INTERNATIONAL RESIDENTIAL CODE® for One- and Two-Family Dwellings

INCLUDES
Residential requirements from NFPA 70: National Electrical Code® 2017

The electrical code designated for use with the I-Codes®

INTERNATIONAL RESIDENTIAL CODE® for One- and Two-Family Dwellings

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PREFACE

Introduction


The I-Codes, including this International Residential Code, are used in a variety of ways in both the public and private sectors. Most industry professionals are familiar with the I-Codes as the basis of laws and regulations in communities across the U.S. and in other countries. However, the impact of the codes extends well beyond the regulatory arena, as they are used in a variety of nonregulatory settings, including:

- Voluntary compliance programs such as those promoting sustainability, energy efficiency and disaster resistance.
- The insurance industry, to estimate and manage risk, and as a tool in underwriting and rate decisions.
- Certification and credentialing of individuals involved in the fields of building design, construction and safety.
- Certification of building and construction-related products.
- U.S. federal agencies, to guide construction in an array of government-owned properties.
- Facilities management.
- “Best practices” benchmarks for designers and builders, including those who are engaged in projects in jurisdictions that do not have a formal regulatory system or a governmental enforcement mechanism.
- College, university and professional school textbooks and curricula.
- Reference works related to building design and construction.

In addition to the codes themselves, the code development process brings together building professionals on a regular basis. It provides an international forum for discussion and deliberation about building design, construction methods, safety, performance requirements, technological advances and innovative products.

Development

This 2018 edition presents the code as originally issued, with changes reflected in the 2003 through 2015 editions and further changes approved by the ICC Code Development Process through 2017. Residential electrical provisions are based on the 2017 National Electrical Code® (NFPA 70). A new edition such as this is promulgated every 3 years.

Fuel gas provisions have been included through an agreement with the American Gas Association (AGA). Electrical provisions have been included through an agreement with the National Fire Protection Association (NFPA).
This code is founded on principles intended to establish provisions consistent with the scope of a residential code that adequately protects public health, safety and welfare; provisions that do not unnecessarily increase construction costs; provisions that do not restrict the use of new materials, products or methods of construction; and provisions that do not give preferential treatment to particular types or classes of materials, products or methods of construction.

**Maintenance**

The *International Residential Code* is kept up-to-date through the review of proposed changes submitted by code enforcement officials, industry representatives, design professionals and other interested parties. Proposed changes are carefully considered through an open code development process in which all interested and affected parties may participate.

The ICC Code Development Process reflects principles of openness, transparency, balance, due process and consensus, the principles embodied in OMB Circular A-119, which governs the federal government’s use of private-sector standards. The ICC process is open to anyone; there is no cost to participate, and people can participate without travel cost through the ICC’s cloud-based app, cdp-Access®. A broad cross section of interests are represented in the ICC Code Development Process. The codes, which are updated regularly, include safeguards that allow for emergency action when required for health and safety reasons.

In order to ensure that organizations with a direct and material interest in the codes have a voice in the process, the ICC has developed partnerships with key industry segments that support the ICC’s important public safety mission. Some code development committee members were nominated by the following industry partners and approved by the ICC Board:

- National Association of Home Builders (NAHB)
- National Council of Structural Engineers Association (NCSEA)

The code development committees evaluate and make recommendations regarding proposed changes to the codes. Their recommendations are then subject to public comment and council-wide votes. The ICC’s governmental members—public safety officials who have no financial or business interest in the outcome—cast the final votes on proposed changes.

The contents of this work are subject to change through the code development cycles and by any governmental entity that enacts the code into law. For more information regarding the code development process, contact the Codes and Standards Development Department of the International Code Council.

The maintenance process for the fuel gas provisions is based on the process used to maintain the *International Fuel Gas Code*, in conjunction with the American Gas Association. The maintenance process for the electrical provisions is undertaken by the National Fire Protection Association.

While the I-Code development procedure is thorough and comprehensive, the ICC, its members and those participating in the development of the codes disclaim any liability resulting from the publication or use of the I-Codes, or from compliance or noncompliance with their provisions. The ICC does not have the power or authority to police or enforce compliance with the contents of this code.

**Code Development Committee Responsibilities**

In each code development cycle, proposed changes to the code are considered at the Committee Action Hearings by the applicable International Code Development Committee as follows:

- [RB] = IRC—Building Code Development Committee
- [RE] = International Residential Energy Conservation Code Development Committee
- [MP] = IRC—Mechanical/Plumbing Code Development Committee
The [RE] committee is also responsible for the IECC—Residential Provisions and Appendix T.

