

1. One-story detached *accessory structures*, provided that the floor area does not exceed ~~200~~ 120 square feet (~~18.58~~ 11.15 m<sup>2</sup>).
2. Fences not over ~~7~~ 8 feet (~~2134~~ 2,438 mm) high that are not constructed of masonry or concrete, and that are not electrically energized.
3. Retaining walls that are not over 4 feet (1,219 mm) in height measured from the bottom of the footing to the top of the wall, unless supporting a surcharge.
4. Water tanks supported directly upon *grade* if the capacity does not exceed 5,000 gallons (18 927 L) and the ratio of height to diameter or width does not exceed 2 to 1.
5. ~~Sidewalks and driveways.~~ Uncovered wood decks accessory to a one- and two-family dwelling that are not more than 30 inches above *grade*.
6. Minor repair and maintenance of existing structures that include:
  - 6.1. Painting, tarping, wallpapering, tiling, carpeting, cabinets, and counter-tops repair and replacement and similar finish work;
  - 6.2. Repair to gypsum board (sheetrock or drywall) on existing walls that is not part of a fire-rated assembly and that does not exceed an aggregate of 100 square feet (9.29 m<sup>2</sup>);
  - 6.3. Repair, using the same material, of exterior wood fascia, trim and soffits that do not exceed an aggregate of 128 square feet (11.89 m<sup>2</sup>); or
  - 6.4. Roof covering that does not exceed an aggregate of 100 square feet (9.29 m<sup>2</sup>).
- ~~7. Prefabricated *swimming pools* that are less than 24 inches (610 mm) deep.~~
- ~~78.~~ Minor single-family residential accessory *S*swings and other residential playground equipment less than 12-feet in height.
- ~~89.~~ Window awnings supported by an exterior wall ~~which~~ that do not project more than 54 inches (1,372 mm) from the exterior wall and do not require additional support.
- ~~940.~~ Decks not exceeding 200 square feet (18.58 m<sup>2</sup>) in area, that are not more than 30 inches (762 mm) above *grade* at any point, are not attached to a *dwelling* and do not serve the exit door required by Section R311.4.

**Electrical:**

1. *Listed* cord-and-plug connected temporary decorative lighting.
2. Reinstallation of attachment plug receptacles but not the outlets therefor.
3. Replacement of branch circuit overcurrent devices of the required capacity in the same location.
4. Electrical wiring, devices, *appliances*, apparatus or *equipment* operating at less than 25 volts and not capable of supplying more than 50 watts of energy.
5. ~~Minor repair work, including the~~ The replacement of lamps or the connection of *approved* portable electrical *equipment* to *approved* permanently installed receptacles.

**Gas:**

1. Portable heating, cooking or clothes drying *appliances*.
2. Replacement of any minor part that does not alter approval of *equipment* or make such *equipment* unsafe.
3. Portable-fuel-cell *appliances* that are not connected to a fixed piping system and are not interconnected to a power grid.

**Mechanical:**

1. Portable heating *appliances*.
2. Portable ventilation *appliances*.
3. Portable cooling units.
4. Steam, hot- or chilled-water piping within any heating or cooling *equipment* regulated by this code.
5. Replacement of any minor part that does not alter approval of *equipment* or make such *equipment* unsafe.
6. Portable evaporative coolers.
7. Self-contained refrigeration systems containing 10 pounds (4.54 kg) or less of refrigerant or that are actuated by motors of 1 horsepower (746 W) or less.
8. Portable-fuel-cell *appliances* that are not connected to a fixed piping system and are not interconnected to a power grid.

**Plumbing:**

1. The stopping of leaks in drains, water, soil, waste or vent pipe; provided, however, that if any concealed trap, drainpipe, water, soil, waste or vent pipe becomes defective and it becomes necessary to remove and replace the same with new material, such work shall be considered as new work and a *permit* shall be obtained and inspection made as provided in this code.
2. The clearing of stoppages or the repairing of leaks in pipes, valves or fixtures, and the removal and reinstallation of water closets, provided such

repairs do not involve or require the replacement or rearrangement of valves, pipes, or fixtures.

**R105.2.1 Emergency replacements or repairs.** Where emergency equipment replacements and or emergency repairs for which a permit is required must be performed, the *permit* application shall be submitted to the building official within not later than the next working business day after initiation of the replacement or repair.

**R105.2.2 Repairs.** Application or notice to the *building official* is not required for ordinary repairs to structures or any item listed in Section 105.2. Such repairs shall not include the cutting away of any wall, partition or portion thereof, the removal or cutting of any structural beam or load-bearing support, or the removal or change of any required means of egress system, or rearrangement of parts of a structure affecting the egress requirements; nor shall ordinary repairs include *addition* to, *alteration* of, replacement or relocation of any water supply, sewer, drainage, drain leader, gas, soil, waste, vent or similar piping, electric wiring or mechanical or other work affecting public health or general safety.

**R105.3 Application for permit.** To obtain a *permit*, the applicant shall first file an application therefor in writing on a form furnished by Building Code Enforcement ~~the department of building safety~~ for that purpose. Such application shall:

1. Identify and describe the work to be covered by the *permit* for which application is made.
2. Describe the land on which the proposed work is to be done by legal description, street address or similar description that will readily identify and definitely locate the proposed building or work.
3. Indicate the use and occupancy for which the proposed work is intended.
4. Be accompanied by *construction documents* and other information as required in Section R106.1.
5. State the valuation of total aggregate square footage of any new structure, addition(s), alteration, and the square footage of new paving, and linear feet of new sidewalks and curbs located within the right-of-way associated with the proposed work.
6. Be signed by the applicant or the applicant's authorized agent.
7. Give such other data and information as required by the *building official*.

{EDITORIAL NOTE: DELETE SECTION R105.3.1.1 IN ITS ENTIRETY AND RESERVE.}

**R105.3.2 Time limitation of application.** An application for which no permit is issued within 180 days following the date of application shall become inactive, and plans and other data submitted for review thereafter shall be returned to the applicant or destroyed by the building official. The building official is authorized to grant one or more extensions of time for additional periods not to exceed 180 days each, for a maximum of two years from the date of the original application, upon written request and justifiable cause demonstrated by the applicant. If an application for permit does not result in a permit within two years after the date of original application, the permit application shall expire. In order to renew action on an application after expiration, the applicant shall submit a new permit application and plans and shall pay a new plan review fee. ~~An application for a permit for~~

~~any proposed work shall be deemed to have been abandoned 180 days after the date of filing unless such application has been pursued in good faith or a *permit* has been issued; except that the *building official* is authorized to grant one or more extensions of time for additional periods not exceeding 180 days each. The extension shall be requested in writing and justifiable cause demonstrated.~~

**R105.4 Validity of permit.** ~~Permit validity shall be governed by Section 105.4 of the *Building Code*. The issuance or granting of a permit shall not be construed to be a permit for, or an approval of, any violation of any of the provisions of this code or of any other ordinance of the *jurisdiction*. Permits presuming to give authority to violate or cancel the provisions of this code or other ordinances of the *jurisdiction* shall not be valid. The issuance of a permit based on construction documents and other data shall not prevent the building official from requiring the correction of errors in the construction documents and other data. The building official is authorized to prevent occupancy or use of a structure where in violation of this code or of any other ordinances of this *jurisdiction*.~~

**R105.5 Expiration.** ~~Every *permit* issued shall become ~~invalid~~ inactive unless the work authorized by such *permit* ~~is~~ has commenced and been inspected by a city inspector within 180 days after its issuance, or if the work authorized by such *permit* is suspended or abandoned for a period of 180 days after the time the work is commenced.~~

~~If work has not commenced under a *permit* within two years after the date of issuance or is suspended or abandoned at any time for a period of two years, the *permit* shall expire. In order to recommence work under an expired *permit*, the *permit* holder shall pay the full applicable *permit* fee and submit plans that comply with this code for all uninspected work.~~

**Exception:** ~~For the purpose of issuing a certificate of compliance, the *building official* may, upon request, reactivate a *permit* and perform a final inspection of work.~~

**R105.5.1 Extensions.** ~~The *building official* is authorized to grant, in writing, one or more extensions of time for issued permits, for periods not more than 180 days each. The extension shall be requested in writing and justifiable cause demonstrated.~~

**R105.6 Suspension or revocation.** ~~The *building official* is authorized to suspend or revoke a *permit* issued under the provisions of this code wherever the *permit* is issued in error or on the basis of incorrect, inaccurate or incomplete information, or in violation of any ordinance, or regulation, or any of the provisions of this code. Prior to taking such action, the *building official* shall provide notice of a right to a hearing on the matter pursuant to Section 117 of the *Building Code*.~~

~~{EDITORIAL NOTE: DELETE SECTION R106.1.4 IN ITS ENTIRETY.}~~

**R108.2 Schedule of permit fees.** ~~On buildings, structures, electrical, gas, mechanical and plumbing systems or *alterations* requiring a *permit*, a fee for each *permit* shall be paid as required, in accordance with Section 118 of the *Building Code* and the schedule ~~as established by the applicable governing authority~~ city fee schedule.~~

**R108.3 Building permit fee calculation valuations.** ~~Building *permit* valuation shall include total value of the work for which a *permit* is being issued, such as electrical, gas, mechanical, plumbing *equipment* and other permanent systems, including materials and labor. The structural building permit fee for new one- and two-family residential *dwellings* and townhouses and their detached~~

accessory structures shall be calculated as specified in Section 118.2.1 and Tables 118(1) and 118(2) of the *Building Code* and the city fee schedule based on the total square footage of the building area as defined by the *Building Code*.

The permit fee for new additions to one- and two-family residential dwellings and townhouses shall be calculated as required for new residential buildings.

The permit fee for repair, alterations, or remodeling of residential one and two-family dwellings and townhouses shall be 20% of the calculated fee for new construction as specified in Section 118.2.1 and Tables 118(1) and 118(2) of the *Building Code* and the city fee schedule based on the total aggregate square footage of the building area being repaired or altered or the total aggregate square footage of the walls and ceilings being repaired or altered.

**R108.5 Refunds.** The building official is authorized to establish a refund policy may authorize a refund of any fee paid hereunder that was erroneously paid or collected due to an error by a city employee. This provision shall not be applicable if the error occurred because of incorrect information provided by the applicant.

The building official may authorize a refund of not more than 90 percent of the amount in excess of the minimum permit fee paid when no work has been done under a permit issued in accordance with this code. If work has been done under the permit, no refund shall be authorized. The originally paid administrative fee and the plan review portion of the permit fee shall be nonrefundable.

The building official shall not authorize a refund of any fee paid except on written application filed by the original permit holder not later than 180 calendar days after the date of fee payment.

**R108.6 Work commencing before permit issuance.** Any person who commences work requiring a permit on a building, structure, electrical, gas, mechanical, or plumbing system before obtaining the necessary permits shall be subject to a fee established by the applicable governing authority equal to the amount of the permit fee and applicable minimum investigation fees required by the *Building Code* that shall be in addition to the required permit fees.

**108.7 Plan review fees.** Where plans or other data is required to be submitted in accordance with the *Construction Code*, a plan review fee shall be paid at the time of submitting construction documents for review. The plan review fees for any proposed work shall be charged as described in Section 118.1.11 of the *Building Code* and the city fee schedule.

When approved plans are lost or changed so as to require an additional plan review or when a plan review is required and there is no building permit required, a plan review fee shall be charged as described in Section 118.2.8 of the *Building Code* and the city fee schedule.

**108.7.1 Deferred submittal plan review fees.** A plan review fee shall be paid at the time of submitting construction documents for review of deferred submittal plans. The fee for any deferred submittal review shall be charged at the rate shown in the city fee schedule for a minimum permit fee plus applicable administrative fee. The plan review fees specified in this subsection are separate fees from the permit fees.

## **SECTION R110 CERTIFICATE OF OCCUPANCY COMPLIANCE**

**R110.1 Use and occupancy.** A Group R3 One- and Two-family Dwellings and Townhouses and associated residential accessory buildings or structures shall not be used or occupied, and a

change in the existing use or occupancy classification of a building or structure or portion thereof to a building or structure regulated by this code shall not be made, until the *building official* has issued a certificate of occupancy compliance therefor as provided herein. Issuance of a certificate of occupancy compliance shall not be construed as an approval of a violation of the provisions of this code or of any other ordinances of the *jurisdiction*. Certificates presuming to give authority to violate or cancel the provisions of this code or other ordinances of the *jurisdiction* shall not be valid.

**Exceptions:**

1. ~~A Certificate of compliance occupancy is not required for work exempt from permits under Section R105.2.~~
2. ~~Accessory buildings or structures. A certificate of occupancy is not required for a Group U occupancy accessory to a single-family dwelling or townhouse not containing hazardous materials exceeding the maximum allowable quantities identified in Section 307 of the *Building Code*.~~

**R110.2 Change in use.** Changes in the character or use of an existing structure shall not be made except as specified in Sections ~~3408 and 3409~~ 407, 506, and 1205, and Chapter 10 of the *International Existing Building Code*.

**R110.3 Certificate issued.** After the building official inspects the building or structure and does not find violations of the provisions of this code or other laws that are enforced by ~~the department of building safety~~ Building Code Enforcement, the *building official* shall issue a certificate of compliance occupancy containing the following:

1. The building permit number or project number.
2. The address of the structure.
3. The name and address of the owner and when applicable ~~or~~ the owner's authorized agent.
4. Where applicable a ~~A~~ description of that portion of the structure for which the certificate is issued.
5. A statement that the described portion of the structure has been inspected for compliance with the requirements of this code.
6. The name of the *building official*.
7. The edition of the code under which the permit was issued.
8. If an automatic sprinkler system is provided, and whether the sprinkler system is required.
9. Any special stipulations and conditions of the building permit.
10. The use and occupancy of the building.
11. The type of construction as defined by Chapter 6 of the *Building Code*.

**R110.4 Temporary occupancy.** The building official is authorized to issue a temporary certificate of compliance occupancy before the completion of the entire work covered by the permit, provided that such portion or portions shall be occupied safely. The building official shall set a time period during which the temporary certificate of compliance occupancy is valid.

**R110.5 Revocation.** The *building official* ~~is authorized to~~ shall, in writing, suspend or revoke a certificate of compliance occupancy issued under the provisions of this code in writing, wherever

the certificate is issued in error, or on the basis of incorrect information supplied, or where it is determined that the building or structure or portion thereof is in violation of any ordinance or regulation or any of the provisions of this code. Prior to taking such action, the *building official* shall provide notice of a right to a hearing on the matter pursuant to Section 117 of the *Building Code*.

