

Houston Amendments to the *2021 International Residential Code for One- and Two-Family Dwellings*



Adopted by Ord. No. 2023-907¹

Passed October 25, 2023²

Effective January 1, 2024³

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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

SECTION R101 SCOPE AND GENERAL REQUIREMENTS

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 hereinafter 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. 2023-907⁴.

R101.2 Scope. The provisions of this code ~~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 508.5 of the ~~International Building Code~~.
2. Owner-occupied *lodging houses* with five or fewer guestrooms.
3. A care facility with five or fewer persons receiving custodial care within a *dwelling unit*.
4. A care facility with five or fewer persons receiving medical care within a *dwelling unit*.
5. A care facility for five or fewer persons receiving care that are within a single-family dwelling.

SECTION R102 APPLICABILITY

R102.1 General. Where there is a conflict between a general requirement and a specific requirement, the specific requirement shall be applicable. 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 govern. 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

4. City Secretary shall insert number of adopting ordinance.

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 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 *2021 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*.

SECTION R104
DUTIES AND POWERS OF THE BUILDING OFFICIAL

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 the Building Code Enforcement Division ~~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*.

SECTION R105 PERMITS

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. Other than *storm* shelters, one-story detached *accessory structures*, provided that the floor area does not exceed ~~200~~120 square feet (~~18.58~~11.15 m²).
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 not covered under the provisions of the *Infrastructure Design Manual*; i.e. *interior flatwork* not exceeding 65% of the total impervious area.
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 m²);
 - 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 m²); or
 - 6.4. Roof covering that does not exceed an aggregate of 100 square feet (9.29 m²).
7. ~~Prefabricated *swimming pools* that are less than 24 inches (610 mm) deep.~~
78. Swings and other playground equipment.
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 m²) in area, that are not more than 30 inches (762 mm) above *grade* at any point, are not attached to a *dwelling* and do not serve the exit door required by Section R311.4.

Electrical:

1. *Listed* cord-and-plug connected temporary decorative lighting.
2. Reinstallation of attachment plug receptacles but not the outlets therefor.

3. Replacement of branch circuit overcurrent devices of the required capacity in the same location.
4. Electrical wiring, devices, *appliances*, apparatus or *equipment* operating at less than 25 volts and not capable of supplying more than 50 watts of energy.
5. ~~Minor repair work, including the~~ 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 in an emergency situation, the *permit* application shall be submitted to the building official within not later than the next working business day to the building official 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, replacement of lamps or the connection of *approved* portable electrical

equipment to *approved* permanently installed receptacles, ~~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 of 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 the Building Code Enforcement Division ~~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 after commencement of work if more than 180 days pass between inspections. The building official is authorized to grant, in writing, one or more extensions of time, for periods not more than 180 days each. The extension shall be requested in writing and justifiable cause demonstrated.

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.

SECTION R106 CONSTRUCTION DOCUMENTS

[EDITORIAL NOTE: DELETE SECTION R106.1.4 IN ITS ENTIRETY.]

SECTION R108 FEES

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 R108.3 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 R108.3.1, Tables R108.3.1(1)~~

and R108.3.1(2), 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 R108.3.1, Tables R108.3.1(1) and R108.3.1(2), 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.

R108.3.1 Buildings. Building permit fees, payable in the amounts set forth in the *city fee schedule*, shall be required under this code for new buildings, additions, *alterations*, remodels, conversions, and *repairs*.

For one- and two-family *dwellings*, the building permit fee shall be comprised of two components, the base charge, which shall be determined according to type of construction and size, as shown in Table R108.3.1(1), and the incremental charge, which shall be determined according to type of construction and size, as shown in Table R108.3.1(2).

TABLE R108.3.1(1)
RESIDENTIAL BUILDING PERMIT CONSTRUCTION TYPE AND TIER

<u>Type of Construction</u>	<u>Tier</u>	<u>Square footage greater than</u>	<u>Square footage less than or equal to</u>
<u>IA</u>	<u>1</u>	<u>0</u>	<u>44.92</u>
<u>IA</u>	<u>2</u>	<u>44.92</u>	<u>962.53</u>
<u>IA</u>	<u>3</u>	<u>962.53</u>	<u>1,283.37</u>
<u>IA</u>	<u>4</u>	<u>1,283.37</u>	<u>1,925.05</u>
<u>IA</u>	<u>5</u>	<u>1,925.05</u>	<u>3,208.42</u>
<u>IA</u>	<u>6</u>	<u>3,208.42</u>	<u>6,416.84</u>
<u>IA</u>	<u>7</u>	<u>6,416.84</u>	<u>32,084.19</u>
<u>IA</u>	<u>8</u>	<u>32,084.19</u>	<u>320,841.89</u>
<u>IA</u>	<u>9</u>	<u>320,841.89</u>	<u>No maximum</u>
<u>IB</u>	<u>1</u>	<u>0</u>	<u>46.17</u>
<u>IB</u>	<u>2</u>	<u>46.17</u>	<u>989.38</u>
<u>IB</u>	<u>3</u>	<u>989.38</u>	<u>1,319.17</u>
<u>IB</u>	<u>4</u>	<u>1,319.17</u>	<u>1,978.76</u>
<u>IB</u>	<u>5</u>	<u>1,978.76</u>	<u>3,297.94</u>
<u>IB</u>	<u>6</u>	<u>3,297.94</u>	<u>6,595.87</u>
<u>IB</u>	<u>7</u>	<u>6,595.87</u>	<u>32,979.35</u>
<u>IB</u>	<u>8</u>	<u>32,979.35</u>	<u>329,793.55</u>
<u>IB</u>	<u>9</u>	<u>329,793.55</u>	<u>No maximum</u>
<u>IIA</u>	<u>1</u>	<u>0</u>	<u>47.35</u>
<u>IIA</u>	<u>2</u>	<u>47.35</u>	<u>1,014.68</u>
<u>IIA</u>	<u>3</u>	<u>1,014.68</u>	<u>1,352.91</u>