For the development of the 2021 edition of the I-Codes, there will be two groups of code development committees and they will meet in separate years.

### Group A Codes
(Heard in 2018, Code Change Proposals
Deadline: January 8, 2018)

- **International Building Code**
  - Egress (Chapters 10, 11, Appendix E)
  - Fire Safety (Chapters 7, 8, 9, 14, 26)
  - General (Chapters 2–6, 12, 27–33, Appendices A, B, C, D, K, N)

### Group B Codes
(Heard in 2019, Code Change Proposals
Deadline: January 7, 2019)

- **Administrative Provisions** (Chapter 1 of all codes except IECC, IRC and IgCC, administrative updates to currently referenced standards, and designated definitions)

#### International Fire Code
- Structural (Chapters 15–25, Appendices F, G, H, I, J, L, M)

#### International Fuel Gas Code
- International Existing Building Code

#### International Mechanical Code
- International Energy Conservation Code—Commercial

#### International Plumbing Code
- International Energy Conservation Code—Residential
  - IECC—Residential
  - IRC—Energy (Chapter 11)

#### International Property Maintenance Code
- International Green Construction Code
  (Chapter 1)

#### International Private Sewage Disposal Code
- International Residential Code
  - IRC—Building (Chapters 1–10, Appendices E, F, H, J, K, L, M, O, Q, R, S, T)

#### International Residential Code
- IRC—Mechanical (Chapters 12–23)
- IRC—Plumbing (Chapters 25–33, Appendices G, I, N, P)

#### International Swimming Pool and Spa Code

#### International Wildland-Urban Interface Code

#### International Zoning Code

*Note:* Proposed changes to the ICC Performance Code™ will be heard by the code development committee noted in brackets [ ] in the text of the ICC Performance Code™.


It is very important that anyone submitting code change proposals understand which code development committee is responsible for the section of the code that is the subject of the code change proposal. For further information on the code development committee responsibilities, please visit the ICC website at www.iccsafe.org/scoping.

### Marginal Markings

Solid vertical lines in the margins within the body of the code indicate a technical change from the requirements of the 2015 edition. Deletion indicators in the form of an arrow (→) are provided in the margin where an entire section, paragraph, exception or table has been deleted or an item in a list of items or a table has been deleted.
A single asterisk [*] placed in the margin indicates that text or a table has been relocated within the code. A double asterisk [**] placed in the margin indicates that the text or table immediately following it has been relocated there from elsewhere in the code. The following table indicates such relocations in the 2018 edition of the *International Residential Code*.

<table>
<thead>
<tr>
<th>2018 LOCATION</th>
<th>2015 LOCATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>R703.3.1.2</td>
<td>R703.11.1.4</td>
</tr>
</tbody>
</table>

**Coordination of the International Codes**

The coordination of technical provisions is one of the strengths of the ICC family of model codes. The codes can be used as a complete set of complementary documents, which will provide users with full integration and coordination of technical provisions. Individual codes can also be used in subsets or as stand-alone documents. To make sure that each individual code is as complete as possible, some technical provisions that are relevant to more than one subject area are duplicated in some of the model codes. This allows users maximum flexibility in their application of the I-Codes.

**Italicized Terms**

Selected words and terms defined in Chapter 2, Definitions, are italicized where they appear in code text and the Chapter 2 definition applies. Where such words and terms are not italicized, common-use definitions apply. The words and terms selected have code-specific definitions that the user should read carefully to facilitate better understanding of the code.

**Adoption**

The International Code Council maintains a copyright in all of its codes and standards. Maintaining copyright allows the ICC to fund its mission through sales of books, in both print and electronic formats. The ICC welcomes adoption of its codes by jurisdictions that recognize and acknowledge the ICC’s copyright in the code, and further acknowledge the substantial shared value of the public/private partnership for code development between jurisdictions and the ICC.

The ICC also recognizes the need for jurisdictions to make laws available to the public. All I-Codes and I-Standards, along with the laws of many jurisdictions, are available for free in a nondownloadable form on the ICC’s website. Jurisdictions should contact the ICC at adoptions@icc.org to learn how to adopt and distribute laws based on the *International Residential Code* in a manner that provides necessary access, while maintaining the ICC’s copyright.