**R110.6 Certificate of compliance availability.** The *certificate of compliance* shall be available on the premises and shall not be removed except by the *building official*. The owner shall maintain the correct information on the *certificate of compliance*. The *code official* and *fire code official* shall require correction of any errors on a *certificate of occupancy* or *certificate of compliance*.

**R112.1 General.** ~~In order to~~ Except as provided below for mechanical and plumbing issues, the General Appeals Board, in accordance with the provisions of the *Building Code*, shall hear and decide appeals of orders, decisions or determinations made by the *building official* relative to the application and interpretation of this code, there shall be and is hereby created a board of appeals. The *building official* shall be an ex-officio member of said board but shall not have a vote on any matter before the board. The board of appeals shall be appointed by the governing body and shall hold office at its pleasure. The board shall adopt rules of procedure for conducting its business, and shall render decisions and findings in writing to the appellant with a duplicate copy to the *building official*.

**R112.2 Mechanical.** The Mechanical Code Review Board, in accordance with the provisions of the *Mechanical Code*, shall hear and decide appeals of orders, decisions or determinations made by the *building official* relative to the application and interpretation of Part V-Mechanical  
**Limitations on authority.** An application for appeal shall be based on a claim that the true intent of this code or the rules legally adopted thereunder have been incorrectly interpreted, the provisions of this code do not fully apply, or an equally good or better form of construction is proposed. The board shall not have authority to waive requirements of this code.

**R112.3 Plumbing.** The Plumbing Code Review Board, in accordance with the provisions of the *Plumbing Code*, shall hear and decide appeals of orders, decisions or determinations made by the *building official* relative to the application and interpretation of Part VI- Fuel Gas and Part VII- Plumbing of this code  
**Qualifications.** The board of appeals shall consist of members who are qualified by experience and training to pass on matters pertaining to building construction and are not employees of the *jurisdiction*.

**R113.4.1 Penalty.** Where no specific penalty is otherwise provided in this code, the violation of any provision of this code shall constitute a misdemeanor punishable upon conviction by a fine of not less than \$500.00 nor more than \$2,000.00. Each day that any violation continues shall constitute and be punishable as a separate offense. Where any such conduct constitutes a violation of state penal law, then the offense shall be punishable as provided in the applicable state law. In prosecutions under this code, the various provisions hereof that are designated as an "exception" or "exceptions" shall not be treated as exceptions within the meaning of Section 2.02 of the *Texas Penal Code*, and, instead, they shall constitute defenses to prosecution within the meaning of Section 2.03 of the *Texas Penal Code*.

**SECTION 115**  
**PRIVATE PLAN REVIEW AND INSPECTION SERVICES**

**R115.1 Applicability.** This section applies to any required *permit* for the construction, repair, or renovation of any one- or two-family residence or townhouse and associated accessory structures.

**R115.2 Program established.** The *building official* may establish a private plan review and inspection program under which qualified persons who are not city employees may review plans, conduct certain building inspections, and provide related services for structures to which this section applies to assure compliance with all applicable construction codes. The program shall be conducted in accordance with the regulations and forms promulgated by the *building official*, which shall, without limitation, address the following:

1. Qualifications of the firms and individuals authorized to perform plan reviews, conduct inspections, and provide other related *permit* services. The qualifications shall include licensing in accordance with any applicable laws and regulations and certification in accordance with state or federally recognized standards.
2. Requirement of appropriate liability coverages in an amount of not less than \$1,000,000 per occurrence, with indemnity agreements and coverage of the *jurisdiction*, as an additional insured, for the protection of the *jurisdiction* and other persons who may be affected by the performance of any services under the program.
3. Provisions to ensure that the firms and individuals participating in the program will act independently of building owners, contractors, and others so as to avoid conflicts of interest.
4. Provisions for any non-building-code-related review of plans and issuance of *permits* to applicants who utilize plan review, inspection, and other related services under the program.
5. Provisions regarding the keeping of records and filing of reports with the *building official*.
6. Administrative provisions for the acceptance, suspension, and revocation of the right of a firm or individual to participate in the program, which shall include elements of due process, including a right of appeal to a hearing officer designated by the director of Houston Public Works, whose decision, notwithstanding any other provision of this code, shall be final and not appealable to the General Appeals Board or city council.
7. Provisions to ensure that no firm or individual may be certified to participate in the program unless qualified to conduct plan reviews and inspections under the codes currently enforced by the *jurisdiction* and/or a nationally recognized uniform or international code.
8. Provisions relating to fees charged by any firm or individual for services rendered under the program, including any fees required by law to be paid directly to the *jurisdiction* and remitted by the *building official* to a firm or individual.
9. Provisions prohibiting any private developer, builder or contractor from employing any firm or individual, including subcontractors, to perform more than 25% of that developer's, builder's or contractor's services under the program in any one calendar year unless a greater amount is approved by the *building official*.

10. Provisions requiring any private developer, builder or contractor utilizing any services under the program and the *building official* to file reports as set forth below:

10.1. Each private developer, builder or contractor utilizing any services under the program shall file a report with the *building official*, supported by affidavit, containing the following information:

10.1.1. The total number of *permits* received during the preceding calendar year for the construction of any residential *structure* in connection with which services under the program were rendered;

10.1.2. The name of each firm or individual utilized under the program on each residential structure during the reporting period; and

10.1.3. A statement certifying that the developer, builder or contractor has fully complied with all rules and regulations under the program during the reporting period, including but not limited to, all rules governing the maximum number of plan reviews and inspections permitted to be performed by any firm or individual, including subcontractors, rendering any services under the program.

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The report shall be filed with the *building official* not later than the last day of January and July in each calendar year and shall cover the preceding six month period ending on the last day of December and June, respectively, in each year.

10.2. The *building official* shall file a report with the mayor and city council containing the following information:

10.2.1. A listing of the names of all companies or contractors that utilized individuals or firms for services under the program and the name of each firm or individual so utilized;

10.2.2. Names of all firms and individuals approved to perform services under the program;

10.2.3. Total number of plan reviews and inspections performed by firms and individuals for each private developer, builder or contractor operating under the program;

10.2.4. Number of plan rechecks and oversight inspections conducted by the *jurisdiction* for each firm or individual utilized under the program and the percentage of that firm or individual's work, including that performed by subcontractors, so inspected;

10.2.5. The number of code violations found through plan rechecks and oversight inspections, including the name of the firm or individual, including subcontractors, who performed such services;

10.2.6. A list of any firms or individuals removed from the program by the *building official*; and

10.2.7. An assessment of program effectiveness as demonstrated by available data, including comments and complaints received by the *jurisdiction* regarding the program pertaining to work performed by a participating developer, builder or contractor, or any firm or

individual, including subcontractors, providing private plan review or inspection services under the program.

The *building official's* report shall be filed with the mayor and city council not later than the last day of August and February in each calendar year and shall cover the preceding 6 month period ending on the last day of July and January, respectively, in each year and may include such additional information relating to the program as he may deem appropriate.

11. Provisions prohibiting any private plan reviewer or inspector from being related to *building owners*, contractors, and other similarly situated individuals or entities within the third degree of consanguinity or within the second degree of affinity.

**R115.3 Oversight inspections.** The provisions of this section do not affect the *jurisdiction* of the *building official* over any work or preclude oversight inspections by the *building official* of structures that are subject to the provision of services under the program. For purposes of quality assurance, the *building official* may recheck plans, perform inspections or reinspections, issue stop work orders, and take any and all actions that are authorized to be taken under this code, the *Electrical Code*, the *Plumbing Code*, or the *Mechanical Code*, without providing prior notice to any program firm or individual, contractor, or owner, unless otherwise required by law.

**R115.4 Fees.** To cover administrative costs of the program established under Section R115, including registration of firms and individuals, management of the program, and oversight inspections, the *building official* shall assess fees equal to 25 percent of the amount otherwise payable under this code for any *permit*, but not less than the minimum fee stated in the city fee schedule. In addition to the reduced *permit* fees charged in connection with the program, an additional fee for each payment voucher issued, as stated for this provision in the city fee schedule, shall be assessed to cover the *jurisdiction's* costs in connection with any fee required to be paid to and remitted by the *jurisdiction*. If any contractor or owner requests an inspection by the *building official* of any structure that is subject to private inspection under this section, then the *building official* may perform the inspection for the fee stated for this provision in the city fee schedule. The administrative fee that is payable under Section 118.1 of the *Building Code* shall be collected in addition to the fees otherwise provided under this section.

Notwithstanding any maximum fee established pursuant to the *Construction Code*, the fees in this section or in any volume of the *Construction Code*, as adjusted according to this provision, shall be automatically increased on the first day of each subsequent calendar year as provided in Section 1-13 of the *City Code*.



## CHAPTER 2

# DEFINITIONS

**R201.3 Specific construction and terms defined in other codes.** Where specific rules of construction or terms are not addressed or defined in this code and are addressed or defined in the City Code or another volume of the Construction Code, such terms or specific constructions herein shall have the meanings ascribed to them in those other volumes, as applicable to the construction and proposed scope of work hereunder in other code publications of the International Code Council.

### SECTION 202 DEFINITIONS

**ALLEY.** A public or private right-of-way that is not used primarily for through traffic and that provides vehicular access to rear entrances to buildings or properties that front on an adjacent street.

**[RB] ALTERATION.** Any construction, retrofit or renovation to an existing structure other than repair or addition that requires a permit. Also, a change to an existing in-a-building, or changes to existing electrical, gas, mechanical or plumbing system that involves an extension, addition or change to the arrangement, type or purpose of the original installation that requires a permit.

**ATTIC, HABITABLE.** A finished ~~or unfinished~~ area, not considered a *story*, complying with all of the following requirements:

1. The occupiable floor area is not less than 70 square feet (17m<sup>2</sup>), in accordance with Section R304.
2. The occupiable floor area has a ceiling height in accordance with Section R305.
3. The occupiable space is enclosed by the roof assembly above, knee walls ~~(if applicable)~~ on the sides and the floor-ceiling assembly below.
4. The occupiable space is within a one- or two- family dwelling containing not more than two stories above grade plane in height.

**AUTHORITY HAVING JURISDICTION.** The director of Houston Public Works or the director's duly authorized representative.

**BUILDING CODE.** The City of Houston Building Code, as adopted and amended by this jurisdiction.

**BUILDING OFFICIAL** ~~The officer or other designated authority charged with the administration and enforcement of this code~~ director of Houston Public Works or the duly authorized representative designated by the director to act as the chief construction code enforcement official of the jurisdiction; also known as chief building official. The term also includes the Houston Airport Systems building official who may be designated by the building official to perform Construction Code permitting and enforcement activities on Houston Airport Systems premises.

**BUILDING THERMAL ENVELOPE.** The boundary formed by basement walls, exterior walls, floor, roof and any other building element that encloses conditioned space. This boundary also includes the boundary between conditioned space and any exempt or unconditioned space.

**CERTIFICATE OF COMPLIANCE.** A certificate stating that materials and products meet specified standards or that the scope of work under a specific permit was done in compliance with approved construction documents. Any reference in the Construction Code to a “CC”, certificate of completion, or a certificate of inspection issued by this jurisdiction, is a reference to a certificate of compliance as defined herein.

**CITY CODE.** The Code of Ordinances, City of Houston, Texas.

**CITY FEE SCHEDULE.** The schedule of fees charged by the city for various permits, licenses, authorizations and services, which is maintained on the city's website.

**CODE OFFICIAL.** The Building Code Enforcement employees, including but not limited to, the building official, plan analysts, field inspectors, and other technical staff charged with the administration and enforcement of this code as specifically delegated by the authority having jurisdiction. The code official is authorized to approve designs, construction, equipment, materials, installations, processes, procedures, practices, and other duties necessary to administer, verify and document compliance with the Construction Code, the Fire Code, ordinances, and other laws and policies as specifically delegated by the chief building official, fire chief, and the authority having jurisdiction.

**CONSTRUCTION CODE.** Has the meaning ascribed in Section 1-2 of the City Code.

**CONTROL JOINT.** A one-piece joint made of metal, zinc, or plastic installed in the surface membrane only of plaster or stucco finish in order to allow for stress relief and to reduce minor cracking of the surface. A control joint may not serve as an expansion joint.

**DANGEROUS.** Any building meeting the definition of a dangerous building as defined in Chapter 10, Article IX, of the City Code or any building, structure or portion thereof that meets any of the conditions described below shall be deemed dangerous:

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

**DUPLEX.** An individual free-standing structure containing not more than two dwelling units, single-family dwellings, or households, each containing a separate means of egress.

**ELECTRICAL CODE.** The City of Houston Electrical Code, as adopted and amended by this jurisdiction.

**ENERGY CONSERVATION CODE.** The City of Houston Residential Energy Conservation Code, as adopted and amended by this jurisdiction.

**EXISTING BUILDING CODE.** The City of Houston Existing Building Code as adopted and amended by this jurisdiction.

**EXPANSION JOINT.** A two-piece slip joint made of metal, zinc, or plastic installed in a stucco or plaster finish system in which the framing, sheathing, and lath are cut to create a true plane to accommodate expansion and contraction of the system as well as to allow for building movement. An expansion joint may also serve as a control joint.

**FIRE CODE.** The *City of Houston Fire Code*, as adopted and amended by this *jurisdiction*.

**FIRE CODE OFFICIAL.** The fire marshal or a duly authorized representative charged with the administration and enforcement of the *Fire Code*.

**GRAY WATER.** Untreated waste water that has not come into contact with toilet waste. *Gray water* includes ~~Waste~~ waste water discharged from lavatories, bathtubs, showers, clothes washers and laundry trays.

**INTERNATIONAL BUILDING CODE.** Any reference herein to the *International Building Code* shall be construed as referring to the *City of Houston Building Code*, as adopted and amended by this *jurisdiction*.

**INTERNATIONAL ENERGY CONSERVATION CODE.** Any reference herein to the *International Energy Conservation Code* shall be construed as referring to the *City of Houston Residential Energy Conservation Code*, as adopted and amended by this *jurisdiction*.

**INTERNATIONAL EXISTING BUILDING CODE.** Any reference herein to the *International Existing Building Code* shall be construed as referring to the *City of Houston Existing Building Code*, as adopted and amended by this *jurisdiction*.

**INTERNATIONAL FIRE CODE.** Any reference herein to the *International Fire Code* shall be construed as referring to the *City of Houston Fire Code*, as adopted and amended by this *jurisdiction*.

**INTERNATIONAL FUEL GAS CODE.** Any reference herein to the *International Fuel Gas Code* shall be construed as referring to the *City of Houston Plumbing Code*, as adopted and amended by this *jurisdiction*.