<u>Type of Construction</u>	<u>Tier</u>	<u>Square footage greater than</u>	<u>Square footage less than or equal to</u>
IIA	<u>4</u>	<u>1,352.91</u>	<u>2,029.36</u>
IIA	<u>5</u>	<u>2,029.36</u>	<u>3,382.26</u>
IIA	<u>6</u>	<u>3,382.26</u>	<u>6,764.53</u>
IIA	<u>7</u>	<u>6,764.53</u>	<u>33,822.63</u>
IIA	<u>8</u>	<u>33,822.63</u>	<u>338,226.34</u>
IIA	<u>9</u>	<u>338,226.34</u>	<u>No maximum</u>
IIB	<u>1</u>	<u>0</u>	<u>48.58</u>
IIB	<u>2</u>	<u>48.58</u>	<u>1,041.02</u>
IIB	<u>3</u>	<u>1,041.02</u>	<u>1,388.02</u>
IIB	<u>4</u>	<u>1,388.02</u>	<u>2,082.03</u>
IIB	<u>5</u>	<u>2,082.03</u>	<u>3,470.05</u>
IIB	<u>6</u>	<u>3,470.05</u>	<u>6,940.11</u>
IIB	<u>7</u>	<u>6,940.11</u>	<u>34,700.53</u>
IIB	<u>8</u>	<u>34,700.53</u>	<u>347,005.34</u>
IIB	<u>9</u>	<u>347,005.34</u>	<u>No maximum</u>
IIIA	<u>1</u>	<u>0</u>	<u>50.38</u>
IIIA	<u>2</u>	<u>50.38</u>	<u>1,079.60</u>
IIIA	<u>3</u>	<u>1,079.60</u>	<u>1,439.47</u>
IIIA	<u>4</u>	<u>1,439.47</u>	<u>2,159.21</u>
IIIA	<u>5</u>	<u>2,159.21</u>	<u>3,598.68</u>
IIIA	<u>6</u>	<u>3,598.68</u>	<u>7,197.35</u>
IIIA	<u>7</u>	<u>7,197.35</u>	<u>35,986.76</u>
IIIA	<u>8</u>	<u>35,986.76</u>	<u>359,867.57</u>
IIIA	<u>9</u>	<u>359,867.57</u>	<u>No maximum</u>
IIIB	<u>1</u>	<u>0</u>	<u>51.75</u>
IIIB	<u>2</u>	<u>51.75</u>	<u>1,108.89</u>
IIIB	<u>3</u>	<u>1,108.89</u>	<u>1,478.52</u>
IIIB	<u>4</u>	<u>1,478.52</u>	<u>2,217.79</u>
IIIB	<u>5</u>	<u>2,217.79</u>	<u>3,696.31</u>
IIIB	<u>6</u>	<u>3,696.31</u>	<u>7,392.62</u>
IIIB	<u>7</u>	<u>7,392.62</u>	<u>36,963.11</u>
IIIB	<u>8</u>	<u>36,963.11</u>	<u>369,631.11</u>
IIIB	<u>9</u>	<u>369,631.11</u>	<u>No maximum</u>
IV	<u>1</u>	<u>0</u>	<u>49.39</u>
IV	<u>2</u>	<u>49.39</u>	<u>1,058.43</u>
IV	<u>3</u>	<u>1,058.43</u>	<u>1,411.23</u>
IV	<u>4</u>	<u>1,411.23</u>	<u>2,116.85</u>
IV	<u>5</u>	<u>2,116.85</u>	<u>3,528.08</u>
IV	<u>6</u>	<u>3,528.08</u>	<u>7,056.17</u>
IV	<u>7</u>	<u>7,056.17</u>	<u>35,280.84</u>

<u>Type of Construction</u>	<u>Tier</u>	<u>Square footage greater than</u>	<u>Square footage less than or equal to</u>
<u>IV</u>	<u>8</u>	<u>35,280.84</u>	<u>352,808.35</u>
<u>IV</u>	<u>9</u>	<u>352,808.35</u>	<u>No maximum</u>
<u>VA</u>	<u>1</u>	<u>0</u>	<u>53.83</u>
<u>VA</u>	<u>2</u>	<u>53.83</u>	<u>1,153.49</u>
<u>VA</u>	<u>3</u>	<u>1,153.49</u>	<u>1,537.99</u>
<u>VA</u>	<u>4</u>	<u>1,537.99</u>	<u>2,306.98</u>
<u>VA</u>	<u>5</u>	<u>2,306.98</u>	<u>3,844.97</u>
<u>VA</u>	<u>6</u>	<u>3,844.97</u>	<u>7,689.94</u>
<u>VA</u>	<u>7</u>	<u>7,689.94</u>	<u>38,449.71</u>
<u>VA</u>	<u>8</u>	<u>38,449.71</u>	<u>384,497.08</u>
<u>VA</u>	<u>9</u>	<u>384,497.08</u>	<u>No maximum</u>
<u>VB</u>	<u>1</u>	<u>0</u>	<u>57.16</u>
<u>VB</u>	<u>2</u>	<u>57.16</u>	<u>1,224.89</u>
<u>VB</u>	<u>3</u>	<u>1,224.89</u>	<u>1,633.19</u>
<u>VB</u>	<u>4</u>	<u>1,633.19</u>	<u>2,449.78</u>
<u>VB</u>	<u>5</u>	<u>2,449.78</u>	<u>4,082.97</u>
<u>VB</u>	<u>6</u>	<u>4,082.97</u>	<u>8,165.93</u>
<u>VB</u>	<u>7</u>	<u>8,165.93</u>	<u>40,829.66</u>
<u>VB</u>	<u>8</u>	<u>40,829.66</u>	<u>408,296.59</u>
<u>VB</u>	<u>9</u>	<u>408,296.59</u>	<u>No maximum</u>