To facilitate adoption, several sections of this code contain blanks for fill-in information that needs to be supplied by the adopting jurisdiction as part of the adoption legislation. For this code, please see:

- Section R101.1. Insert: [NAME OF JURISDICTION]
- Table R301.2(1)—Jurisdictions to fill in details as directed by provisions of the code.
- Section P2603.5.1 Insert: [NUMBER OF INCHES IN TWO LOCATIONS]
EFFECTIVE USE OF THE INTERNATIONAL RESIDENTIAL CODE

Effective Use of the International Residential Code

The International Residential Code® (IRC®) was created to serve as a complete, comprehensive code regulating the construction of single-family houses, two-family houses (duplexes) and buildings consisting of three or more townhouse units. All buildings within the scope of the IRC are limited to three stories above grade plane. For example, a four-story single-family house would fall within the scope of the International Building Code® (IBC®), not the IRC. The benefits of devoting a separate code to residential construction include the fact that the user need not navigate through a multitude of code provisions that do not apply to residential construction in order to locate that which is applicable. A separate code also allows for residential and nonresidential code provisions to be distinct and tailored to the structures that fall within the appropriate code’s scopes.

The IRC contains coverage for all components of a house or townhouse, including structural components, fireplaces and chimneys, thermal insulation, mechanical systems, fuel gas systems, plumbing systems and electrical systems.

The IRC is a prescriptive-oriented (specification) code with some examples of performance code language. It has been said that the IRC is the complete cookbook for residential construction. Section R301.1, for example, is written in performance language, but states that the prescriptive requirements of the code will achieve such performance.

It is important to understand that the IRC contains coverage for what is conventional and common in residential construction practice. While the IRC will provide all of the needed coverage for most residential construction, it might not address construction practices and systems that are atypical or rarely encountered in the industry. Sections such as R301.1.3, R301.2.2.1.1, R320.1, M1301.1, G2401.1 and P2601.1 refer to other codes either as an alternative to the provisions of the IRC or where the IRC lacks coverage for a particular type of structure, design, system, appliance or method of construction. In other words, the IRC is meant to be all inclusive for typical residential construction and it relies on other codes only where alternatives are desired or where the code lacks coverage for the uncommon aspect of residential construction. Of course, the IRC constantly evolves to address new technologies and construction practices that were once uncommon, but are now common.

The IRC is unique in that much of it, including Chapters 3 through 9 and Chapters 34 through 43, is presented in an ordered format that is consistent with the normal progression of construction, starting with the design phase and continuing through the final trim-out phase. This is consistent with the “cookbook” philosophy of the IRC.

The IRC is divided into eight main parts, specifically: Part I—Administration; Part II—Definitions; Part III—Building Planning and Construction; Part IV—Energy Conservation; Part V—Mechanical; Part VI—Fuel Gas; Part VII—Plumbing; and Part VIII—Electrical.

The following provides a brief description of the content of each chapter and appendix of the IRC:

**Chapter 1 Scope and Administration.** This chapter contains provisions for the application, enforcement and administration of subsequent requirements of the code. In addition to establishing the scope of the code, Chapter 1 identifies which buildings and structures come under its purview. Chapter 1 is largely concerned with maintaining “due process of law” in enforcing the building criteria contained in the body of the code. Only through careful observation of the administrative provisions can the building official reasonably expect to demonstrate that “equal protection under the law” has been provided.

**Chapter 2 Definitions.** Terms defined in the code are listed alphabetically in Chapter 2. It is important to note that two chapters have their own definitions sections: Chapter 11 for the defined terms unique to energy conservation, Chapter 24 for the defined terms that are unique to fuel gas and Chapter 35 containing terms that are applicable to electrical Chapters 34 through 43. Where Chapter 24 or 35 defines a term differently than it is defined in Chapter 2, the definition applies in that chapter only. Chapter 2 definitions apply in all other locations in the code.
Where understanding a term’s definition is key to or necessary for understanding a particular code provision, the term is shown in italics where it appears in the code. This is true only for those terms that have a meaning that is unique to the code. In other words, the generally understood meaning of a term or phrase might not be sufficient or consistent with the meaning prescribed by the code; therefore, it is essential that the code-defined meaning be known.

Guidance regarding not only tense, gender and plurality of defined terms, but also terms not defined in this code, is provided.

Chapter 3 Building Planning. Chapter 3 provides guidelines for a minimum level of structural integrity, life safety, fire safety and livability for inhabitants of dwelling units regulated by this code. Chapter 3 is a compilation of the code requirements specific to the building planning sector of the design and construction process. This chapter sets forth code requirements dealing with light, ventilation, sanitation, minimum room size, ceiling height and environmental comfort. Chapter 3 establishes life-safety provisions including limitations on glazing used in hazardous areas, specifications on stairways, use of guards at elevated surfaces, window and fall protection, and rules for means of egress. Snow, wind and seismic design live and dead loads and flood-resistant construction, as well as solar energy systems, and swimming pools, spas and hot tubs, are addressed in this chapter.