**INTERNATIONAL MECHANICAL CODE.** Any reference herein to the *International Mechanical Code* shall be construed as referring to the *City of Houston Mechanical Code*, as adopted and amended by this *jurisdiction*.

**INTERNATIONAL PLUMBING CODE.** Any reference herein to the *International Plumbing Code* shall be construed as referring to the *City of Houston Plumbing Code*, as adopted and amended by this *jurisdiction*.

**INTERNATIONAL PROPERTY MAINTENANCE CODE.** Any reference herein to the *International Property Maintenance Code* shall be construed as referring to Chapter 10, Article IX, of the *City Code*, which is also known as the *Houston Building Standards Code*.

**INTERNATIONAL RESIDENTIAL CODE.** Any reference herein to the *International Residential Code* shall be construed as referring to the *City of Houston Residential Code*, as adopted and amended by this *jurisdiction*.

**INTERNATIONAL SWIMMING POOL AND SPA CODE.** Any reference herein to the *International Swimming Pool and Spa Code* shall be construed as referring to the *City of Houston Swimming Pool and Spa Code*, as adopted and amended by this *jurisdiction*.

**MEANS OF EGRESS SYSTEM.** A continuous and unobstructed path of vertical and horizontal egress travel from any occupied portion of a building or structure to a *public way*. A means of egress system consists of three separate and distinct parts: the *exit access*, the *exit* and the *exit discharge*.

**MECHANICAL CODE.** The *City of Houston Mechanical Code*, as adopted and amended by this *jurisdiction*.

**MULTI-FAMILY RESIDENTIAL STRUCTURE.** A structure, including a townhouse structure, that is constructed with three or more attached single-family residences, dwelling units, apartments or condominiums.

**ONE- AND TWO-FAMILY DWELLING.** An individual free-standing structure containing not more than two *dwelling units*, also referred to as a *dwelling*, *duplex* or *single-family dwelling* depending on the number of *dwelling units* within.

**PATIO COVER.** A structure with open or glazed walls that is used for recreational, outdoor living purposes associated with a dwelling unit.

**PLUMBING CODE.** The *City of Houston Plumbing Code*, as adopted and amended by this *jurisdiction*.

**PUBLIC WAY.** Any street, alley or other parcel of land open to the outside air leading to a public street, that has been deeded, dedicated or otherwise permanently appropriated to the public for public use and ~~that~~ which has a clear width and height of not less than 10-20 feet (3048-6,096 mm).

**[RB] REPAIR.** The reconstruction or renewal of any part of an existing building for the purpose of its maintenance or to correct damage using like for like materials.

**RESIDENTIAL CODE.** The *City of Houston Residential Code*, as adopted and amended by this *jurisdiction*.

**RIGHT-OF-WAY.** The entire area between the property boundary lines of every way (including but not limited to roads, streets, alleys, highways, boulevards, bridges, tunnels, or similar thoroughfares), whether acquired by purchase, grant, or dedication by the state or federal government, or acceptance by the *authority having jurisdiction* for public use.

**SIGN CODE.** The *Houston Sign Code*, which is Chapter 46 of the *Building Code* but is published as a separate document.

**SINGLE-FAMILY DWELLING.** An individual freestanding residential structure intended to serve a single family or household as a *dwelling* and/or other uses authorized by the *Building Code* and *Residential Code*.

**SUBSTANTIAL DAMAGE.** A condition where one or both of the following apply:

1. In any story, the vertical elements of the lateral force-resisting system have suffered damage such that the lateral load-carrying capacity of the structure in any

horizontal direction has been reduced by more than 33 percent from its pre-damage condition.

2. The capacity of any vertical gravity load-carrying component, or any group of such components, that supports more than 30 percent of the total area of the structure's floor(s) and roof(s) has been reduced more than 20 percent from its pre-damage condition and the remaining capacity of such affected elements, with respect to all dead and live loads, is less than 75 percent of that required by this code for new buildings of similar structure, purpose and location.

**SWIMMING POOL AND SPA CODE.** The *City of Houston Swimming Pool and Spa Code*, as adopted and amended by this *jurisdiction*.

**TOWNHOUSE.** A multi-family residential structure constructed in a group of three or more attached single-family *dwelling units* constructed in a group of three or more attached units in which each unit extends from foundation to roof and with a *yard* or public way on not less than two sides, which may or may not include lot lines or property lines separating each *dwelling unit*.

**UNSAFE.** Buildings, structures or equipment that are unsanitary, or that are deficient due to inadequate means of egress facilities, inadequate light and ventilation, or that constitute a fire hazard, or in which the structure or individual structural members meet the definition of *dangerous*, or that are otherwise hazardous to human life or the public welfare, or that involve illegal or improper occupancy or inadequate maintenance shall be deemed unsafe. A vacant structure that is not secured against entry shall be deemed unsafe.

## CHAPTER 3

# BUILDING PLANNING

**R301.2.1.1 Wind limitations and wind design required.** The wind provisions of this code shall not apply to the design of buildings where ~~wind design is required in accordance with Figure R301.2(4)B~~ the Ultimate Design Windspeed, as calculated in accordance with Table R301.2(1), meets or exceeds 140 mph (62.59 m/s)

### Exceptions:

1. For concrete construction, the wind provisions of this code shall apply in accordance with the limitations of Sections R404 and R608.
2. For structural insulated panels, the wind provisions of this code shall apply in accordance with the limitations of Section R610.
3. For cold-formed steel light-frame construction, the wind provisions of this code shall apply in accordance with the limitations of Sections R505, R603, and R804.

In regions where ~~wind design is required in accordance with Figure R301.2(4)B~~ the Ultimate Design Windspeed as determined by Table R301.2(1) meets or exceeds 140 mph (62.59 m/s), the design of buildings for wind loads shall be in accordance with one or more of the following methods:

1. *AF&PA Wood Frame Construction Manual (WFCM).*
2. *ICC Standard for Residential Construction in High-Wind Regions (ICC 600).*
3. *ASCE Minimum Design Loads for Buildings and Other Structures (ASCE 7).*
4. *AISI Standard for Cold-Formed Steel Framing—Prescriptive Method for One- and Two-Family Dwellings (AISI S230).*
5. ~~*International Building Code.*~~
6. *Appendix L—Conventional Light-Frame Wood Construction for High-wind Areas.*

The elements of design not addressed by the methods in Items 1 through ~~5~~6 shall be in accordance with the provisions of this code.

Where ASCE 7 or the ~~International Building Code~~ is used for the design of the building, the wind speed map and exposure category requirements as specified in ASCE 7 and the ~~International Building Code~~ shall be used.

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

GROUND SNOW LOAD	WIND DESIGN				SEISMIC DESIGN CATEGORY <sup>f</sup>	SUBJECT TO DAMAGE FROM			WINTER DESIGN TEMP <sup>g</sup>	ICE BARRIER UNDERLAYMENT REQUIRED <sup>h</sup>	FLOOD HAZARDS <sup>g</sup>	AIR FREEZING INDEX <sup>i</sup>	MEAN ANNUAL TEMP <sup>j</sup>
	Speed <sup>d</sup> (mph)	Topographic effects <sup>k</sup>	Special wind region <sup>l</sup>	Wind-borne debris zone <sup>m</sup>		Weathering <sup>a</sup>	Frost line depth <sup>b</sup>	Termite <sup>c</sup>					
0	See Footnote n	NO	NO	Zone 1 or 2 <sup>n</sup>	A	Negligible	6 inches	Very heavy	28	NO	Reference Ch. 19 of City Code	<1500	68.2

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

{EDITORIAL NOTE: FOOTNOTES NOT SHOWN REMAIN AS SET FORTH IN 2015 IRC.}

n. Ultimate Design Windspeed shall be determined by entering the physical address of the property where the building will be constructed into the ASCE 7 Windspeed Website: <http://windspeed.atcouncil.org/>. Buildings shall be considered Risk Category II. A copy of the windspeed printout from the website shall be attached to the plans for verification.

**R302.1 Exterior walls.** Construction, projections, openings and penetrations of *exterior walls of dwellings* and accessory buildings shall comply with Table R302.1(1); or *dwellings* equipped throughout with an *automatic sprinkler system* installed in accordance with Section P2904 shall comply with Table R302.1(2). Projections shall not extend within 2 feet of a lot line or to an imaginary line between two buildings on the same lot in accordance with the definition of *Fire Separation Distance* in this code.

**Exceptions:**

1. Walls, projections, openings or penetrations in walls perpendicular to the line used to determine the *fire separation distance*.
2. Walls of *dwellings* and *accessory structures* located on the same *lot*.
3. Detached tool sheds and storage sheds, playhouses and similar *structures* exempted from permits are not required to provide wall protection based on location on the *lot*. Projections beyond the *exterior wall* shall not extend over the *lot line*.
4. Detached garages accessory to a *dwelling* located within 2 feet (610 mm) of a *lot line* are permitted to have roof eave projections not exceeding 4 inches (102 mm).
5. Foundation vents installed in compliance with this code are permitted.

**TABLE R302.1(1)  
EXTERIOR WALLS**

EXTERIOR WALL ELEMENT		MINIMUM FIRE-RESISTANT RATING	MINIMUM FIRE SEPARATION DISTANCE
Walls	Fire-resistance rated	1 hour—tested in accordance with ASTM E 119 or UL 263 with exposure from both sides	< 5 feet
	Not fire-resistance rated	0 hours	≥ 5 feet
Projections	Not Allowed	N/A	< 2 feet
	Fire-resistance rated	1 hour on the face and underside <sup>a, b</sup>	≥ 2 feet to < 5 feet
	Not fire-resistance rated	0 hours	≥ 5 feet

Openings	Not Allowed	N/A	< 3 feet
	25% maximum of wall area <sup>e</sup>	0 hours	3 feet
	Unlimited	0 hours	5 feet
Penetrations	All	Comply with Section R302.4	< 3 feet
		None required	3 feet

For SI: 1 foot = 304.8 mm.

N/A = Not Applicable

- Roof eave fire-resistance rating shall be permitted to be reduced to 0 hours on the underside of the eave if fire blocking is provided from the wall top plate to the underside of the roof sheathing.
- Roof eave fire-resistance rating shall be permitted to be reduced to 0 hours on the underside of the eave provided that gable vent openings are not installed.
- Opening requirements do not apply to noncombustible carports open on two sides.

**TABLE R302.1(2)  
EXTERIOR WALLS—DWELLINGS WITH FIRE SPRINKLERS**

EXTERIOR WALL ELEMENT		MINIMUM FIRE-RESISTANCE RATING	MINIMUM FIRE SEPARATION DISTANCE
Walls	Fire-resistance rated	1 hour—tested in accordance with ASTM E 119 or UL 263 with exposure from both sides	0 feet
	Not fire-resistance rated	0 hours	3 feet <sup>a</sup>
Projections	Not allowed	N/A	< 2 feet
	Fire-resistance rated	1 hour on the <u>face and underside</u> <sup>b, c</sup>	2 feet <sup>a</sup>
	Not fire-resistance rated	0 hours	3 feet
Openings in walls	Not Allowed <sup>d</sup>	N/A	< 3 feet
	Unlimited	0 hours	3 feet <sup>a</sup>
Penetrations	All	Comply with Section R302.4	< 3 feet
		None Required	3 feet <sup>a</sup>

For SI: 1 Foot = 304.8 mm.

N/A = Not Applicable

- For residential subdivisions where all *dwelling*s are equipped throughout with an automatic sprinkler system installed in accordance with Section P2904, the *fire separation distance* for nonrated exterior walls and rated projections shall be permitted to be reduced to 0 feet, and unlimited unprotected openings and penetrations shall be permitted, where the adjoining *lot* provides an open setback *yard* that is 6 feet or more in width on the opposite side of the property line.
- The roof eave fire-resistance rating shall be permitted to be reduced to 0 hours on the underside of the eave if fire blocking is provided from the wall top plate to the underside of the roof sheathing.
- The roof eave fire-resistance rating shall be permitted to be reduced to 0 hours on the underside of the eave provided that gable vent openings are not installed.
- Opening requirements do not apply to noncombustible carports that are open on two sides.

**TABLE R302.6  
DWELLING GARAGE SEPARATION<sup>a</sup>**

SEPARATION	MATERIAL
From the residence and attics	Not less than 1/2-inch gypsum board or equivalent applied to the garage side
From habitable rooms above the garage	Not less than 5/8-inch Type X gypsum board or equivalent
Structure(s) supporting floor/ceiling assemblies used for separation required by this section	Not less than 1/2-inch gypsum board or equivalent
Garages located less than 3 feet from a dwelling unit on the same lot	Not less than 1/2-inch gypsum board or equivalent applied to the interior side of exterior walls that are within this area

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm.

- a. Disappearing or pull-down attic stairs may be installed in the garage ceiling provided the garage-side exposed panel is not less than 3/8-inch thick fire retardant-treated plywood, untreated plywood protected with 1/2-inch thick gypsum board, or untreated plywood coated with 60-minute rated intumescent paint. In all cases, the opening protection material must be applied to the garage side of the plywood.

**R303.4 Mechanical ventilation.** Where the air infiltration rate of a *dwelling unit* is 5-3 air changes per hour or less when tested with a blower door at a pressure of 0.2 inch w.c. (50 Pa) in accordance with the Energy Conservation Code Section N1102.4.1.2, the *dwelling unit* shall be provided with whole-house mechanical ventilation in accordance with Section M1507.3 or ASHRAE 62.2.

**R311.1.1 Yards and courts.** Yards and courts shall not be less than 3 feet (914 mm) in width, and shall be open to a continuous and unobstructed path of egress travel to a public way.

**Exception:** Projections shall not reduce the clear width to less than 32 inches (813 mm) up to 80 inches (2,032 mm) above the floor or ground.

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

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

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

**R319.1 Address identification.** A numerical address identification posted with respect to any building constructed pursuant to this code shall be provided in accordance with Chapter 10, Article V, of the *City Code*. Where a conflict exists between the *City Code* and this section, the provisions of the *City Code* shall prevail. Buildings shall be provided with ~~approved~~ address identification. The address identification shall be legible and placed in a position that is visible from the street or road fronting the property. Address identification ~~characters shall~~ be comprised of Arabic numbers or alphabetical letters and contrast with their background. Address numbers shall be Arabic numbers or alphabetical letters. Numbers shall not be spelled out. Each character number or letter shall be not less than 4 inches (102 mm) in height with a stroke width of not less than 0.5 inch (12.7 mm). Where required by the fire code official, address identification *shall* be provided

in additional *approved* locations to facilitate emergency response. Where access is by means of a private road and the *building* address cannot be viewed from the *public right-of-way*, a monument, pole or other signs or means *shall* be used to identify the *structure*. Address identification *shall* be maintained in good and readable condition from the public right-of-way.