TABLE R108.3.1(2)
SQUARE FOOTAGE INCREMENT BY TYPE OF CONSTRUCTION

<u>Type of Construction</u>	<u>Square footage increment, each incurring additional charge</u>
<u>IA</u>	<u>6.42</u>
<u>IB</u>	<u>6.60</u>
<u>IIA</u>	<u>6.76</u>
<u>IIB</u>	<u>6.94</u>
<u>IIIA</u>	<u>7.20</u>
<u>IIIB</u>	<u>7.39</u>
<u>IV</u>	<u>7.06</u>
<u>VA</u>	<u>7.69</u>
<u>VB</u>	<u>8.17</u>

For all buildings not included in Tables R108.3.1(1) and R108.3.1(2), the building permit fee shall be based on the valuation, as described in Section 109.3 and the *city fee schedule*.

Notes:

1. New one- and two-family *dwelling*s and townhouses 1,800 square feet or less shall

receive a 50 percent discount on permit fees.

2. A historic building that has been designated by the *jurisdiction* as a landmark or that is located within a historic district designated by the *jurisdiction*, or for which designation as a landmark or part of a historic district is pending, shall receive a 50 percent discount on permit fees provided that a certificate of appropriateness approved by the Houston Archaeological and Historical Commission pursuant to Chapter 33 of the *City Code* is submitted with the construction documents.

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 in whole or in part, and a *change of occupancy* in 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~~ Certificates of compliance occupancy is not required for work exempt from permits under Section R105.2.
2. ~~Accessory buildings or structures. A certificate of compliance 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.

R110.3 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 Building Code Enforcement~~, the *building official* shall issue a certificate of compliance occupancy containing the following:

1. The *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. Where 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 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 the provisions of this code or other ordinance of the *jurisdiction*. 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. If a certificate of compliance has been issued, then, 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.

SECTION R112 BOARD OF APPEALS

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 wave 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*.~~

SECTION R113 VIOLATIONS

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.

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

SECTION R201 GENERAL

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 R202 DEFINITIONS

EDITORIAL NOTE: ALL PORTIONS OF SECTION R202 NOT SHOWN REMAIN AS SET FORTH IN THE 2021 IRC.

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 an 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*. For the definition applicable in Chapter 11, see Section N1101.6.

APPROVED FABRICATOR. An established and qualified person, firm or corporation registered and certified with the *jurisdiction* and approved by the *building official* pursuant to Chapter 17 of this code to provide specific products and/or services that document compliance with the *Construction Code*.

AUTHORITY HAVING JURISDICTION. The City of Houston, Texas. The definition shall also include the director of Houston Public Works as the *jurisdiction'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 or a duly authorized representative 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. For the definition applicable in Chapter 11, see Section N1101.6.

BUILDING THERMAL ENVELOPE. For the definition applicable in Chapter 11, see Section N1101.6. 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*, ordinances, and other laws and policies as specifically delegated by the *building official, fire chief, and the authority having jurisdiction*.

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

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*.

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*.

GRAYWATER. 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.

INFRASTRUCTURE DESIGN MANUAL. The design manual with latest revision at the time of permit application that sets forth the standards for infrastructure design and construction as approved by the Office of the City Engineer in Houston Public Works.

INTERIOR FLATWORK. Any flat system of construction, such as a concrete slab, sidewalks, patios, and asphalt drives constructed inside of the property line.

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

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

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

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

INTERNATIONAL FUEL GAS CODE. The City of Houston Plumbing Code, as adopted and amended by this jurisdiction.

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

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

INTERNATIONAL SWIMMING POOL AND SPA CODE. 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.

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, replacement or renewal of any part of an existing building for the purpose of its maintenance or to correct damage using like for like materials.

For the definition applicable in Chapter 11, see Section N1101.6.

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*.

SPECIAL INSPECTOR. A qualified person employed or retained by an *approved agency* registered and certified with the *jurisdiction* and *approved* by the *building official* as having the competence necessary to inspect a particular type of construction requiring *special inspection*.

SUBSTANTIAL DAMAGE. A condition where one or all 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.
3. The capacity of any structural component carrying snow load, or any group of such components, that supports more than 30 percent of the roof area if similar construction has been reduced more than 20 percent from its pre-damage condition, and the remaining

capacity with respect to dead, live, and snow 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.

[RB] TOWNHOUSE. A building that contains three or more attached *townhouse units*, also considered a multi-family residential structure.