Chapter 4 Foundations. Chapter 4 provides the requirements for the design and construction of foundation systems for buildings regulated by this code. Provisions for seismic load, flood load and frost protection are contained in this chapter. A foundation system consists of two interdependent components: the foundation structure itself and the supporting soil.

The prescriptive provisions of this chapter provide requirements for constructing footings and walls for foundations of wood, masonry, concrete and precast concrete. In addition to a foundation’s ability to support the required design loads, this chapter addresses several other factors that can affect foundation performance. These include controlling surface water and subsurface drainage, requiring soil tests where conditions warrant and evaluating proximity to slopes and minimum depth requirements. The chapter also provides requirements to minimize adverse effects of moisture, decay and pests in basements and crawl spaces.

Chapter 5 Floors. Chapter 5 provides the requirements for the design and construction of floor systems that will be capable of supporting minimum required design loads. This chapter covers four different types: wood floor framing, wood floors on the ground, cold-formed steel floor framing and concrete slabs on the ground. Allowable span tables are provided that greatly simplify the determination of joist, girder and sheathing sizes for raised floor systems of wood framing and cold-formed steel framing. This chapter also contains prescriptive requirements for wood-framed exterior decks and their attachment to the main building.

Chapter 6 Wall Construction. Chapter 6 contains provisions that regulate the design and construction of walls. The wall construction covered in Chapter 6 consists of five different types: wood framed, cold-formed steel framed, masonry, concrete and structural insulated panel (SIP). The primary concern of this chapter is the structural integrity of wall construction and transfer of all imposed loads to the supporting structure. This chapter provides the requirements for the design and construction of wall systems that are capable of supporting the minimum design vertical loads (dead, live and snow loads) and lateral loads (wind or seismic loads). This chapter contains the prescriptive requirements for wall bracing and/or shear walls to resist the imposed lateral loads due to wind and seismic.

Chapter 6 also regulates exterior windows and doors installed in walls. This chapter contains criteria for the performance of exterior windows and doors and includes provisions for testing and labeling, garage doors, wind-borne debris protection and anchorage details.

Chapter 7 Wall Covering. Chapter 7 contains provisions for the design and construction of interior and exterior wall coverings. This chapter establishes the various types of materials, materials standards and methods of application permitted for use as interior coverings, including interior plaster, gypsum board, ceramic tile, wood veneer paneling, hardboard paneling, wood shakes and wood shingles. Chapter 7 also contains requirements for the use of vapor retarders for moisture control in walls.
Exterior wall coverings provide the weather-resistant exterior envelope that protects the building’s interior from the elements. Chapter 7 provides the requirements for wind resistance and water-resistive barrier for exterior wall coverings. This chapter prescribes the exterior wall coverings as well as the water-resistive barrier required beneath the exterior materials. Exterior wall coverings regulated by this section include aluminum, stone and masonry veneer, wood, hardboard, particleboard, wood structural panel siding, wood shakes and shingles, exterior plaster, steel, vinyl, fiber cement and exterior insulation finish systems.

Chapter 8 Roof-ceiling Construction. Chapter 8 regulates the design and construction of roof-ceiling systems. This chapter contains two roof-ceiling framing systems: wood framing and cold-formed steel framing. Allowable span tables are provided to simplify the selection of rafter and ceiling joist size for wood roof framing and cold-formed steel framing. Chapter 8 also provides requirements for the application of ceiling finishes, the proper ventilation of concealed spaces in roofs (e.g., enclosed attics and rafter spaces), unvented attic assemblies and attic access.

Chapter 9 Roof Assemblies. Chapter 9 regulates the design and construction of roof assemblies. A roof assembly includes the roof deck, vapor retarder, substrate or thermal barrier, insulation, vapor retarder and roof covering. This chapter provides the requirement for wind resistance of roof coverings.

The types of roof covering materials and installation regulated by Chapter 9 are: asphalt shingles, clay and concrete tile, metal roof shingles, mineral-surfaced roll roofing, slate and slate-type shingles, wood shakes and shingles, built-up roofs, metal roof panels, modified bitumen roofing, thermoset and thermoplastic single-ply roofing, sprayed polyurethane foam roofing, liquid applied coatings and photovoltaic shingles. Chapter 9 also provides requirements for roof drainage, flashing, above deck thermal insulation, rooftop-mounted photovoltaic systems and recovering or replacing an existing roof covering.