**R321.3 Accessibility.** ~~Elevators or platform lifts that are part of an accessible route required by Chapter 11 of the *International Building Code*, shall comply with ICC A117.1.~~

**R322.1 General.** Buildings and structures constructed in whole or in part in flood hazard areas, including A or V Zones and Coastal A Zones, as established in Table R301.2(1), and substantial improvement and restoration of substantial damage of buildings and structures in flood hazard areas, shall be designed and constructed in accordance with the provisions contained in ~~this section~~ Chapter 19 of the *City Code*.

Where a conflict exists between the *City Code* and this section, the provisions of the *City Code* shall prevail, and where a variance has been issued by the Floodplain Management Office, the provisions of the variance shall prevail over both the applicable terms of the *City Code* and this section. Buildings and structures that are located in more than one flood hazard area shall comply with the provisions associated with the most restrictive flood hazard area. Buildings and structures located in whole or in part in identified floodways shall be designed and constructed in accordance with ASCE 24.

**R326.1 General.** The design and construction of pools and spas shall comply with the ~~*International Swimming Pool and Spa Code*, Chapter 43 of the *City Code*, and Chapter 757 of the *Texas Health & Safety Code*.~~

# CHAPTER 4

## FOUNDATIONS

**R401.5 Foundation elevation.** All new buildings constructed within this jurisdiction shall have the top of the finished floor of the first story of the building or structure elevated not less than 12 inches above the nearest sanitary sewer manhole rim of the sewer connected to and serving the building, or, where no sewer is available, the top of the finished floor of the first story of the building or structure shall be elevated not less than 4 inches above the crown of the street.

**Exception:** Buildings located in annexed subdivisions where the following conditions exist:

1. The subdivision was platted and recorded prior to annexation;
2. The sanitary sewer system for the subdivision was installed prior to annexation; and
3. The drainage piping from a building meets the requirements of Section 710 of the *Plumbing Code*.

**NOTE:** When a greater elevation is required by Chapter 19 of the *City Code* than under this section, then Chapter 19 of the *City Code* shall govern.

**R401.5.1 Plans and applications.** All construction plans and applications submitted for construction, sewer connections or septic systems shall reflect the elevations of the finished floor of the building and the elevation of the nearest manhole rim of a sanitary sewer connected to the building or crown of the street, whichever is applicable.

**R401.5.2 Damage risk.** All permits for connection shall be issued on the condition that the owner take all the risk of damage that may result from water backing up into the premises from the sewer.

**R401.5.3 Existing structures.** When an existing structure is required to connect with a public or private sewer, the finished floor shall be a minimum of 12 inches above the nearest sanitary sewer manhole rim of a sewer connected to the building.

**Exception:** Where the public or private sewer is not of sufficient depth, or where structures required to be connected to the sewer cannot meet the minimum requirements of this section and other ordinances, the building official may authorize the issuance of a permit for an alternate method of construction or installation when this will not be detrimental to the health, welfare, and safety of the public.

**R404.1.3 Concrete foundation walls.** Concrete foundation walls that support light-frame walls shall be designed and constructed in accordance with the provisions of this section, ACI 318, ACI 332 or PCA 100. Concrete foundation walls that support above-grade concrete walls that are within the applicability limits of Section R608.2 shall be designed and constructed in accordance with the provisions of this section, ACI 318, ACI 332 or PCA 100. Concrete foundation walls that support above-grade concrete walls that are not within the applicability limits of Section R608.2 shall be designed and constructed in accordance with the provisions of ACI 318, ACI 332 or PCA 100. ~~When ACI 318, ACI 332, PCA 100 or the provisions of this section are used to design concrete foundation walls,~~

~~project drawings, typical details and specifications are not required to bear the seal of the architect or engineer responsible for design, unless otherwise required by the state law of the *jurisdiction having authority.*~~

## CHAPTER 6

# WALL CONSTRUCTION

**R608.1 General.** Exterior concrete walls shall be designed and constructed in accordance with the provisions of this section or in accordance with the provisions of PCA 100 or ACI 318. ~~Where PCA 100, ACI 318 or the provisions of this section are used to design concrete walls, project drawings, typical details and specifications are not required to bear the seal of the architect or engineer responsible for design, unless otherwise required by the state law of the *jurisdiction* having authority.~~

**R610.1 General.** Structural insulated panel (SIP) walls shall be designed in accordance with the provisions of this section. ~~Where the provisions of this section are used to design structural insulated panel walls, project drawings, typical details and specifications are not required to bear the seal of the architect or engineer responsible for design, unless otherwise required by the state law of the *jurisdiction having authority*.~~

## CHAPTER 7

# WALL COVERING

**R703.7 Exterior plaster.** Installation of these materials shall be in compliance with ASTM C 926, ASTM C 1063 and the provisions of this code.

**Exception:** Lath may be continuous behind *control joints*.

## CHAPTER 9

# ROOF ASSEMBLIES

**R905.7 Wood shingles and wooden shakes.** ~~The installation of wood shingles shall comply with the provisions of this section.~~ Wood shingles and wooden shakes shall not be used in new construction. Wood shingles or wooden shakes in existing construction shall not be replaced with other wood shingles or wooden shakes unless the replacement wood shingles or wooden shakes are fire-retardant-treated in accordance with Section R902.2 and installed in accordance with this section.

# CHAPTER 11 [RE]

## ENERGY EFFICIENCY

**N1101.1 Scope.** ~~This chapter~~ The *Energy Conservation Code* regulates the energy efficiency for the design and construction of buildings regulated by this code.

{EDITORIAL NOTE: DELETE THE REMAINDER OF THIS CHAPTER IN ITS ENTIRETY.}

## CHAPTER 12

# MECHANICAL ADMINISTRATION

**M1201.2 Application.** In addition to the general administration requirements of Chapter 1, the administrative provisions of ~~this chapter~~ the *Mechanical Code* shall also apply to the mechanical requirements of Chapters ~~13 through 24~~ 12 through 23, as well as to the mechanical provisions of Chapter 24.

# CHAPTER 13

## GENERAL MECHANICAL SYSTEM REQUIREMENTS

**M1305.1.3 Appliances in attics.** Attics containing *appliances*, shall be provided with pull down stairs large enough to allow removal of the largest appliance and not less than 22 inches in width at its narrowest point with a load capacity of not less than 350 pounds an opening and a clear and unobstructed passageway large enough to allow removal of the largest *appliance*, but not less than 30 inches (762 mm) high and ~~22~~ 30 inches (559-762 mm) wide and not more than 20 feet (6,096 mm) long measured along the centerline of the passageway from the opening to the *appliance*. The passageway shall have continuous solid flooring in accordance with Chapter 5 not less than 24 inches (610 mm) wide. A level service space not less than 30 inches (762 mm) deep and 30 inches (762 mm) wide shall be present along all sides of the *appliance* where access is required. The clear access opening dimensions shall be not less than 20 inches by 30 inches (508 mm by 762 mm), and large enough to allow removal of the largest *appliance*.

### Exceptions:

1. The passageway and level service space are not required where the *appliance* can be serviced and removed through the required opening.
2. Where the passageway is unobstructed and not less than 6 feet (1,829 mm) high and 22 inches (559 mm) wide for its entire length, the passageway shall be not more than 50 feet (15,250 mm) long.
3. The opening is through a vertical door on the same level as the equipment with a minimum clear access opening of 30 inches (762 mm) high and 22 inches (559 mm) wide and large enough to allow removal of the largest appliance.

**M1305.1.4.3 Electrical requirements.** A luminaire controlled by a switch located at the required passageway opening and a receptacle outlet shall be installed at or near the *appliance* location in accordance with ~~the *Electrical Code* Chapter 39.~~ Exposed lamps shall be protected from damage by location or lamp guards.

**M1307.4.2 Mechanical ventilation.** Indoor locations intended for hydrogen-generating or refueling operations shall be ventilated in accordance with ~~Section 502.16 of the *International Mechanical Code*~~ 406.9 of the *Building Code*. In these locations, *equipment* and *appliances* having an *ignition source* shall be located so that the source of ignition is below the mechanical *ventilation* outlet(s).

**M1308.2 Protection against physical damage.** Where piping will be concealed within light-frame construction assemblies, the piping shall be protected against penetration by fasteners in accordance with Sections M1308.2.1 through M1308.2.3.

**Exception:** Cast iron piping, black steel pipe, and galvanized steel piping shall not be required to be protected.

## CHAPTER 14

# HEATING AND COOLING EQUIPMENT AND APPLIANCES

**M1401.2 Access.** Heating and cooling *equipment* and appliances shall be located with respect to building construction and other *equipment* and appliances to permit maintenance, servicing and replacement. Clearances shall be maintained to permit cleaning of heating and cooling surfaces; replacement of filters, blowers, motors, controls, and vent connections; lubrication of moving parts; and adjustments. A level service space at least 30 inches (762 mm) deep and 30 inches (762 mm) wide shall be present along all sides of the *appliance* where access is required.

**Exception:** Access shall not be required for ducts, piping, or other components approved for concealment.

**M1411.3 Condensate disposal.** Condensate from all cooling coils ~~or~~ and evaporators shall be conveyed from the drain pan outlet to an approved *plumbing fixture* or *place of disposal area*. Such piping shall maintain a minimum horizontal slope in direction of discharge of not less than 1/8 unit vertical in 12 units horizontal (1-percent slope). Condensate shall not discharge into a street, alley or other areas where it would cause a nuisance. Drain pans and coils shall be arranged to allow thorough drainage and access for cleaning. Primary drain piping inside buildings shall be insulated for the first 15 feet horizontally from the drain pan.

## CHAPTER 15

# EXHAUST SYSTEMS

**M1502.6 Make up air.** When a closet is designed for the installation of a clothes dryer, a minimum opening of 100 square inches (1.0645 m<sup>2</sup>) for makeup air shall be provided in the door or by other approved means.

**M1503.2 Duct material.** Ducts serving range hoods shall be constructed of galvanized steel, stainless steel or copper.

**Exception:** Ducts for domestic kitchen cooking *appliances* equipped with down-draft exhaust systems shall be permitted to be constructed of schedule 40 PVC pipe and fittings provided that the installation complies with all of the following:

1. The duct is installed under a concrete slab poured on grade.
2. The underfloor trench in which the duct is installed is completely backfilled with sand or gravel.
3. The PVC duct extends not more than 6 inches (152.4 mm) ~~1 inch (25 mm)~~ above the indoor concrete floor surface.
4. The PVC duct extends not more than 12 inches (304.8 mm) ~~1 inch (25 mm)~~ above grade *outside of the building*.
5. The PVC ducts are solvent cemented.

# CHAPTER 16

## DUCT SYSTEMS

**M1601.4.10 Flood hazard areas.** In flood hazard areas as established by Table R301.2(1), *duct systems* shall be located or installed in accordance with Chapter 19 of the City Code ~~Section R322-1.6.~~

**M1602.2 Return air openings.** Return air openings for heating, ventilation and air conditioning systems shall comply with all of the following:

1. Openings shall not be located less than 10 feet (3,048 mm) measured in any direction from an open combustion chamber or draft hood of another appliance located in the same room or space.
2. The amount of return air taken from any room with a door installed that confines the room or space shall be not greater than the flow rate of supply air delivered to such room or space.
3. Return and transfer openings shall be sized in accordance with the appliance or equipment manufacturers' installation instructions, Manual D or the design of the registered design professional.
4. Return air shall not be taken from a closet, bathroom, toilet room, kitchen, garage, mechanical room, boiler room, furnace room or unconditioned attic.

**Exceptions:**

1. Taking return air from a kitchen is not prohibited where such return air openings serve the kitchen only, and are located not less than 10 feet (3,048 mm) from the cooking appliances.
2. Dedicated forced-air systems serving only the garage shall not be prohibited from obtaining return air from the garage.
3. Taking return air from an unconditioned crawl space shall not be accomplished through a direct connection to the return side of a forced-air furnace. Transfer openings in the crawl space enclosure shall not be prohibited.
4. Return air from one dwelling unit shall not be discharged into another dwelling unit.

### SECTION M1603

#### CENTRAL VACUUM SYSTEMS

**M1603.1 Central vacuum systems.** Ducts used in central vacuum-cleaning systems within a dwelling unit shall be permitted to be of PVC pipe. Penetrations of fire walls, as well as rated floor-ceiling and rated roof-ceiling assemblies shall comply with this code. Copper or ferrous pipes or conduits shall be used to extend through the wall assembly separation between a garage and a dwelling unit for a central vacuum unit.

## CHAPTER 22

# SPECIAL PIPING AND STORAGE SYSTEMS

**M2201.1 Materials.** Supply tanks shall be *listed* and *labeled* and shall conform to UL 58 for underground tanks and UL 80 for indoor tanks.

**NOTE:** All special pipe and storage systems shall conform to Chapter 57 of the *Fire Code*.

# CHAPTER 24

## FUEL GAS

The text of this chapter is extracted from the 2015 edition of the *International Fuel Gas Code* and has been modified where necessary to conform to the scope of application of the *International Residential Code for One- and Two-Family Dwellings*. The section numbers appearing in parentheses after each section number are the section numbers of the corresponding text in the *International Fuel Gas Code*.

**G2401.1 (101.2) Application.** This chapter covers those fuel gas *pipng systems*, fuel gas *appliances* and related accessories, *venting systems* and *combustion air* configurations most commonly encountered in the construction of one- and two-family *dwellings* and *structures* regulated by this *code*.

Covering of *pipng systems* shall extend from the *point of delivery* to the outlet of the *appliance* shutoff *valves*. *Pipng systems* requirements shall include design, materials, components, fabrication, assembly, installation, testing, inspection, operation and maintenance. Requirements for gas *appliances* and related accessories shall include installation, combustion and ventilation air and venting and connections to *pipng systems*.

The omission from this chapter of any material or method of installation provided for in the ~~*International Fuel Gas Plumbing Code*~~ shall not be construed as prohibiting the use of such material or method of installation. Fuel gas *pipng systems*, fuel gas *appliances* and related accessories, *venting systems* and *combustion air* configurations not specifically covered in these chapters shall comply with the applicable provisions of the ~~*International Fuel Gas Plumbing Code*~~.

Gaseous hydrogen systems shall be regulated by ~~Chapter 7~~ of the *International Fuel Gas Fire Code*.