[RB] TOWNHOUSE UNIT. A single-family *dwelling unit* in a *townhouse* that extends from foundation to roof and that has 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

SECTION R301 DESIGN CRITERIA

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 R301.2.1.1, or where the ultimate design wind speed, V_{ult} , in Figure R301.2(2) equals or exceeds 140 miles per hour (225 kph) in a special wind region.

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 R301.2.1.1 or where the ultimate design wind speed, V_{ult} , in Figure R301.2(2) equals or exceeds 140 miles per hour (225 kph) in a special wind region, the design of buildings for wind loads shall be in accordance with one or more of the following methods:

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

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 2021 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://asce7hazardtool.online>. Buildings shall be considered Risk Category II. A copy of the windspeed printout from the website shall be attached to the plans for verification.

**SECTION R302
FIRE-RESISTANT CONSTRUCTION**

**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, UL 263, or Section 703.3 of the <i>International Building Code</i> with exposure from both sides	0 feet
	Not fire-resistance rated	0 hours	≥ 5 feet
Projections	Not Allowed	N/A	< 2 feet
	Fire-resistance rated	1 hour on the underside, or heavy timber, or fire-retardant-treated-wood ^{a, b}	≥ 2 feet to < 5 feet
	Not fire-resistance rated	0 hours	≥ 5 feet
Openings	Not Allowed	N/A	< 3 feet
	25% maximum of wall area ^c	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

- The fire-resistance rating shall be permitted to be reduced to 0 hours on the underside of the eave overhang if fireblocking is provided from the wall top plate to the underside of the roof sheathing.
- The fire-resistance rating shall be permitted to be reduced to 0 hours on the underside of the rake overhang where 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, UL 263, or Section 703.2.2 of the <i>International Building Code</i> with exposure from both sides	0 feet
	Not fire-resistance rated	0 hours	3 feet ^a
Projections	Not allowed	N/A	< 2 feet
	Fire-resistance rated	1 hour on the underside, or heavy timber, or fire-retardant-treated wood ^{b, c}	2 feet ^a
	Not fire-resistance rated	0 hours	3 feet
Openings in walls	Not Allowed ^d	N/A	< 3 feet
	Unlimited	0 hours	3 feet ^a
Penetrations	All	Comply with Section R302.4	< 3 feet
		None Required	3 feet ^a

For SI: 1 Foot = 304.8 mm.

N/A = Not Applicable

- a. For residential subdivisions where all dwellings are equipped throughout with an automatic sprinkler system installed in accordance with Section P2904, the fire separation distance for exterior walls not fire-resistance rated and for fire-resistance-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.
- b. The fire-resistance rating shall be permitted to be reduced to 0 hours on the underside of the eave overhang if fireblocking is provided from the wall top plate to the underside of the roof sheathing.
- c. The fire-resistance rating shall be permitted to be reduced to 0 hours on the underside of the rake overhang where gable vent openings are not installed.
- d. Opening requirements do not apply to noncombustible carports that are open on two sides.

SECTION R310 EMERGENCY ESCAPE AND RESCUE OPENINGS

R310.1 Emergency escape and rescue opening required. *Basements, habitable attics and every sleeping room shall have not less than one operable emergency escape and rescue opening. Where basements contain one or more sleeping rooms, an emergency escape and rescue opening shall be required in each sleeping room. Emergency escape and rescue openings shall open directly into a public way, or to a yard or court having a minimum width of 36 inches (914 mm) that opens to a public way. 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.*

[EDITORIAL NOTE: THE REMAINDER OF THIS SECTION REMAINS AS SET FORTH IN THE 2021 IRC.]

SECTION R313 AUTOMATIC FIRE SPRINKLER SYSTEMS

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

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

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

SECTION R319 SITE ADDRESS

~~**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.*~~

SECTION R320 ACCESSIBILITY

~~**R320.1 Scope.** Where there are four or more *dwelling units* or *sleeping units* in a single structure, the provisions of Chapter 11 of the *International Building Code* for Group R-3 *Texas Accessibility Standards* contained within Texas Government Code, Chapter 469, as may be amended, shall apply.~~

SECTION R321 ELEVATORS AND PLATFORM LIFTS

~~**R321.3 Accessibility.** Elevators or platform lifts that are part of an accessible route shall comply with the *Texas Accessibility Standards* contained within Texas Government Code, Chapter 469, as may be amended, required by Chapter 11 of the *International Building Code*, shall comply with ICC-A117.1.~~

SECTION R322 FLOOD-RESISTANT CONSTRUCTION

~~**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, and substantial improvement and *repair* 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.

EDITORIAL NOTE: THE REMAINDER OF THIS SECTION IS NOT ADOPTED BY THIS JURISDICTION.]

SECTION R326 HABITABLE ATTICS

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

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

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

SECTION R327 SWIMMINGS POOLS, SPAS AND HOT TUBS

R327.1 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

SECTION R401 GENERAL

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.

SECTION R404 FOUNDATION AND RETAINING WALLS

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. Where 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

SECTION R608 EXTERIOR CONCRETE 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, ACI 318 or ACI 332. ~~Where PCA 100, ACI 318, ACI 332 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.~~

SECTION R610 STRUCTURAL INSULATED PANEL WALL CONSTRUCTION

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

SECTION R703 EXTERIOR 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*.

R703.7.2.2 Alternative plaster applications. When approved by the building official, plaster products and applications not covered in Section R703.7.2 shall be provided and installed in accordance with the manufacturer's approved instructions and approved design. Products and applications approved by ICC-ES Evaluation reports are considered approved unless specifically prohibited by the building official.