Chapter 10 Chimneys and Fireplaces. Chapter 10 contains requirements for the safe construction of masonry chimneys and fireplaces and establishes the standards for the use and installation of factory-built chimneys, fireplaces and masonry heaters. Chimneys and fireplaces constructed of masonry rely on prescriptive requirements for the details of their construction; the factory-built type relies on the listing and labeling method of approval. Chapter 10 provides the requirements for seismic reinforcing and anchorage of masonry fireplaces and chimneys.

Chapter 11 [RE] Energy Efficiency. The purpose of Chapter 11 [RE] is to provide minimum design requirements that will promote efficient utilization of energy in buildings. The requirements are directed toward the design of building envelopes with adequate thermal resistance and low air leakage, and toward the design and selection of mechanical, water heating, electrical and illumination systems that promote effective use of depletable energy resources. The provisions of Chapter 11 [RE] are duplicated from the International Energy Conservation Code—Residential Provisions, as applicable for buildings which fall under the scope of the IRC.

For ease of use and coordination of provisions, the corresponding IECC—Residential Provisions section number is indicated following the IRC section number [e.g. N1102.1 (R402.1)].

Chapter 12 Mechanical Administration. Chapter 12 establishes the limits of applicability of the code and describes how the code is to be applied and enforced. A mechanical code, like any other code, is intended to be adopted as a legally enforceable document and it cannot be effective without adequate provisions for its administration and enforcement. The provisions of Chapter 12 establish the authority and duties of the code official appointed by the jurisdiction having authority and also establish the rights and privileges of the design professional, contractor and property owner. It also relates this chapter to the administrative provisions in Chapter 1.

Chapter 13 General Mechanical System Requirements. Chapter 13 contains broadly applicable requirements related to appliance listing and labeling, appliance location and installation, appliance and systems access, protection of structural elements and clearances to combustibles, among others.
Chapter 14 Heating and Cooling Equipment and Appliances. Chapter 14 is a collection of requirements for various heating and cooling appliances, dedicated to single topics by section. The common theme is that all of these types of appliances use energy in one form or another, and the improper installation of such appliances would present a hazard to the occupants of the dwellings, due to either the potential for fire or the accidental release of refrigerants. Both situations are undesirable in dwellings that are covered by this code.

Chapter 15 Exhaust Systems. Chapter 15 is a compilation of code requirements related to residential exhaust systems, including kitchens and bathrooms, clothes dryers and range hoods. The code regulates the materials used for constructing and installing such duct systems. Air brought into the building for ventilation, combustion or makeup purposes is protected from contamination by the provisions found in this chapter.

Chapter 16 Duct Systems. Chapter 16 provides requirements for the installation of ducts for supply, return and exhaust air systems. This chapter contains no information on the design of these systems from the standpoint of air movement, but is concerned with the structural integrity of the systems and the overall impact of the systems on the fire-safety performance of the building. This chapter regulates the materials and methods of construction which affect the performance of the entire air distribution system.

Chapter 17 Combustion Air. Complete combustion of solid and liquid fuel is essential for the proper operation of appliances, control of harmful emissions and achieving maximum fuel efficiency. If insufficient quantities of oxygen are supplied, the combustion process will be incomplete, creating dangerous byproducts and wasting energy in the form of unburned fuel (hydrocarbons). The byproducts of incomplete combustion are poisonous, corrosive and combustible, and can cause serious appliance or equipment malfunctions that pose fire or explosion hazards.

The combustion air provisions in this code from previous editions have been deleted from Chapter 17 in favor of a single section that directs the user to NFPA 31 for oil-fired appliance combustion air requirements and the manufacturer’s installation instructions for solid fuel-burning appliances. If fuel gas appliances are used, the provisions of Chapter 24 must be followed.

Chapter 18 Chimneys and Vents. Chapter 18 regulates the design, construction, installation, maintenance, repair and approval of chimneys, vents and their connections to fuel-burning appliances. A properly designed chimney or vent system is needed to conduct the flue gases produced by a fuel-burning appliance to the outdoors. The provisions of this chapter are intended to minimize the hazards associated with high temperatures and potentially toxic and corrosive combustion gases. This chapter addresses factory-built and masonry chimneys, vents and venting systems used to vent oil-fired and solid fuel-burning appliances.