This chapter shall not apply to the following:

1. Liquefied natural gas (LNG) installations.
2. Temporary *LP-gas pipng* for buildings under construction or renovation that is not to become part of the permanent *pipng system*.
3. Except as provided in Section G2412.1.1, gas *pipng*, *meters*, gas *pressure regulators*, and other appurtenances used by the serving gas supplier in the distribution of gas, other than undiluted LP-gas.
4. Portable LP-gas *appliances* and *equipment* of all types that is not connected to a fixed fuel *pipng system*.
5. Portable fuel cell *appliances* that are neither connected to a fixed *pipng system* nor interconnected to a power grid.
6. Installation of hydrogen gas, LP-gas and compressed natural gas (CNG) systems on vehicles.
7. Liquid petroleum gas facilities regulated by the Railroad Commission of Texas pursuant to Chapter 113 of the *Texas Natural Resources Code*.

**NOTE:** All fuel oil facilities and pipng shall conform to Chapter 61 of the *Fire Code*.

**G2404.7 (301.11) Flood hazard.** For structures located in flood hazard areas, the appliance, equipment and system installations regulated by this code shall be located at or above the elevation required by Chapter 19 of the City Code ~~Section R322 for utilities and attendant equipment.~~

~~**Exception:** The appliance, equipment and system installations regulated by this code are permitted to be located below the elevation required by Section R322 for utilities and attendant equipment provided that they are designed and installed to prevent water from entering or accumulating within the components and to resist hydrostatic and hydrodynamic loads and stresses, including the effects of buoyancy, during the occurrence of flooding to such elevation.~~

**G2406.2 (303.3) Prohibited locations.** *Appliances* shall not be located in sleeping rooms, bathrooms, toilet rooms, storage closets or surgical rooms, or in a space that opens only into such rooms or spaces, except where the installation complies with one of the following:

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

**G2412.2 (401.2) Liquefied petroleum gas storage.** The storage system for *liquefied petroleum gas* shall be designed and installed in accordance with the ~~*International Fire Code*, and NFPA 58,~~ and applicable State laws that are administered by the Texas Railroad Commission.

**G2413.3 (402.3) Sizing.** *Gas piping* shall be sized in accordance with ~~one of the following:~~ Tables G2413.4(1) through G2413.4(21). CSST piping shall be sized according to manufacturer's recommendations and the *Plumbing Code*.

1. ~~Pipe sizing tables or sizing equations in accordance with Section G2413.4.~~
2. ~~The sizing tables included in a *listed piping system's* manufacturer's installation instructions.~~

3. ~~Other approved engineered methods.~~

{EDITORIAL NOTE: DELETE SECTION G2413.6 (402.6) IN ITS ENTIRETY.}

**G2414.10.4 (403.10.4) Metallic fittings.** Metallic fittings, shall comply with the following:

1. Fittings used with steel or wrought-iron *pipe* shall be steel, copper alloy, malleable iron, or cast iron.
2. Fittings used with copper or copper alloy *pipe* shall be copper or copper alloy.
3. Brass or bronze fittings, if exposed to soil, shall have a minimum 80-percent copper content.
- ~~34.~~ Cast-iron bushings shall be prohibited.
45. Special fittings. Fittings such as couplings, proprietary-type joints, saddle tees, gland-type compression fittings, and flared, flareless or compression-type *tubing* fittings shall be: used within the fitting manufacturer's pressure-temperature recommendations; used within the service conditions anticipated with respect to vibration, fatigue, thermal expansion or contraction; and shall be *approved*.
56. Where pipe fittings are drilled and tapped in the field, the operation shall be in accordance with all of the following:
  - 56.1. The operation shall be performed on systems having operating pressures of 5 psi (34.5 kPa) or less.
  - 56.2. The operation shall be performed by the gas supplier or the gas supplier's designated representative.
  - 56.3. The drilling and tapping operation shall be performed in accordance with written procedures prepared by the gas supplier.
  - 56.4. The fittings shall be located outdoors.
  - 56.5. The tapped fitting assembly shall be inspected and proven to be free of leakage.

**G2415.6 (404.6) Underground penetrations prohibited.** Gas *pipng* shall not penetrate building foundation walls at any point below *grade*. Gas *pipng* shall enter and exit a building at a point above grade and the annular space between the *pipe* and the wall shall be sealed at a point where the *pipe* enters the building.

**G2415.11 (404.11) Protection against corrosion.** Metallic pipe or *tubing* exposed to corrosive action, such as soil condition or moisture, shall be protected in an *approved* manner. Zinc coatings (galvanizing) shall not be deemed adequate protection for *gas pipng* underground. Where dissimilar metals are joined ~~underground~~, an insulating coupling or fitting shall be used. *Pipng* shall not be laid in contact with cinders.

**G2415.12.1 (404.12.1) Individual outside appliances.** Individual lines to outdoor lights, grills, or other *appliances* shall be installed not less than 12 inches (304.56 mm)-8 inches (203 mm) below finished grade, provided that such installation is *approved* and is installed in locations not susceptible to physical damage.

**G2415.17.1 (404.17.1) Limitations.** Plastic pipe shall be installed outdoors underground only, with a minimum depth of 18 inches of cover. Plastic pipe shall not be used within or under any building or slab or be operated at pressures greater than 100 psig (689 kPa) for natural gas or 30 psig (207 kPa) for LP gas.

**Exceptions:**

1. Plastic pipe shall be permitted to terminate above ground outside of buildings where installed in premanufactured *anodeless risers* or service head adapter risers that are installed in accordance with the manufacturer's installation instructions.
2. Plastic pipe shall be permitted to terminate with a wall head adapter within buildings where the plastic pipe is inserted in a *pipng* material for *fuel gas* use in buildings.
3. Plastic pipe shall be permitted under outdoor patio, walkway, and driveway slabs provided that the burial depth complies with Section G2415.10.

**G2417.1.1 (406.1.1) Inspections.** Inspections shall consist of visual examination, during or after manufacture, fabrication, assembly ~~or~~ and pressure tests. The building official shall make the following inspections and either approve the portion of the work as completed or notify the permit holder that the same fails to comply with this code:

1. **Rough piping inspection.** This inspection shall be made after all gas piping authorized by the permit has been installed and before any such piping has been covered or concealed, or any fixture or appliance has been attached thereto. This inspection shall include a determination that the gas piping size, material, and installation meet the requirements of this code. This inspection shall also include a pressure test in which the gas piping shall pass an air pressure test of 25 psi (172 kPa) for a period of 15 minutes with no perceptible drop in pressure.

For metal welded piping and for piping carrying gas at pressure greater than 14 inches (355.6 mm) water column pressure, the test pressure shall not be less than 100 psi (689 kPa) for 30 minutes. These tests shall be made using air, CO, or nitrogen pressure only and shall be made in the presence of the inspector. All necessary apparatus for conducting tests shall be furnished by the permit holder.

2. **Final piping inspection.** This inspection shall be made after all piping authorized by the permit has been installed and after all portions are covered or concealed, after all fixtures, appliances or shutoff valves have been attached, before any fixture, appliance, or shutoff valve has been attached thereto and after the completed system is ready to be put in service. This inspection shall include an air, CO, or nitrogen pressure test at a pressure measured with a manometer or slope gauge for a period of

not less than 15 minutes with no perceptible drop in pressure. The test pressure shall not be less than twice the pressure that the system will be subjected to when in service. These tests shall be made in the presence of the inspector. All necessary apparatus for conducting tests shall be furnished by the permit holder. A final inspection shall be required for all gas systems that require a permit as defined in the Plumbing Code.

For annual gas tests and gas turn-ons, the tests shall be done at the pressure required for the final gas inspection.

**G2417.4 (406.4) Test pressure measurement.** Test pressure shall be measured with a manometer or with an approved alternative pressure-measuring device designed and calibrated to read, record, or indicate a pressure loss caused by leakage during the pressure test period. The source of pressure shall be isolated before the *pressure tests* are made. Mechanical gauges used to measure test pressures shall have a range such that the highest end of the scale is not greater than five times the test pressure. Test gauges shall have a pressure range not greater than twice the pressure applied.

**G2417.4.1 (406.4.1) Test pressure.** The test pressure to be used shall be not less than 1½ times the proposed maximum working pressure, but not less than 3 psig (20 kPa gauge), irrespective of design pressure. Where the test pressure exceeds 125 psig (862 kPa gauge), the test pressure shall not exceed a value that produces a hoop stress in the *pipng* greater than 50 percent of the specified minimum yield strength of the pipe.

**G2417.4.2 (406.4.2) Test duration.** The test duration shall be not less than ~~40~~ 15 minutes.

**G2417.4.3 (406.4.3) Approved Alternative Pressure Measuring Devices.** The following alternative pressure measuring devices are approved:

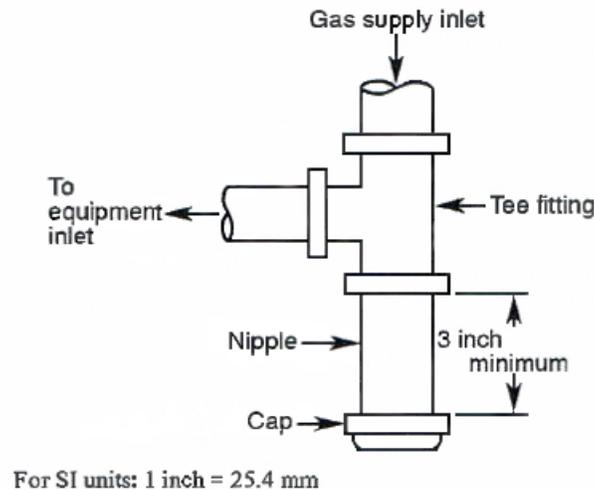
1. Low pressure systems. A low-pressure diaphragm gauge with a minimum dial size of 3½ inches (88.9 mm) with a set hand and a pressure range not to exceed 6 psi with 1/10 pound (0.69 kPa) increments. The minimum test pressure shall not be less than 3 psi, and the maximum test pressure to be applied shall not exceed 4 psi.
2. Medium pressure systems. A diaphragm type pressure gauge with a minimum dial size of 3½ inches (88.9 mm) with a set hand and a pressure range not to exceed 20 psi with 2/10-pound (1.38 kPa) increments. The minimum test pressure shall not be less than 10 psi, and the maximum test pressure shall not exceed 12 psi.
3. High pressure systems. Gauges for high pressure tests shall be as follows:
  - 3.1. Required pressure tests that exceed 10 pounds (69 kPa) but do not exceed 100 pounds (689 kPa) shall be performed with gauges that have 1 pound (6.9 kPa) increments or less.
  - 3.2. Required pressure tests that exceed 100 pounds (689 kPa) shall be performed with gauges incremented for 2 percent or less of the required test pressure.

**G2418.2 (407.2) Design and installation.** *Pipng* shall be supported with metal pipe hooks, metal pipe straps, metal bands, metal brackets, metal hangers or building structural components suitable for the size of *pipng*, of adequate strength and quality, and located at intervals to prevent

or damp out excessive vibration. *Piping* shall be anchored to prevent undue strains on connected *appliances* and shall not be supported by other *piping or equipment*. Pipe hangers and supports shall conform to the requirements of MSS SP-58 and shall be spaced in accordance with Section G2424. Supports, hangers and anchors shall be installed so as not to interfere with the free expansion and contraction of the *piping* between anchors. All parts of the supporting *equipment* shall be designed and installed so that they will not be disengaged by movement of the supported *piping*.

**G2419.4 (408.4) Sediment trap.** Where a sediment trap is not incorporated as part of the appliance, a sediment trap shall be installed downstream of the appliance shutoff valve as close to the inlet of the appliance as practical. The sediment trap shall be either a tee fitting having a capped nipple of any length installed vertically in the bottommost opening of the tee as illustrated in Figure G2419.4 or other device approved as an effective sediment trap. Illuminating appliances, ranges, clothes dryers, decorative vented appliances for installation in vented fireplaces, gas fireplaces and outdoor grills need not be so equipped.

{EDITORIAL NOTE: DELETE FIGURE G2419.4 AND REPLACE WITH FIGURE 1211.8 OF THE 2012 UNIFORM PLUMBING CODE.}



**FIGURE G2419.4 (408.4)**  
**METHOD OF INSTALLING A TEE FITTING SEDIMENT TRAP**  
**[NFPA 54: FIGURE 9.6.7]**

**G2423.1 (413.1) General.** Motor fuel-dispensing facilities for CNG fuel and their operation shall be in accordance with ~~Section 413 of the *International Fuel Gas Fire Code*.~~

**G2425.8 (501.8) Appliances not required to be vented.** The following *appliances* shall not be required to be vented:

1. Ranges.
2. Built-in domestic cooking units *listed* and marked for optional venting.
3. Hot plates and laundry stoves.

4. *Type 1 clothes dryers* (*Type 1 clothes dryers* shall be exhausted in accordance with the requirements of Section G2439).
5. Refrigerators.
6. Counter *appliances*.
7. ~~Room heaters *listed* for unvented use.~~

Where the *appliances* listed in Items 5 and 6 through 7 above are installed so that the aggregate input rating exceeds 20 *Btu* per hour per cubic foot (207 W/m<sup>3</sup>) of volume of the room or space in which such *appliances* are installed, one or more shall be provided with venting *systems* or other *approved* means for conveying the *vent gases* to the outdoor atmosphere so that the aggregate input rating of the remaining *unvented appliances* does not exceed 20 *Btu* per hour per cubic foot (207 W/m<sup>3</sup>). Where the room or space in which the *appliance* is installed is directly connected to another room or space by a doorway, archway or other opening of comparable size that cannot be closed, the volume of such adjacent room or space shall be permitted to be included in the calculations.

**G2439.7.4.1 (614.8.4.1) Specified length.** The maximum length of the exhaust duct shall be 35 feet (10,668 mm) from the connection to the transition duct from the dryer to the outlet terminal. Where fittings are used, the maximum length of the exhaust duct shall be reduced in accordance with Table G2439.7.4.1.

**Exception:** Listed booster fans installed per manufacturer's specifications may be provided to extend the maximum length of the exhaust duct.

**G2439.7.5 (614.8.5) Length identification.** Where the exhaust duct is concealed within the building construction and the equivalent length exceeds 35 feet (10,668 mm), the equivalent length of the exhaust duct shall be identified on a permanent label or tag. The label or tag shall be located within 6 feet (1,829 mm) of the exhaust duct connection.