CHAPTER 9

ROOF ASSEMBLIES

SECTION R905 REQUIREMENTS FOR ROOF COVERINGS

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

SECTION N1101 GENERAL

N1101.1 Scope. 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

SECTION M1201 GENERAL

M1201.2 Application. In addition to the general administration requirements of Chapter 1, the administrative provisions of ~~this chapter~~ the *Mechanical Code* shall 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

SECTION M1305 APPLIANCE ACCESS

M1305.1.2 Appliances in attics. *Attics containing appliances shall be provided with pull down stairs with a load capacity of not less than 350 pounds, large enough to allow removal of the largest appliance, and a stair width not less than 22 inches at its narrowest point. ~~an opening~~ Attics containing appliances shall have 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 (6096 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 22 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. If the opening to the attic is through a vertical door on the same level as the appliances, it shall have a minimum clear access opening of 30 inches (762 mm) high and 22 inches (559 mm) wide and be large enough to allow removal of the largest appliance.

M1305.1.2.1 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.

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

M1305.1.4 Appliances on roofs. Appliances located on roofs shall meet the access requirements of Chapter 3 of the *Mechanical Code*.

**SECTION M1307
APPLIANCE INSTALLATION**

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*~~ 2311 of the *Fire 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).

**SECTION M1308
MECHANICAL SYSTEMS INSTALLATION**

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 and ~~galvanized~~ steel piping shall not be required to be protected.

CHAPTER 14

HEATING AND COOLING EQUIPMENT AND APPLIANCES

SECTION M1401 GENERAL

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.

SECTION M1402 CENTRAL FURNACES

M1402.1 General. Oil-fired central furnaces shall conform to ANSI/UL 727. Electric furnaces shall conform to UL 1995 or UL/CSA/ANCE 60335-2-40.

SECTION M1403 HEAT PUMP EQUIPMENT

M1403.1 Heat pumps. Electric heat pumps shall be listed and labeled in accordance with UL 1995 or UL/CSA/ANCE 60335-2-40.

SECTION M1411 HEATING AND COOLING EQUIPMENT

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.

M1411.6 Insulation of refrigerant piping. Piping and fittings for refrigerant vapor (suction) lines shall be insulated with insulation having a thermal resistivity of not less than R-3 and having an external surface permeance not exceeding 0.05 perm [2.87 ng/(s x m² x Pa)] when tested in accordance with ASTM E96.

**SECTION M1412
ABSORPTION COOLING EQUIPMENT**

M1412.1 Approval of equipment. Absorption systems shall be installed in accordance with the manufacturer's instructions. Absorption equipment shall comply with UL 1995 or UL/CSA/ANCE 60335-2-40.

**SECTION M1413
EVAPORATIVE COOLING EQUIPMENT**

M1413.1 General. Evaporative cooling equipment and appliances shall comply with UL 1995 or UL/CSA/ANCE 60335-2-40 and shall be installed:

CHAPTER 15

EXHAUST SYSTEMS

SECTION M1502 CLOTHES DRYER EXHAUST

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 m²) for makeup air shall be provided in the door or by other approved means.

SECTION M1503 EXHAUST DUCTS AND EXHAUST OPENINGS

M1503.4 Duct material. Ducts serving domestic cooking exhaust equipment 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

SECTION M1601 DUCT CONSTRUCTION

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

SECTION M1602 RETURN AIR

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 (3048 mm) measured in any direction from an open combustion chamber or draft hood of another *appliance* located in the same room or space.
2. The amount of return air taken from any room 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.
5. For other than dedicated HVAC systems, return air shall not be taken from indoor swimming pool enclosures and associated deck areas except where the air in such spaces is dehumidified.
6. Taking return air from an unconditioned crawl space shall not be accomplished through a direct connection to the return side of a forced-air furnace. Transfer openings in the crawl space enclosure shall not be prohibited.
7. Return air from one dwelling unit shall not be discharged into another dwelling unit.

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 20

BOILERS AND WATER HEATERS

SECTION M2006 POOL HEATERS

M2006.1 General. Pool and spa heaters shall be installed in accordance with the manufacturer's installation instructions. Oil-fired pool heaters shall comply with UL726. Electric pool & spa heaters shall comply with UL 1261. Pool and spa heat pump water heaters shall comply with UL 1995, UL/CSA/ANZE 60335-2-40 or CSA C22.2 No. 236.

Exception: Portable residential spas and portable residential exercise spas shall comply with UL 1563 or CSA C22.2 No. 218.1.

CHAPTER 22

SPECIAL PIPING AND STORAGE SYSTEMS

SECTION M2201 OIL TANKS

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

SECTION G2401 GENERAL

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* (see definition of “*Point of delivery*”). *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 piping shall conform to Chapter 61 of the Fire Code.

**SECTION G2404
GENERAL**

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.~~

**SECTION G2412
GENERAL**

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.