Chapter 19 Special Appliances, Equipment and Systems. Chapter 19 regulates the installation of fuel-burning appliances that are not covered in other chapters, such as ranges and ovens, sauna heaters, fuel cell power plants and hydrogen systems. Because the subjects in this chapter do not contain the volume of text necessary to warrant individual chapters, they have been combined into a single chapter. The only commonality is that the subjects use energy to perform some task or function. The intent is to provide a reasonable level of protection for the occupants of the dwelling.

Chapter 20 Boilers and Water Heaters. Chapter 20 regulates the installation of boilers and water heaters. Its purpose is to protect the occupants of the dwelling from the potential hazards associated with such appliances. A water heater is any appliance that heats potable water and supplies it to the plumbing hot water distribution system. A boiler either heats water or generates steam for space heating and is generally a closed system.

Chapter 21 Hydronic Piping. Hydronic piping includes piping, fittings and valves used in building space conditioning systems. Applications include hot water, chilled water, steam, steam condensate, brines and water/antifreeze mixtures. Chapter 21 regulates installation, alteration and repair of all hydronic piping systems to ensure the reliability, serviceability, energy efficiency and safety of such systems.
Chapter 22 Special Piping and Storage Systems. Chapter 22 regulates the design and installation of fuel oil storage and piping systems. The regulations include reference to construction standards for above-ground and underground storage tanks, material standards for piping systems (both above-ground and underground) and extensive requirements for the proper assembly of system piping and components. The purpose of this chapter is to prevent fires, leaks and spills involving fuel oil storage and piping systems, whether inside or outside structures and above or underground.

Chapter 23 Solar Thermal Energy Systems. Chapter 23 contains requirements for the construction, alteration and repair of all systems and components of solar thermal energy systems used for space heating or cooling, and domestic hot water heating or processing. The provisions of this chapter are limited to those necessary to achieve installations that are relatively hazard free.

A solar thermal energy system can be designed to handle 100 percent of the energy load of a building, although this is rarely accomplished. Because solar energy is a low-intensity energy source and dependent on the weather, it is usually necessary to supplement a solar thermal energy system with traditional energy sources.

As our world strives to find alternate means of producing power for the future, the requirements of this chapter will become more and more important over time.

Chapter 24 Fuel Gas. Chapter 24 regulates the design and installation of fuel gas distribution piping and systems, appliances, appliance venting systems and combustion air provisions. The definition of “Fuel gas” includes natural, liquefied petroleum and manufactured gases and mixtures of these gases.

The purposes of this chapter are to establish the minimum acceptable level of safety and to protect life and property from the potential dangers associated with the storage, distribution and use of fuel gases and the byproducts of combustion of such fuels. This code also protects the personnel who install, maintain, service and replace the systems and appliances addressed herein.

Chapter 24 is composed entirely of text extracted from the IFGC; therefore, whether using the IFGC or the IRC, the fuel gas provisions will be identical. Note that to avoid the potential for confusion and conflicting definitions, Chapter 24 has its own definition section.

Chapter 25 Plumbing Administration. The requirements of Chapter 25 do not supersede the administrative provisions of Chapter 1. Rather, the administrative guidelines of Chapter 25 pertain to plumbing installations that are best referenced and located within the plumbing chapters. This chapter addresses how to apply the plumbing provisions of this code to specific types or phases of construction. This chapter also outlines the responsibilities of the applicant, installer and inspector with regard to testing plumbing installations.

Chapter 26 General Plumbing Requirements. The content of Chapter 26 is often referred to as “miscellaneous,” rather than general plumbing requirements. This is the only chapter of the plumbing chapters of the code whose requirements do not interrelate. If a requirement cannot be located in another plumbing chapter, it should be located in this chapter. Chapter 26 contains safety requirements for the installation of plumbing systems and includes requirements for the identification of pipe, pipe fittings, traps, fixtures, materials and devices used in plumbing systems. If specific provisions do not demand that a requirement be located in another chapter, the requirement is located in this chapter.

Chapter 27 Plumbing Fixtures. Chapter 27 requires fixtures to be of the proper type, approved for the purpose intended and installed properly to promote usability and safe, sanitary conditions. This chapter regulates the quality of fixtures and faucets by requiring those items to comply with nationally recognized standards. Because fixtures must be properly installed so that they are usable by the occupants of the building, this chapter contains the requirements for the installation of fixtures.