**G2445.1 (621.1) General.** ~~*Unvented room heaters* shall be tested in accordance with ANSI Z21.11.2 and shall be installed in accordance with the conditions of the listing and the manufacturer's instructions.~~ **Prohibited fuel-burning room heaters and decorative appliances.** *Unvented fuel-burning room heaters* and decorative *appliances* shall be prohibited.

{EDITORIAL NOTE: DELETE REMAINDER OF SECTION G2445.}

**G2447.2 (623.2) Prohibited location.** Cooking appliances designed, tested, *listed* and *labeled* for use in commercial occupancies shall only not be installed within dwelling units or within any area where domestic cooking operations occur when in compliance with the ventilation and clearance to combustibles requirements for commercial cooking appliances in the Mechanical Code.

**Exception:** Appliances that are also *listed* as domestic cooking appliances.

## CHAPTER 25

# PLUMBING ADMINISTRATION

**P2503.5.1 Rough plumbing.** DWV systems shall be tested on completion of the rough piping installation by water or, for piping systems other than plastic, by air, without evidence of leakage. ~~Either~~ The test shall be applied to the drainage system in its entirety or in sections after rough-in piping has been installed, as follows:

1. Water test. Each section shall be filled with water to a point not less than 5 feet (1,524 mm) ~~above the highest fitting connection in that section, or to~~ the highest point in the completed system. Water shall be held in the section under test for a period of 15 minutes. The system shall prove leak free by visual inspection.
2. Air test. The portion under test shall be maintained at a gauge pressure of 5 pounds per square inch (psi) (34 kPa) or 10 inches of mercury column (34 kPa). This pressure shall be held without introduction of additional air for a period of 15 minutes.

## CHAPTER 27

# PLUMBING FIXTURES

**P2708.1 General.** Shower compartments shall have not less than 1024 square inches (0.827 m<sup>2</sup>) ~~900 square inches (0.6 m<sup>2</sup>)~~ of interior cross-sectional area. Shower compartments shall be not less than 30 inches (762 mm) in minimum dimension measured from the finished interior dimension of the shower compartment, exclusive of fixture valves, shower heads, soap dishes, and safety grab bars or rails. The minimum required area and dimension shall be measured from the finished interior dimension at a height equal to the top of the threshold and at a point tangent to its centerline and shall be continued to a height of not less than 70 inches (1,778 mm) above the shower drain outlet. Hinged shower doors shall open outward. The wall area above built-in tubs having installed shower heads and in shower compartments shall be constructed in accordance with Section R702.4. Such walls shall form a water-tight joint with each other and with either the tub, receptor or shower floor.

### Exceptions:

1. Fold-down seats shall be permitted in the shower, provided the required 1,024 square inches (0.827 m<sup>2</sup>) ~~900 square inch (0.6 m<sup>2</sup>)~~ dimension is maintained when the seat is in the folded-up position.
2. When replacing standard size bathtubs of 30 inches by 60 inches (762 mm by 1,524 mm), shower ~~Shower~~ compartments having not less than 25 inches (635 mm) in minimum dimension measured from the finished interior dimension of the compartment provided that the shower compartment has a cross-sectional area of not less than 1,300 square inches (0.838 m<sup>2</sup>).

**P2708.2 Shower drain.** Shower drains shall have an outlet size of not less than ~~1½ inches [38 mm]~~ 2 inches (50.8 mm) in diameter.

**P2709.5 Test for shower receptors.** Shower receptors shall be tested for watertightness by filling with water to the level of the rough threshold. The test plug shall be so placed that both upper and under sides of the subpan shall be subjected to the test at the point where it is clamped to the drain.

**P2717.2 Sink and dishwasher.** The combined discharge from a dishwasher and a one- or two-compartment sink, with or without a food-waste disposer, shall be served by a trap of not less than 1½ inches (38 mm) in outside diameter. The dishwasher discharge pipe or tubing shall rise to the underside of the counter and be fastened or otherwise held in that position before connecting to the head of the food-waste disposer or ~~to a wye fitting in the sink tailpiece.~~

### SECTION P2725

### NONLIQUID SATURATED TREATMENT SYSTEMS RESERVED

{EDITORIAL NOTE: DELETE AND RESERVE THE CONTENTS OF THIS SECTION.}

## CHAPTER 28

# WATER HEATERS

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

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

Where available, listed pans shall be used. A plastic pan shall not be installed beneath a gas-fired water heater.

**P2801.6.1 Pan size and drain.** The pan shall be not less than 1½ inches (38 mm) deep and shall be of sufficient size and shape to receive dripping or condensate from the tank or water heater. The pan shall be drained by an indirect waste pipe of not less than ¾ inch (19 mm) diameter. Piping for safety pan drains shall be of those materials indicated in Table P2905.5. Where a pan drain was not previously installed, a pan drain shall ~~not~~ be required for a replacement water heater installation and shall be installed in accordance with Section P2801.6.2.

**P2804.6.1 Requirements for discharge pipe.** The discharge piping serving a pressure-relief valve, temperature relief valve or combination valve shall:

1. Not be directly connected to the drainage system.
2. Discharge through an air gap located in the same room as the water heater.
3. Not be smaller than the diameter of the outlet of the valve served and shall discharge full size to the air gap.
4. Serve a single relief device and shall not connect to piping serving any other relief device or equipment.
5. Discharge to the floor, ~~to the pan serving the water heater or storage tank,~~ to a waste receptor or to the outdoors.
6. Discharge in a manner that does not cause personal injury or structural damage.
7. Discharge to a termination point that is readily observable by the building occupants.
8. Not be trapped.
9. Be installed to flow by gravity.
10. Terminate not more than 6 inches (152 mm) and not less than two times the discharge pipe diameter above the floor or waste receptor flood level rim.

11. Not have a threaded connection at the end of the piping.
12. Not have valves or tee fittings.
13. Be constructed of those materials indicated in Section P2906.5 or materials tested, rated and *approved* for such use in accordance with ASME A112.4.1.
- ~~14. Be one nominal size larger than the size of the relief valve outlet, where the relief valve discharge piping is constructed of PEX or PE-RT tubing. The outlet end of such tubing shall be fastened in place.~~

# CHAPTER 29

## WATER SUPPLY AND DISTRIBUTION

**P2902.5.1 Connections to boilers.** ~~Where chemicals will not be introduced into a boiler, the~~ The potable water supply to the boiler shall be protected from the boiler by a backflow preventer with an intermediate atmospheric vent complying with ASSE 1012 or CSA B64.3. ~~Where chemicals will be introduced into a boiler, the potable water supply to the boiler shall be protected from the boiler by an air gap or a reduced pressure principle backflow prevention assembly complying with ASSE 1013, CSA B64.4 or AWWA C511.~~

**P2902.5.5.3 Direct systems for other than potable water distribution systems.** Where a solar thermal system directly heats water for a system other than a potable water distribution system, a potable water supply connected to such system shall be protected by a backflow preventer ~~with an intermediate atmospheric vent complying with ASSE 1012.~~ Where a solar thermal system directly heats chemically treated water for a system other than a potable water distribution system, a potable water supply connected to such system shall be protected by a reduced pressure principle backflow prevention assembly complying with ASSE 1013.

**TABLE P2903.2  
MAXIMUM FLOW RATES AND CONSUMPTION FOR PLUMBING  
FIXTURES AND FIXTURE FITTINGS<sup>b</sup>**

PLUMBING FIXTURE OR FIXTURE FITTING	PLUMBING FIXTURE OR FIXTURE FITTING
Lavatory faucet	2.2 gpm at 60 psi
Shower head <sup>a</sup>	2.5 gpm at 80 psi
Sink faucet	2.2 gpm at 60 psi
Water closet	<u>1.28</u> 4.6 gallons per flushing cycle

For SI: 1 gallon per minute = 3.785 L/m,  
1 pound per square inch = 6.895 kPa.

- a. A handheld shower spray ~~shall be considered~~ is also a shower head.
- b. Consumption tolerances shall be determined from referenced standards.

**P2904.1 General.** The design and installation of residential fire sprinkler systems shall be in accordance with NFPA 13D or Section P2904, which shall be considered equivalent to NFPA 13D. Partial residential sprinkler systems shall be permitted to be installed only in buildings not required to be equipped with a residential sprinkler system. Section P2904 shall apply to stand-alone and multipurpose wet-pipe sprinkler systems that do not include the use of antifreeze. A multipurpose fire sprinkler system shall provide domestic water to both fire sprinklers and plumbing fixtures. A stand-alone sprinkler system shall be separate and independent from the water distribution system. ~~A backflow preventer shall not be required to separate a stand-alone sprinkler system from the water distribution system.~~

**P2904.3 Sprinkler piping system.** Sprinkler piping shall be supported in accordance with requirements for cold water distribution piping. Sprinkler piping shall comply with the requirements for cold water distribution piping. For multipurpose piping systems, the sprinkler piping shall connect to and be a part of the cold water distribution piping system.

**Exception:** For plastic piping, it shall be ~~permissible~~ required to follow either the manufacturer's installation instructions or the provisions of this code, whichever is more restrictive.

**P2906.8 Joint and connection tightness.** Joints and connections in the plumbing system shall be gas tight and water tight for the intended use or required test pressure. No joints shall be permitted under slabs.

**P2906.9.1.5 Cross-linked polyethylene plastic (PEX).** ~~↓~~ Tubing and joints between cross-linked polyethylene plastic tubing or fittings shall comply with Section 2906.9.1.5.1 or through Section P2906.9.1.5.23.

**P2906.9.1.5.3 Tubing.** PEX tubing shall have a minimum chlorine designation code of 5 to meet minimum chlorine resistance at end use condition of 100% of the time at 140°F. Acceptable markings on the tubing are PEX 5106, PEX 5206, and PEX 5306.

**P2906.17.2 Plastic pipe or tubing to other piping material.** Joints between different types of plastic pipe or between plastic pipe and other piping material shall be made with an *approved* adapter fitting. Plastic adapter fittings shall be male only.

**P2910.1 Scope.** The provisions of either this section or the rules promulgated by the Texas Commission on Environmental Quality, whichever is more restrictive, shall govern the materials, design, construction and installation of systems for the collection, storage, treatment and distribution of nonpotable water. The use and application of nonpotable water shall comply with laws, rules and ordinances applicable in the *jurisdiction*.

**P2911.1 General.** The provisions of either this section or the rules promulgated by the Texas Commission on Environmental Quality, whichever is more restrictive, shall govern the construction, installation, alteration and repair of on-site nonpotable water reuse systems for the collection, storage, treatment and distribution of on-site sources of nonpotable water as permitted by the *jurisdiction*.

**P2912.1 General.** The provisions of either this section or the rules promulgated by Texas Commission on Environmental Quality, whichever is more restrictive, shall govern the construction, installation, alteration, and repair of rainwater collection and conveyance systems for the collection, storage, treatment and distribution of rainwater for nonpotable applications, as permitted by the *jurisdiction*.

# CHAPTER 30

## SANITARY DRAINAGE

**P3001.3 Flood-resistant installation.** In flood hazard areas as established by Chapter 19 of the City Code Table R301.2(4), drainage, waste and vent systems shall be located and installed to prevent infiltration of floodwaters into the systems and discharges from the systems into floodwaters.

**P3002.3.1 Drainage.** Drainage fittings shall have a smooth interior waterway of the same diameter as the piping served. Fittings shall conform to the type of pipe used. Drainage fittings shall not have ledges, shoulders or reductions that can retard or obstruct drainage flow in the piping. Threaded drainage pipe fittings shall be of the recessed drainage type, cast iron black or galvanized. Drainage fittings shall be designed to maintain one-fourth unit vertical in 12 units horizontal (2-percent slope) grade. This section shall not be applicable to tubular waste fittings used to convey vertical flow upstream of the trap seal liquid level of a fixture trap.

**P3003.9.2 Solvent cementing.** Joint surfaces shall be clean and free from moisture. A purple primer that conforms to ASTM F 656 shall be applied. Solvent cement not purple in color and conforming to ASTM D 2564, CSA B137.3 or CSA B181.2 shall be applied to all joint surfaces. The joint shall be made while the cement is wet, and shall be in accordance with ASTM D 2855. Solvent cement joints shall be installed above or below ground.

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

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

**TABLE P3005.1  
FITTINGS FOR CHANGE IN DIRECTION**

TYPE OF FITTING PATTERN	CHANGE IN DIRECTION		
	HORIZONTAL TO VERTICAL <sup>c</sup>	VERTICAL TO HORIZONTAL	HORIZONTAL TO HORIZONTAL
Sixteenth bend	X	X	X
Eighth bend	X	X	X
Sixth bend	X	X	X
Quarter bend	X	X <sup>a</sup>	X <sup>a</sup>
Short sweep	X	X <sup>a,b</sup>	X <sup>a</sup>
Long sweep	X	X	X
Sanitary tee	X <sup>c</sup>	--	--
Wye	X	X	X
Combination wye and eighth bend	X	X	X

For SI: 1 inch = 25.4 mm.

a. The fittings shall only be permitted for a 2-inch or smaller fixture drain.

- b. Three inches and or larger.
- c. For a limitation on multiple connection fittings, see Plumbing Code Section ~~P3005.4.1~~ 706.2.

**P3005.2.1 Horizontal drains and building drains.** Horizontal drainage pipes in buildings shall have cleanouts located at intervals of not more than 100 feet (30,480 mm). *Building drains* shall have cleanouts located at intervals of not more than 100 feet (30,480 mm) except where manholes are used instead of cleanouts, the manholes shall be located at intervals of not more than ~~400 feet (122 m)~~ 300 feet (92 m). The interval length shall be measured from the cleanout or manhole opening, along the *developed length* of the piping to the next drainage fitting providing access for cleaning, the end of the horizontal drain or the end of the *building drain*.

**Exception:** Horizontal fixture drain piping serving a nonremovable trap shall not be required to have a cleanout for the section of piping between the trap and the vent connection for such trap.

**P3005.2.8 Installation arrangement.** The installation arrangement of a cleanout shall enable cleaning of drainage piping only in the direction of drainage flow, unless using a

**Exceptions:**

1. ~~Test tees serving as cleanouts.~~
2. ~~A two-way cleanout installation that is approved for meeting the requirements of Section P3005.2.3.~~

**P3005.4.1 Branch and stack sizing.** Branches and stacks shall be sized in accordance with Table P3005.4.1. Below grade drain pipes shall be not less than 2 inches (50 mm) ~~1½ inches (38 mm)~~ in diameter. Drain stacks shall be not smaller than the largest horizontal branch connected.