**SECTION G2413
PIPE SIZING**

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 or G2413.5, as applicable.~~
- ~~2. The sizing tables included in a *listed piping* system's manufacturer's installation instructions.~~
- ~~3. *Approved engineering methods*.~~

G2413.7 (402.7) Maximum operating pressure. The maximum design operating pressure for *piping systems* located inside buildings shall not exceed 5 pounds per square inch gauge (psig) (34 kPa gauge) except where allowed by Section 1210.5 of the *Plumbing Code*. ~~one or more of the following conditions are met:~~

- ~~1. The *piping* joints are welded or brazed.~~
- ~~2. The *piping* is joined by fittings *listed* to ANSI LC4/GSA 6-32 and installed in accordance with the manufacturer's instructions.~~
- ~~3. The *piping* joints are flanged and pipe to flange connections are made by welding or brazing.~~
- ~~4. The *piping* is located in a ventilated chase or otherwise enclosed for protection against accidental gas accumulation.~~
- ~~5. The *piping* is a temporary installation for buildings under construction.~~

SECTION G2414 PIPING MATERIALS

G2414.9.5 (403.9.5) Metallic fittings. Metallic fittings shall comply with the following:

1. Fittings used with steel, stainless steel or wrought-iron *pipe* shall be steel, stainless 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.

SECTION G2415 PIPING SYSTEM INSTALLATION

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 any point where the *pipe* enters the building.

G2415.11.3 (404.11.3) Dissimilar metals. Where dissimilar metals are joined ~~underground~~, an insulating coupling or fitting shall be used.

G2415.12.1 (404.12.1) Individual outside appliances. Individual lines to outdoor lights, grills and 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 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 G2415.12.

**SECTION G2417
INSPECTION, TESTING AND PURGING**

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.

G2417.4.2 (406.4.2) Test duration. The test duration shall be not less than ~~10~~ 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.

SECTION G2418 PIPING SUPPORT

G2418.2 (407.2) Design and installation. *Piping* 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 *piping*, 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. The components of the supporting *equipment* shall be designed and installed so that they will not be disengaged by movement of the supported *piping*.

SECTION G2419 DRIPS AND SLOPED 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 with a 3 inch minimum length 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 1212.9 OF THE 2021 *UNIFORM PLUMBING CODE.*

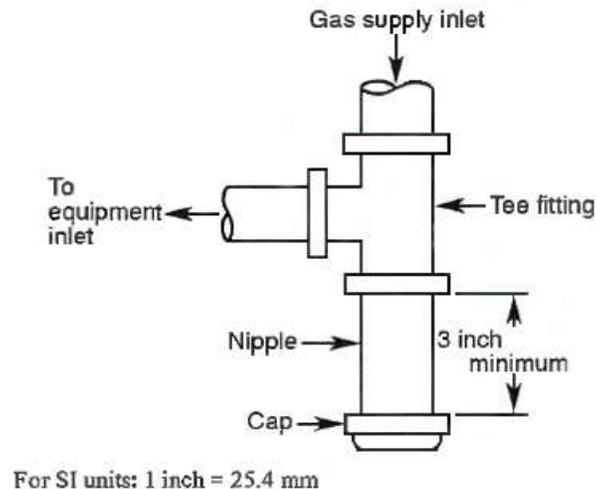


FIGURE G2419.4 (408.4)
METHOD OF INSTALLING A TEE FITTING SEDIMENT TRAP
[NFPA 54: FIGURE 9.6.7]

SECTION G2423
COMPRESSED NATURAL GAS
MOTOR VEHICLE FUEL-DISPENSING FACILITIES

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*.

SECTION G2439
CLOTHES DRYER EXHAUST

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.

**SECTION G2447
COOKING APPLIANCES**

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

SECTION P2503 INSPECTION AND TESTS

P2503.5.1 Rough plumbing. DWV systems shall be tested on completion of the rough piping installation by water, by air for piping systems other than plastic, or by vacuum of air for plastic piping systems, without evidence of leakage. 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 ~~40 feet (3048 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.
3. Vacuum test. The portion under test shall be evacuated of air by a vacuum-type pump to achieve a uniform gauge pressure of -5 pounds per square inch or a negative 10 inches of mercury column (-34 kPa). This pressure shall be held without the removal of additional air for a period of 15 minutes.

CHAPTER 27

PLUMBING FIXTURES

SECTION P2708 SHOWERS

P2708.1 General. Shower compartments shall have not less than 1024 square inches (0.827 m²) ~~900 square inches (0.6 m²)~~ 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 m²) ~~900 square inch (0.6 m²)~~ 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 m²).

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.

SECTION P2709 SHOWER RECEPTORS

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.

SECTION P2717 DISHWASHING MACHINES

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.

CHAPTER 28

WATER HEATERS

SECTION P2801 GENERAL

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.

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

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 P2906.5.

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.

SECTION P2804 RELIEF VALVES

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,~~ or to a location approved by the Authority Having Jurisdiction.
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 installed with insert fittings. The outlet end of such tubing shall be fastened in place.

CHAPTER 29

WATER SUPPLY AND DISTRIBUTION

SECTION P2902 PROTECTION OF POTABLE WATER SUPPLY

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, AWWA C511 or CSA B64.4.~~

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 al backflow prevention assembly complying with ASSE 1013.

SECTION P2903 WATER SUPPLY SYSTEM

**TABLE P2903.2
MAXIMUM FLOW RATES AND CONSUMPTION FOR PLUMBING
FIXTURES AND FIXTURE FITTINGS^b**

PLUMBING FIXTURE OR FIXTURE FITTING	PLUMBING FIXTURE OR FIXTURE FITTING
Lavatory faucet	2.2 gpm at 60 psi
Shower head ^a	2.5 gpm at 80 psi
Sink faucet	2.2 gpm at 60 psi
Water closet	1.28 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 hand-held shower spray shall be considered to be a shower head.
- b. Consumption tolerances shall be determined from referenced standards.