Chapter 28 Water Heaters. Chapter 28 regulates the design, approval and installation of water heaters and related safety devices. The intent is to minimize the hazards associated with the installation and operation of water heaters. Although this chapter does not regulate the size of a water heater, it does regulate all other aspects of the water heater installation such as temperature and pressure relief valves, safety drip pans and connections. Where a water heater also supplies water
for space heating, this chapter regulates the maximum water temperature supplied to the water distribution system.

**Chapter 29 Water Supply and Distribution.** This chapter regulates the supply of potable water from both public and individual sources to every fixture and outlet so that it remains potable and uncontaminated by cross connections. Chapter 29 also regulates the design of the water distribution system, which will allow fixtures to function properly. Because it is critical that the potable water supply system remain free of actual or potential sanitary hazards, this chapter has the requirements for providing backflow protection devices.

**Chapter 30 Sanitary Drainage.** The purpose of Chapter 30 is to regulate the materials, design and installation of sanitary drainage piping systems as well as the connections made to the system. The intent is to design and install sanitary drainage systems that will function reliably, are neither undersized nor oversized and are constructed from materials, fittings and connections whose quality is regulated by this section. This chapter addresses the proper use of fittings for directing the flow into and within the sanitary drain piping system. Materials and provisions necessary for servicing the drainage system are also included in this chapter.

**Chapter 31 Vents.** Venting protects the trap seal of each trap. The vents are designed to limit differential pressures at each trap to 1 inch of water column (249 Pa). Because waste flow in the drainage system creates pressure fluctuations that can negatively affect traps, the sanitary drainage system must have a properly designed venting system. Chapter 31 covers the requirements for vents and venting. All of the provisions set forth in this chapter are intended to limit the pressure differentials in the drainage system to a maximum of 1 inch of water column (249 Pa) above or below atmospheric pressure (i.e., positive or negative pressures).

**Chapter 32 Traps.** Traps prevent sewer gas from escaping from the drainage piping into the building. Water seal traps are the simplest and most reliable means of preventing sewer gas from entering the interior environment. This chapter lists prohibited trap types and specifies the minimum trap size for each type of fixture.

**Chapter 33 Storm Drainage.** Rainwater infiltration into the ground adjacent to a building can cause the interior of foundation walls to become wet. The installation of a subsoil drainage system prevents the buildup of rainwater on the exterior of the foundation walls. This chapter provides the specifications for subsoil drain piping. Where the discharge of the subsoil drain system is to a sump, this chapter also provides coverage for sump construction, pumps and discharge piping.

**Chapter 34 General Requirements.** This chapter contains broadly applicable, general and miscellaneous requirements including scope, listing and labeling, equipment locations and clearances for conductor materials and connections and conductor identification.

**Chapter 35 Electrical Definitions.** Chapter 35 is the repository of the definitions of terms used in the body of Part VIII of the code. To avoid the potential for confusion and conflicting definitions, Part VIII, Electrical, has its own definition chapter.

Codes are technical documents and every word, term and punctuation mark can impact the meaning of the code text and the intended results. The code often uses terms that have a unique meaning in the code, which can differ substantially from the ordinarily understood meaning of the term as used outside of the code.

The terms defined in Chapter 35 are deemed to be of prime importance in establishing the meaning and intent of the electrical code text that uses the terms. The user of the code should be familiar with and consult this chapter because the definitions are essential to the correct interpretation of the code and because the user may not be aware that a term is defined.

**Chapter 36 Services.** This chapter covers the design, sizing and installation of the building’s electrical service equipment and grounding electrode system. It includes an easy-to-use load calculation method and service conductor sizing table. The electrical service is generally the first part of the electrical system to be designed and installed.
Chapter 37 Branch Circuit and Feeder Requirements. Chapter 37 addresses the requirements for designing the power distribution system, which consists of feeders and branch circuits emanating from the service equipment. This chapter dictates the ratings of circuits and the allowable loads, the number and types of branch circuits required, the wire sizing for such branch circuits and feeders and the requirements for protection from overcurrent for conductors. A load calculation method specific to feeders is also included. This chapter is used to design the electrical system on the load side of the service.

Chapter 38 Wiring Methods. Chapter 38 specifies the allowable wiring methods, such as cable, conduit and raceway systems, and provides the installation requirements for the wiring methods. This chapter is primarily applicable to the “rough-in” phase of construction.

Chapter 39 Power and Lighting Distribution. This chapter mostly contains installation requirements for the wiring that serves the lighting outlets, receptacle outlets, appliances and switches located throughout the building. The required distribution and spacing of receptacle outlets and lighting outlets is prescribed in this chapter, as well as the requirements for ground-fault and arc-fault circuit-interrupter protection.