**Exceptions:**

1. A 4-inch by 3-inch (102 mm by 76 mm) closet bend or flange.
2. A 4-inch (102 mm) closet bend connected to a 3-inch (76 mm) stack ~~tee shall not be prohibited.~~

**P3008.1 Sewage backflow.** Where the flood level rims of plumbing fixtures are below the elevation of the manhole cover of the next upstream manhole in the public sewer, the fixtures shall be protected by a backwater valve installed in the *building drain*, branch of the *building drain* or horizontal branch serving such fixtures. Plumbing fixtures having flood level rims above the elevation of the manhole cover of the next upstream manhole in the public sewer shall not discharge through a backwater valve.

**Exception:** ~~In existing buildings, fixtures above the elevation of the manhole cover of the next upstream manhole in the public sewer shall not be prohibited from discharging through a backwater valve.~~

**P3009.1 Scope.** The provisions of this section or the rules promulgated by the Texas Commission of Environmental Quality, whichever is more restrictive, shall govern the materials, design,

construction and installation of subsurface landscape irrigation systems connected to nonpotable water from on-site water reuse systems.

# CHAPTER 31

## VENTS

**P3114.3 Where permitted.** Individual vents, ~~branch vents, circuit vents and stack vents~~ shall be permitted to terminate with a connection to *an air admittance valve*. Individual and branch type air admittance valves shall vent only fixtures that are on the same floor level and connect to a horizontal branch drain.

**P3114.4 Location.** ~~Individual and branch~~ The *air admittance valves* shall be located ~~not less than 4 inches (102 mm) above the horizontal branch drain or fixture drain being vented.~~ Stack type air admittance valves shall be located not less than 6 inches (152 mm) above the flood level rim of the ~~highest~~ fixture being vented. The *air admittance valve* shall be located within the maximum *developed length* permitted for the vent. The *air admittance valve* shall be installed not less than 6 inches (152 mm) above insulation materials where installed in *attics*.

# CHAPTER 32

## TRAPS

**TABLE P3201.7**  
**SIZE OF TRAPS AND TRAP ARMS FOR *PLUMBING FIXTURES***

<b>PLUMBING FIXTURE</b>	<b>TRAP SIZE MINIMUM (inches)</b>
Bathtub (with or without shower head and/or whirlpool attachments)	<u>2-1½</u>
Bidet	1 ¼
Clothes washer standpipe	2
Dishwasher (on separate trap)	1½
Floor drain	2
Kitchen sink (one or two traps, with or without dishwasher and food waste disposer)	1½
Laundry tub (one or more compartments)	1½
Lavatory	1 ¼
Shower (based on the total flow rate through showerheads and body sprays) Flow rate:	
5.7 gpm and less	<del>1½</del> <u>2</u>
More than 5.7 gpm up to 12.3 gpm	2
More than 12.3 gpm up to 25.8 gpm	3
More than 25.8 gpm up to 55.6 gpm	4
<u>Water closet</u>	<u>3</u>

For SI: 1 inch = 25.4 mm.

{EDITORIAL NOTE: DELETE CHAPTERS 34-43 IN THEIR ENTIRETY.}

# CHAPTER 44

## REFERENCED STANDARDS

(EDITORIAL NOTE: PORTIONS OF THIS CHAPTER NOT SHOWN SHALL REMAIN AS SET FORTH IN THE 2015 IRC.)

**ASTM**                      ASTM International  
 100 Barr Harbor Drive  
 West Conshohocken, PA 19428-2959

Standard Reference number	Title	Referenced in code section number
E 84—2013a	Test Method for Surface Burning Characteristics of Building Materials .....	R202, R302.9.3, R302.9.4, R302.10.1, R302.10.2, R316.3, R316.5.9, R316.5.11, R507.3.2, R802.1.5, M1601.3, M1601.5.2
E 90—09(2016)	Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements .....	N104.1, N105.1

**NFPA**                      National Fire Protection Association  
 1 Batterymarch Park  
 Quincy, MA 02169-7471

Standard Reference number	Title	Referenced in code section number
70— <del>2014</del>	National Electrical Code .....	108.3, 415.11.1.8, 904.3.1, 907.6.1, 909.12.2, 909.16.3, 1205.4.1, 2701.1, 2702.1.2, G501.4, G1001.6, H106.1, H106.2, K101, K111.1, <del>E3401.1, E3401.2, E4301.1, Table E4303.2, E4304.3, E4304.4, R324.3</del>
241—19	Standard for Safeguarding Construction, Alteration, and Demolition Operations .....	3301.1

# APPENDIX A

## SIZING AND CAPACITIES OF GAS PIPING

~~(This appendix is informative and is not part of the code.~~ This appendix is an excerpt from the 2015 *International Fuel Gas Code*, coordinated with the section numbering of the *International Residential Code*.)

{EDITORIAL NOTE: ALL OTHER PROVISIONS OF THIS APPENDIX REMAIN AS SET FORTH IN 2015 IRC.}

**APPENDIX B**

**SIZING OF VENTING SYSTEMS SERVING  
APPLIANCES EQUIPPED WITH DRAFT HOODS,  
CATEGORY I APPLIANCES, AND APPLIANCES  
LISTED FOR USE WITH TYPE B VENTS**

~~(This appendix is informative and is not part of the code. This appendix is an excerpt from the 2015 International Fuel Gas Code, coordinated with the section numbering of the International Residential Code.)~~

{EDITORIAL NOTE: ALL OTHER PROVISIONS OF THIS APPENDIX REMAIN AS SET FORTH IN 2015 IRC.}

# APPENDIX C

## EXIT TERMINALS OF MECHANICAL DRAFT AND DIRECT-VENT VENTING SYSTEMS

~~(This appendix is informative and is not part of the code. This appendix is an excerpt from the 2015 International Fuel Gas Code, coordinated with the section numbering of the International Residential Code.)~~

{EDITORIAL NOTE: ALL OTHER PROVISIONS OF THIS APPENDIX REMAIN AS SET FORTH IN 2015 IRC.}

# APPENDIX H

## PATIO COVERS

*(The provisions contained in this appendix are ~~not mandatory unless specifically referenced in the adopting ordinance.~~)*

{EDITORIAL NOTE: ALL OTHER PROVISIONS OF THIS APPENDIX REMAIN AS SET FORTH IN 2015 IRC.}

## APPENDIX K

# SOUND TRANSMISSION

*(The provisions contained in this appendix are ~~not mandatory unless specifically referenced in the adopting ordinance.~~)*

**AK101.1 General.** Wall and floor-ceiling assemblies separating dwelling units in multi-family residential structures, including those separating adjacent *townhouse* units, shall provide air-borne sound insulation for walls, and both air-borne and impact sound insulation for floor-ceiling assemblies.

{EDITORIAL NOTE: ALL OTHER PROVISIONS OF THIS APPENDIX REMAIN AS SET FORTH IN 2015 IRC.}

# APPENDIX L

## PERMIT FEES

{EDITORIAL NOTE: DELETE ENTIRE APPENDIX AND REPLACE WITH THE FOLLOWING.}

### CONVENTIONAL LIGHT-FRAME WOOD CONSTRUCTION FOR SINGLE FAMILY RESIDENTIAL CONSTRUCTION IN HIGH-WIND AREAS

#### SECTION AL101 GENERAL

AL101.1 Scope. This chapter applies to regular-shaped single family residential buildings that are not more than three stories in height and are of conventional light-frame construction.

Exception: Detached carports and garages not exceeding 700 square feet (65 m<sup>2</sup>) and accessory to Group R-3 occupancies need only comply with the roof-member-to-wall-tie requirements of Section AL 103.8.

#### SECTION AL102 DEFINITION

CORROSION RESISTANT or NONCORROSIVE. Refers to a material having a *corrosion resistance* equal to or greater than a hot-dipped galvanized coating of 1.5 ounces of zinc per square foot (4 g/m<sup>2</sup>) of surface area. When an element is required to be corrosion resistant or noncorrosive, all of its parts, such as screws, nails, wire, dowels, bolts, nuts, washers, shims, anchors, ties and attachments, shall also be corrosion resistant or noncorrosive.

#### SECTION AL103 COMPLETE LOAD PATH AND UPLIFT TIES

AL103.1 General. Blocking, bridging, straps, approved framing anchors or mechanical fasteners shall be installed to provide continuous ties from the roof to the foundation system. Tie straps shall be 1 1/8 inch (28.6 mm) by 0.036 inch (0.91 mm) (No. 20 gauge) sheet steel and shall be corrosion resistant as herein specified. All metal connectors and fasteners used in exposed locations or in areas otherwise subject to corrosion shall be of corrosion-resistant or noncorrosive material. The number of common nails specified is the total required and shall be equally divided on each side of the connection. Nails shall be spaced to avoid splitting of the wood.

Exception: Pre-manufactured connectors that provide equal or greater tie-down capacity may be used, provided that they are installed in compliance with all the manufacturer's specifications.

AL103.2 Wall-to-foundation tie. Exterior walls shall be tied to a continuous foundation system or an elevated foundation system in accordance with Section AL105.

**AL103.3 Sills and foundation tie.** Foundation plates resting on concrete or masonry foundations shall be bolted to the foundation with not less than ½ inch diameter (13 mm) anchor bolts with 7 inch (178 mm) minimum embedment into the foundation and spaced not more than 4 feet (1,219 mm) on center.

**AL103.4 Floor-to-foundation tie.** The lowest level exterior wall studs shall be connected to the foundation sill plate or an approved elevated foundation system with bent tie straps spaced not more than 32 inches (813 mm) on center. Tie straps shall be nailed with a minimum of 4 ten penny nails.

**AL103.5 Wall framing details.** The spacing of studs in exterior walls shall be in accordance with Chapter 23. Mechanical fasteners complying with this chapter shall be installed at a maximum of 32 inches (813 mm) on center as required to connect studs to the sole plates, foundation sill plate and top plates of the wall. The fasteners shall be nailed with a minimum of 8 eight penny nails.

Where openings exceed 4 feet (1,219 mm) in width, the required tie straps shall be secured at each edge of the opening and connected to a doubled full-height wall stud. When openings exceed 12 feet (3,658 mm) in width, two ties or a manufactured fastener designed to prevent uplift shall be provided at each connection.

**AL103.6 Wall sheathing.** All exterior walls and required interior main cross-stud partitions shall be sheathed in accordance with Chapter 6.

**AL103.7 Floor-to-floor tie.** Upper level exterior wall studs shall be aligned and connected to the wall studs below with tie straps placed a minimum of 32 inches (813 mm) on center and connected with a minimum of 6 eight penny nails per strap.

**AL103.8 Roof-members-to-wall tie.** Tie straps shall be provided from the side of the roof-framing member to the supporting member below the roof. Tie straps shall be placed at every roof framing member and connected with a minimum of 8 eight penny nails.

**AL103.9 Ridge ties.** Opposing common rafters shall be aligned at the ridge and be connected at the rafters with tie straps spaced a maximum of 32 inches (813 mm) on center and connected with 8 eight penny nails.

**AL103.10 Gable end walls.** Gable end wall studs shall be continuous between points of lateral support that are perpendicular to the plane of the wall. Gable end wall studs shall be attached with approved mechanical fasteners at the top and bottom. 8 eight penny nails shall be required for each fastener. Fasteners shall be spaced a maximum of 32 inches (813 mm) on center.

## **SECTION AL104** **ROOFS**

**AL104.1 Roof sheathing.** Solid roof sheathing shall be nailed to roof framing in an approved manner and shall consist of a minimum 1 inch thick (25.4 mm) nominal lumber applied diagonally or a minimum 15/32 inch thick (11.9 mm) wood structural panel or particle board (OSB) or other approved sheathing applied with the long dimension perpendicular to supporting rafters. The end joints of wood structural panels or particle board shall be staggered and shall occur over blocking, rafters, or other supports.

**AL104.2 Roof covering.** Roof coverings shall be approved and shall be installed and fastened in accordance with Chapter 9 or with the manufacturer's instructions, whichever is most restrictive.

**AL104.3 Roof overhang.** The roof eave overhang shall not exceed 3 feet (914 mm) unless an analysis is provided showing that the required resistance is provided to prevent uplift. The roof

overhang at gabled ends shall not exceed 2 feet (610 mm) unless an analysis showing that the required resistance to prevent uplift is provided.

## **SECTION AL105** **ELEVATED FOUNDATION**

**AL105.1 General.** When approved, elevated foundations supporting not more than one story and meeting the provisions of this section may be used. A foundation investigation may be required by the building official.

**AL105.2 Material.** All exposed wood framing members shall be treated wood. All metal connectors and fasteners used in exposed locations shall be corrosion-resistant or noncorrosive steel.

**AL105.3 Wood piles.** The spacing of wood piles shall not exceed 8 feet (2,438 mm) on center. Square piles shall not be less than 10 inches (254 mm) and tapered piles shall have a tip of not less than 8 inches (203 mm). Eight inch square (5,161 mm<sup>2</sup>) piles shall have a minimum embedment length of 5 feet (1,524 mm) and shall project not more than 8 feet (2,438 mm) above undisturbed ground surface. Eight inch (203 mm) taper piles shall have a minimum embedment length of 6 feet (1,828 mm) and shall project not more than 7 feet (2,134 mm) above undisturbed ground surface.

**AL105.4 Girders.** Floor girders shall consist of solid sawn timber, built up 2 inch thick (51 mm) lumber, or trusses. Splices shall occur over wood piles. The floor girders shall span in the direction parallel to the potential floodwater and wave action.

**AL105.5 Connections.** Wood piles may be notched to provide a shelf for supporting the floor girders. The total notching shall not exceed 50 percent of the pile cross section. Approved bolted connections with ¼ inch (6.4 mm) corrosion-resistant or noncorrosive steel plates and ¾ inch diameter (19 mm) bolts shall be provided. Each end of the girder shall be connected to the piles using a minimum of two ¾ inch diameter (19 mm) bolts.

## APPENDIX M

# HOME DAY CARE—R3 OCCUPANCY

*(The provisions contained in this appendix are ~~not mandatory unless specifically referenced in the adopting ordinance.~~)*

**AM101.1 General.** This appendix shall apply to a home day care operated within a dwelling. The area of application shall include buildings and structures occupied by persons of any age who receive custodial care for less than 24 hours by individuals other than parents, ~~or~~ guardians or relatives by blood, marriage, or adoption, and in a place other than the home of the person cared for.

{EDITORIAL NOTE: ALL OTHER PROVISIONS OF THIS APPENDIX REMAIN AS SET FORTH IN 2015 IRC.}

**APPENDIX Q**  
**RESERVED**  
**AIRPORT SOUND ATTENUATION**  
**REQUIREMENTS**

**SECTION AQ101**  
**GENERAL**

**AQ101.1 Purpose.** The purpose of this appendix is to set forth sound attenuation specifications for buildings when such sound attenuation is required by Chapter 9, Article VI, of the *City Code* to achieve an interior sound level of 45 dBa or less.