SECTION P2904 DWELLING UNIT FIRE SPRINKLER SYSTEM

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 sprinkler system from the water distribution system, provided that the sprinkler system complies with all of the following:~~

- ~~1. The system complies with NFPA 13D or Section P2904.~~
- ~~2. The piping material complies with Section P2906.~~
- ~~3. The system does not contain antifreeze.~~
- ~~4. The system does not have a fire department connection.~~

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.

SECTION P2906 MATERIALS, JOINTS AND CONNECTIONS

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

P2906.10 Cross-linked polyethylene plastic (PEX). ~~J~~Tubing and joints between cross-linked polyethylene plastic tubing or fittings shall comply with Section 2906.9.1. 1 ~~or~~ through Section P2906.9.1. ~~23.~~

P2906.10.3 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.

P2906.18.3 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.

SECTION P2910 NONPOTABLE WATER SYSTEMS

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*.

**SECTION P2911
ON-SITE NONPOTABLE WATER REUSE SYSTEMS**

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*.

**SECTION P2912
NONPOTABLE RAINWATER COLLECTION AND
DISTRIBUTION SYSTEMS**

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. For nonpotable rainwater systems, the provisions of CSA B805/ICC 805 shall be an alternative for regulating the materials, design, construction and installation of systems for rainwater collection, storage, treatment and distribution of nonpotable water. The use and application of nonpotable water shall comply with the laws, rules and ordinances applicable in the *jurisdiction*.

CHAPTER 30

SANITARY DRAINAGE

SECTION P3001 GENERAL

P3001.3 Flood-resistant installation. In flood hazard areas as established by Chapter 19 of the City Code Table R301.2, 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.

SECTION P3003 JOINTS AND CONNECTIONS

P3003.9.2 Solvent cementing. Joint surfaces shall be clean and free from moisture. A purple primer, or other *approved* primer, that conforms to ASTM F656 shall be applied. Solvent cement not purple in color and conforming to ASTM D2564, CSA B137.3 or CSA B181.2 shall be applied to all joint surfaces. The joint shall be made while the cement is wet, and shall be in accordance with ASTM D2855. Solvent-cement joints shall be installed above or below ground.

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

- ~~1. The solvent cement used is third party certified as conforming to ASTM D2564.~~
- ~~2. The solvent cement is used only for joining PVC drain, waste and vent pipe and fittings in nonpressure applications in sizes up to and including 4 inches (102 mm) in diameter.~~

SECTION P3005 DRAINAGE SYSTEM

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

TYPE OF FITTING PATTERN	CHANGE IN DIRECTION		
	HORIZONTAL TO VERTICAL ^c	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 ^a	X ^a
Short sweep	X	X ^{a,b}	X ^a
Long sweep	X	X	X
Sanitary tee	X ^c	--	--
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.~~

SECTION P3009 GRAYWATER SOIL ABSORPTION SYSTEMS

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 graywater soil absorption systems connected to nonpotable water from on-site water reuse systems.

CHAPTER 31

VENTS

SECTION P3114 AIR ADMITTANCE VALVES

P3114.3 Where permitted. An 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

SECTION P3201 FIXTURE TRAPS

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

PLUMBING FIXTURE	TRAP SIZE MINIMUM (inches)
Bathtub (with or without shower head and/or whirlpool attachments)	<u>2</u> $\frac{1}{2}$
Bidet	1 $\frac{1}{4}$
Clothes washer standpipe	2
Dishwasher (on separate trap)	1 $\frac{1}{2}$
Floor drain	2
Kitchen sink (one or two traps, with or without dishwasher and food waste disposer)	1 $\frac{1}{2}$
Laundry tub (one or more compartments)	1 $\frac{1}{2}$
Lavatory	1 $\frac{1}{4}$
Shower (based on the total flow rate through showerheads and body sprays) Flow rate:	
5.7 gpm and less	<u>1</u> $\frac{1}{2}$
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, 1 gallon per minute = 3.785 L/m.

[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 2021 IRC.]

ANCE

Association of Standardization and Certification
Av. Lázaro Cárdenas No. 869
Fraccion 3
Col. Nva. Industrial Vallejo
Mexico, D.F.

~~NMX J 524/2-40-ANCE—2014/CAN/CSA 22.2 No. 60335-2-40-12/UL 60335-2-40: Safety of Household and Similar Electric Appliances, Part 2-40: Particular Requirements for Heat Pumps, Air Conditioners and Dehumidifiers~~
M1403.1, M1412.1, M1413.1

ASHRAE

ASHRAE
180 Technology Parkway NW
Peachtree Corners, GA 30092

~~ASHRAE 34—2019~~2022: Designation and Safety Classification of Refrigerants
M1411.1

ASTM

ASTM International
100 Barr Harbor Drive, P.O. Box C700
West Conshohocken, PA 19428

~~E90—2009~~(2016): Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements
AU401.1, AU501.1

CSA

CSA Group
8501 East Pleasant Valley Road
Cleveland, OH 44131-5516

~~CAN/CSA/ C22.2 No. 60335-2-40—2012~~2022: Safety of Household and Similar Electrical Appliances, Part 2-40: Particular Requirements for Electrical Heat Pumps, Air Conditioners and Dehumidifiers
M2006.1

NFPA

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

~~70—2020~~2023: National Electrical Code
R107.3, R324.3, R328.6, E3401.1, E4301.1, Table 4303.2, E4304.3, E4304.4