**AQ101.2 Applicability.** These provisions shall apply where an airport land use *permit* is required under Section 9-381(a)(2) or (3) of the *City Code* and are in addition to other applicable building standards set forth elsewhere in this code.

**AQ101.3 Alternate compliance.** Alternative means or methods which equal or exceed the standards set forth in these provisions may be used when approved by the *building official* in accordance with section R104.11.

**SECTION AQ201**  
**DEFINITIONS**

**AQ201.1 Definitions.** For the purposes of these provisions, the following words have the meaning shown herein.

**SOUND TRANSMISSION CLASS (STC).** An integer rating relating to the quality of sound attenuation for building partitions such as walls, ceilings, doors, and windows.

**SECTION AQ301**  
**WALLS**

**AQ301.1 General.** The specific exterior wall assemblies set forth in Sections AQ301.2 and AQ 301.3 shall include the interior finishes set forth therein.

**Exception:** Exterior wall assemblies or materials that have been tested or *listed* with a minimum STC rating of 40 need not include the interior finishes set forth in Sections AQ301.2 and AQ 301.3.

**AQ301.2 Brick veneer.** When exterior walls are constructed using brick veneer, a minimum of ½ inch gypsum drywall shall be applied as the interior finish.

**AQ301.3 Vinyl or cement sidings.** When exterior walls are constructed using vinyl or cement sidings, a minimum of 5/8 inch gypsum drywall shall be applied as the interior finish.

**AQ301.4 Other assemblies and materials.** All other exterior wall assemblies or materials shall have a tested or *listed* minimum STC rating of 40.

**SECTION AQ401**  
**WINDOWS**

**AQ401.1 Windows.** All windows shall have a minimum STC rating of 40 when tested in accordance with ASTM E 90.

**AQ401.2 Insulation at windows.** The cavity between the wood framing and the window frame shall be insulated with fiberglass insulation or foam insulation to the depth of the window frame.

**SECTION AQ501**  
**DOORS**

**AQ501.1 Doors.** All exterior doors shall have a minimum STC rating of 40 when tested in accordance with ASTM E 90.

**Exception:** An exterior door may have a tested or *listed* STC rating of less than 40 when installed with a storm door which when combined, achieve a minimum tested or *listed* STC rating of 40.

**SECTION AQ601**  
**ROOF/CEILING ASSEMBLIES**

**AQ601.1 General.** Roof/ceiling assemblies shall be constructed in accordance with the requirements of AQ601.2 or AQ601.3.

**Exception:** Roof/ceiling assemblies or materials that have been tested or *listed* with a minimum STC rating of 40 need not be constructed in accordance with the requirements of AQ601.2 or AQ601.3.

**AQ601.2 Ceilings with unconditioned attic space above.** Ceilings with unconditioned attic space shall be insulated with a minimum of ½ inch gypsum drywall on the interior ceiling side covered with a minimum of 12 inches of blown in fiberglass insulation.

**AQ601.3 Ceilings without attic space above.** Ceilings without attic space above shall be insulated with a minimum of 5/8 inch gypsum drywall on the interior side filled with a minimum of 9 inches of fiberglass batt insulation with a 1 inch air space between the roof sheathing and the fiberglass.

**APPENDIX T**  
**~~RECOMMENDED PROCEDURE FOR WORST~~**  
**~~CASE TESTING OF ATMOSPHERIC VENTINGS~~**  
**~~SYSTEMS UNDER N1102.4 OR N1105~~**  
**~~CONDITIONS  $\leq 5$  ACH<sub>50</sub>~~**

{EDITORIAL NOTE: DELETE ENTIRE APPENDIX AND REPLACE WITH THE FOLLOWING.}

**TINY HOUSES**

***User note:** Appendix T relaxes various requirements in the body of this code as they apply to houses that are 400 square feet in area or less. Attention is specifically paid to features such as stairs, including stair handrails and headroom, ladders, reduced heights in lofts, and guard and emergency escape and rescue opening requirements at lofts.*

**SECTION AT101**  
**GENERAL**

**AT101.1 Scope.** This appendix shall be applicable to *tiny houses* used as single *dwelling units*. *Tiny houses* shall comply with this code except as otherwise stated in this appendix.

**SECTION AT102**  
**DEFINITIONS**

**AT102.1 General.** The following words and terms shall, for the purposes of this appendix, have the meanings shown herein. Refer to Chapter 2 of this code for general definitions.

**EGRESS ROOF ACCESS WINDOW.** A *skylight* or roof window designed and installed to satisfy the emergency escape and rescue opening requirements in Section R310.2.

**LANDING PLATFORM.** A landing provided as the top step of a stairway accessing a *loft*.

**LOFT.** A floor level located more than 30 inches (762 mm) above the main floor, open to the main floor on one or more sides, with a ceiling height of less than 6 feet 8 inches (2,032 mm) and used as a living or sleeping space.

**TINY HOUSE.** A *dwelling* that is 400 square feet (37 m<sup>2</sup>) or less in floor area excluding *lofts*.

**SECTION AT103**  
**CEILING HEIGHT**

**AT103.1 Minimum ceiling height.** *Habitable space* and hallways in *tiny houses* shall have a ceiling height of not less than 6 feet 8 inches (2,032 mm). Bathrooms, toilet rooms, and kitchens shall have a ceiling height of not less than 6 feet 4 inches (1,930 mm). Obstructions including, but not limited to, beams, girders, ducts and lighting, shall not extend below these minimum ceiling heights.

**Exception:** Ceiling heights in *lofts* are permitted to be less than 6 feet 8 inches (2,032 mm).

## **SECTION AT104** **LOFTS**

**AT104.1 Minimum loft area and dimensions.** A *loft* used as a sleeping or living space shall meet the minimum area and dimension requirements of Sections AT104.1.1 through AT104.1.3.

**AT104.1.1 Minimum area.** A *loft* shall have a floor area of not less than 35 square feet (3.25 m<sup>2</sup>).

**AT104.1.2 Minimum dimensions.** A *loft* shall be not less than 5 feet (1,524 mm) in any horizontal dimension.

**AT104.1.3 Height effect on loft area.** Portions of a *loft* with a sloping ceiling measuring less than 3 feet (914 mm) from the finished floor to the finished ceiling shall not be considered as contributing to the minimum required area for the *loft*.

**Exception:** Portions of a *loft* with a sloped ceiling measuring less than 16 inches (406 mm) from the finished floor to the finished ceiling located under a gable roof with a minimum slope of 6 units vertical in 12 units horizontal (50 percent slope) shall not be considered as contributing to the minimum required area for the *loft*.

**AT104.2 Loft access.** The access to and primary egress from *lofts* shall be of any type described in Sections AT104.2.1 through AT104.2.4.

**AT104.2.1 Stairways.** Stairways accessing *lofts* shall comply with this code or with Sections AT104.2.1.1 through AT104.2.1.5.

**AT104.2.1.1 Width.** Stairways accessing a *loft* shall not be less than 17 inches (432 mm) in clear width at or above the handrail. The width below the handrail shall be not less than 20 inches (508 mm).

**AT104.2.1.2 Headroom.** The headroom in stairways accessing a *loft* shall be not less than 6 feet 2 inches (1,880 mm), as measured vertically, from a sloped line connecting the tread or landing platform nosing's in the middle of their width.

**AT104.2.1.3 Treads and risers.** Risers for stairs accessing a *loft* shall not be less than 7 inches (178 mm) and not more than 12 inches (305 mm) in height. Tread depth and riser height shall be calculated in accordance with one of the following formulas:

1. The tread depth shall be 20 inches (508 mm) minus 4/3rds of the riser height.
2. The riser height shall be 15 inches (381 mm) minus three-fourths of the tread depth.

**AT104.2.1.4 Landing platforms.** The top tread and riser of stairways accessing *lofts* shall be constructed as a *landing platform* where the *loft* ceiling height is less than 6 feet 2 inches (1,880 mm) where the stairway meets the *loft*. The *landing platform* shall be 18 inches to 22 inches (457 to 559 mm) in depth measured from the nosing of the *landing platform* to the edge of *loft*, and 16 to 18 inches (406 to 457 mm) in height measured from the *landing platform* to the *loft* floor.

**AT104.2.1.5 Handrails.** Handrails shall comply with Section R311.7.8.

**AT104.2.1.6 Stairway guards.** Guards at open sides of stairways shall comply with Section R312.1.

**AT104.2.2 Ladders.** Ladders accessing *lofts* shall comply with Sections AT104.2.2.1 and AT104.2.2.2.

**AT104.2.2.1 Size and capacity.** Ladders accessing *lofts* shall have a rung width of not less than 12 inches (305 mm) and 10 inch (254 mm) to 14 inch (356 mm) spacing between rungs. Ladders shall be capable of supporting a 200 pound (75 kg) load on any rung. Rung spacing shall be uniform within 3/8 inch (9.5 mm).

**AT104.2.2.2 Incline.** Ladders shall be installed at 70 to 80 degrees from horizontal.

**AT104.2.3 Alternating tread devices.** Alternating tread devices accessing *lofts* shall comply with Sections R311.7.11.1 and R311.7.11.2. The clear width at and below the handrails shall be not less than 20 inches (508 mm).

**AT104.2.4 Ships ladders.** Ships ladders accessing *lofts* shall comply with Sections R311.7.12.1 and R311.7.12.2. The clear width at and below handrails shall be not less than 20 inches (508 mm).

**AT104.2.5 Loft guards.** *Loft* guards shall be located along the open side of *lofts*. *Loft* guards shall be not less than 36 inches (914 mm) in height or one-half of the clear height to the ceiling, whichever is less.

## **SECTION AT105** **EMERGENCY ESCAPE AND RESCUE OPENINGS**

**AT105.1 General.** *Tiny houses* shall meet the requirements of Section R310 for emergency escape and rescue openings.

**Exception:** *Egress roof access windows* in *lofts* used as sleeping rooms shall be deemed to meet the requirements of Section R310 where installed such that the bottom of the opening is not more than 44 inches (1,118 mm) above the *loft* floor, provided the *egress roof access window* complies with the minimum opening area requirements of Section R310.2.1.

## APPENDIX U

# SOLAR-READY PROVISIONS—DETACHED ONE- AND TWO-FAMILY DWELLINGS, MULTIPLE SINGLE-FAMILY DWELLINGS (TOWNHOUSES)

*(The provisions contained in this appendix are ~~not~~ mandatory unless specifically referenced in the adopting ordinance.)*

**U103.6 Interconnection pathway.** ~~Construction documents shall indicate pathways for routing of conduit or plumbing from the solar ready zone to the electrical service panel or service hot water system. Conduit not less than 1¼ inches (31.75 mm) shall be installed to provide a pathway from the electrical panel to the underside of the roof sufficient to allow future installation of solar equipment.~~

**Exception:** Section U103.6 shall not apply to new single-family homes subject to discount in the *Building Code* based on valuation.

{EDITORIAL NOTE: ALL OTHER PROVISIONS OF THIS APPENDIX REMAIN AS SET FORTH IN 2015 IRC.}

# APPENDIX V

## VISITABILITY

### SECTION AV101

#### SCOPE

**AV101.1 Purpose.** This set of standards is intended to provide minimum residential features to allow a mobility-impaired person to visit and use a home by providing:

1. One zero-step entrance at grade-level from the street, a driveway, garage, or an alley connecting to a 36 inch (914.4 mm) wide door.
2. Doors to kitchens, family rooms, living rooms, dining rooms and hallways on the ground level that are wide enough for wheelchair use.
3. At least one bathroom or half bath on ground level with sufficient room to allow a wheelchair to enter into the bathroom.

**Exception:** Where the grade-level floor plan does not include habitable rooms.

**AV101.2 Application.** Unless compliance is required by another law or regulation outside this code, compliance with this chapter is voluntary. Any owner who desires to comply with this chapter shall so advise the *building official* when the plans for the residence are filed, so that conformity with this chapter may be considered in the plan review and inspection process.

### SECTION AV102

#### ZERO STEP ENTRANCE

**AV102.1 Route.** A 36 inch wide *accessible* route to the residence shall be provided by a smooth uninterrupted surface with slope not to exceed 1:12.

**AV102.2 Ramp slope and rise.** The least possible slope shall be used for any ramp. The maximum slope of a ramp in new construction shall be 1:12. The maximum rise for any run shall be 30 inches (762 mm).

**AV102.3 Special technical provisions for ramps.** Curb ramps and interior or exterior ramps to be constructed on sites where space limitations prohibit the use of a 1:12 slope or less may have slopes and rises as follows:

1. A slope between 1:10 and 1:12 is allowed for a maximum rise of 6 inches (152.4 mm).
2. A slope between 1:8 and 1:10 is allowed for a maximum rise of 3 inches (76.2 mm). A slope steeper than 1:8 is not allowed.

### SECTION AV103

#### DOORS

**AV103.1 Clear width.** One exterior doorway that connects with the zero-step entrance, one bathroom doorway, and any kitchen, family room, living room, dining room or hallway doorways on grade-level shall have a minimum clear opening of 32 inches (812.8 mm) with the door open

90 degrees, measured between the face of the door and the opposite stop. Where the door opens more than 90 degrees the clear opening shall be measured between the stops on both sides.

**AV103.2 Thresholds at doorways.** Thresholds at doorways shall not exceed  $\frac{3}{4}$  inch (19 mm) in height for exterior sliding doors or  $\frac{1}{2}$  inch (13 mm) for other types of doors. Raised thresholds and floor level changes at accessible doorways shall be beveled with a slope no greater than 1:2.

## **SECTION AV104** **WHEELCHAIR PASSAGE WIDTH**

**AV104.1 Wheelchair passage width.** The minimum clear width for single grade-level wheelchair passage shall be 32 inches (812.8 mm) at a point not to exceed 24 inches (609.6 mm) and 36 inches (914.4 mm) continuously (see Figure 1 and 2).

**AV104.2 Changes in level.** Changes in level up to  $\frac{1}{4}$  inch (6 mm) may be vertical and without edge treatment (see Figure 3(a)). Changes in level between  $\frac{1}{4}$  inch and  $\frac{1}{2}$  inch (6 mm and 13 mm, respectively) shall be beveled with a slope no greater than 1:2 (see Figure 3(b)). Changes in level greater than  $\frac{1}{2}$  inch (13 mm) shall be accomplished by means of a ramp that complies with Section AV102.