UL

UL LLC
333 Pfingsten Road
Northbrook, IL 60062

~~UL/CSA/ANCE 60335-2-40—2012~~2022: Standard for Household and Similar Electrical Appliances, Part 2-40: Particular Requirements for Electrical Heat Pumps, Air-Conditioners, and Dehumidifiers ~~Motor-compressors~~
M1402.1, M1403.1, M1412.1, M1413.1, M2006.1

APPENDIX AA

SIZING AND CAPACITIES OF GAS PIPING

This appendix is an excerpt from the 2021 International Fuel Gas Code® informative Appendix A. Table references in the text, other than AA tables, are as numbered in the International Fuel Gas Code (IFGC). For related table references in this code, you can find the IFGC table number in brackets adjacent to the table number in Chapter 24 of this code. For example, Table 402.4(2) in the IFGC is related to Table G2413.4(1) [402.4(2)] in this code.

User note:

About this appendix: *Appendix AA provides commentary, guidance and examples requirements for sizing of gas piping systems. The provisions contained in this appendix are mandatory.*

[EDITORIAL NOTE: ALL OTHER PROVISIONS OF THIS APPENDIX REMAIN AS SET FORTH IN 2021 IRC.]

APPENDIX AB

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 an excerpt from the 2021 International Fuel Gas Code® informative Appendix B. Section and table references in the text, other than AB tables, are as numbered in the International Fuel Gas Code (IFGC). For related table references in this code, you can find the IFGC table number in brackets adjacent to the table number in Chapter 24 of this code. For example, Table 504.2(2) in the IFGC is related to Table G2428.2(2) [504.2(2)] in this code.

User note:

About this appendix: *Appendix AB provides ~~commentary, guidance and examples~~ requirements for the design of venting systems for the types of appliances that vent by natural draft and have draft hoods or are listed as Category I or are listed for use with Type B vents. The provisions contained in this appendix are mandatory.*

EDITORIAL NOTE: ALL OTHER PROVISIONS OF THIS APPENDIX REMAIN AS SET FORTH IN 2021 IRC.]

APPENDIX AC

EXIT TERMINALS OF MECHANICAL DRAFT AND DIRECT-VENT VENTING SYSTEMS

This appendix is mandatory-informative and is not part of the code. This appendix is an excerpt from the 2018 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 2021 IRC.]

APPENDIX AH

PATIO COVERS

This 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 2021 IRC.]

APPENDIX AK

SOUND TRANSMISSION

This 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 2021 IRC.]

APPENDIX AL

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 m²) 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/m²) 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 mm²) 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 AM

HOME DAY CARE—R3 OCCUPANCY

This 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 2021 IRC.]

APPENDIX AQ TINY HOUSES

This 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 2021 IRC.]

APPENDIX AT

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

This provisions contained in this appendix are not mandatory unless specifically referenced in the adopting ordinance.

AT103.6 (RB103.6) Capped roof penetration sleeve. A capped roof penetration sleeve shall be provided indicated on the construction documents adjacent to a solar-ready zone located on a roof slope of not greater than 1 unit vertical in 12 units horizontal (8-percent slope). The capped roof penetration sleeve shall be sized to accommodate the future photovoltaic system conduit, but shall have an inside diameter of not less than 1¼ inches (32 mm).

EDITORIAL NOTE: ALL OTHER PROVISIONS OF THIS APPENDIX REMAIN AS SET FORTH IN 2021 IRC.]

APPENDIX AU

~~COB CONSTRUCTION (MONOLITHIC ADOBE)~~

[EDITORIAL NOTE: DELETE ENTIRE APPENDIX AND REPLACE WITH THE FOLLOWING.]

AIRPORT SOUND ATTENUATION REQUIREMENTS

SECTION AU101 GENERAL

AU101.1 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.

AU101.2 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.

SECTION AU201 DEFINITIONS

AU201.1 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 AU301 WALLS

AU301.1 General. The specific exterior wall assemblies set forth in Sections AU301.2 and AU301.3 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 AU301.2 and AU301.3.

AU301.2 Brick veneer. When exterior walls are constructed using brick veneer, a minimum of ½ inch gypsum drywall shall be applied as the interior finish.

AU301.3 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.

AU301.4 Other assemblies and materials. All other exterior wall assemblies or materials shall have a tested or *listed* minimum STC rating of 40.

SECTION AU401
WINDOWS

AU401.1 Windows. All windows shall have a minimum STC rating of 40 when tested in accordance with ASTM E90, or have a Normalized Noise Isolation Class (NNIC) rating of not less than 45 if field tested in accordance with ASTM E336 for airborne noise. Windows shall be *labeled* to indicate STC rating.

AU401.2 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 AU501
DOORS

AU501.1 Doors. All exterior doors shall have a minimum STC rating of 40 when tested in accordance with ASTM E90, or have a Normalized Noise Isolation Class (NNIC) rating of not less than 45 if field tested in accordance with ASTM E336 for airborne noise. Doors shall be *labeled* to indicate STC rating.

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 AU601
ROOF/CEILING ASSEMBLIES

AU601.1 General. Roof/ceiling assemblies shall be constructed in accordance with the requirements of AU601.2 or AU601.3.

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 AU601.2 or AU601.3.

AU601.2 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.

AU601.3 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 AV

BOARD OF APPEALS

[EDITORIAL NOTE: DELETE ENTIRE APPENDIX AND REPLACE WITH THE FOLLOWING.]

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.