Chapter 40 Devices and Luminaires. This chapter focuses on the devices, including switches and receptacles, and lighting fixtures that are typically installed during the final phase of construction.

Chapter 41 Appliance Installation. Chapter 41 addresses the installation of appliances including HVAC appliances, water heaters, fixed space-heating equipment, dishwashers, garbage disposals, range hoods and suspended paddle fans.

Chapter 42 Swimming Pools. This chapter covers the electrical installation requirements for swimming pools, storable swimming pools, wading pools, decorative pools, fountains, hot tubs, spas and hydromassage bathtubs. The allowable wiring methods are specified along with the required clearances between electrical system components and pools, spas and tubs. This chapter includes the special grounding requirements related to pools, spas and tubs, and also prescribes the equipotential bonding requirements that are unique to pools, spas and tubs.

Chapter 43 Class 2 Remote-control, Signaling and Power-limited Circuits. This chapter covers the power supplies, wiring methods and installation requirements for the Class 2 circuits found in dwellings. Such circuits include thermostat wiring, alarm systems, security systems, automated control systems and doorbell systems.

Chapter 44 Referenced Standards. The code contains numerous references to standards that are used to regulate materials and methods of construction. Chapter 44 contains a comprehensive list of all standards that are referenced in the code. The standards are part of the code to the extent of the reference to the standard. Compliance with the referenced standard is necessary for compliance with this code. By providing specifically adopted standards, the construction and installation requirements necessary for compliance with the code can be readily determined. The basis for code compliance is, therefore, established and available on an equal basis to the code official, contractor, designer and owner.

Chapter 44 is organized in a manner that makes it easy to locate specific standards. It lists all of the referenced standards, alphabetically, by acronym of the promulgating agency of the standard. Each agency’s standards are then listed in either alphabetical or numeric order based upon the standard identification. The list also contains the title of the standard; the edition (date) of the standard referenced; any addenda included as part of the ICC adoption; and the section or sections of this code that reference the standard.

Appendix A Sizing and Capacities of Gas Piping. This appendix is informative and not part of the code. It provides design guidance, useful facts and data and multiple examples of how to apply the sizing tables and sizing methodologies of Chapter 24.
Appendix B Sizing of Venting Systems Serving Appliances Equipped with Draft Hoods, Category I Appliances, and Appliances Listed for Use with Type B Vents. This appendix is informative and not part of the code. It contains multiple examples of how to apply the vent and chimney tables and methodologies of Chapter 24.

Appendix C Exit Terminals of Mechanical Draft and Direct-vent Venting Systems. This appendix is informative and not part of the code. It consists of a figure and notes that visually depict code requirements from Chapter 24 for vent terminals with respect to the openings found in building exterior walls.

Appendix D Recommended Procedure for Safety Inspection of an Existing Appliance Installation. This appendix is informative and not part of the code. It provides recommended procedures for testing and inspecting an appliance installation to determine if the installation is operating safely and if the appliance is in a safe condition.

Appendix E Manufactured Housing Used as Dwellings. The criteria for the construction of manufactured homes are governed by the National Manufactured Housing Construction and Safety Act. While this act may seem to cover the bulk of the construction of manufactured housing, it does not cover those areas related to the placement of the housing on the property. The provisions of Appendix E are not applicable to the design and construction of manufactured homes. Appendix E provides a complete set of regulations in conjunction with federal law for the installation of manufactured housing. This appendix also contains provisions for existing manufactured home installations.

Appendix F Radon Gas Methods. Radon comes from the natural (radioactive) decay of the element radium in soil, rock and water and finds its way into the air. Appendix F contains requirements to mitigate the transfer of radon gases from the soil into the dwelling. The provisions of this appendix regulate the design and construction of radon-resistant measures intended to reduce the entry of radon gases into the living space of residential buildings.

Appendix G Piping Standards for Various Applications. Appendix G provides standards for various types of plastic piping products. This appendix is informative and is not part of the code.

Appendix H Patio Covers. Appendix H sets forth the regulations and limitations for patio covers. The provisions address those uses permitted in patio cover structures, the minimum design loads to be assigned for structural purposes, and the effect of the patio cover on egress and emergency escape or rescue from sleeping rooms. This appendix also contains the special provisions for aluminum screen enclosures in hurricane-prone regions.

Appendix I Private Sewage Disposal. Appendix I simply provides the opportunity to utilize the International Private Sewage Disposal Code for the design and installation of private sewage disposal in one- and two-family dwellings.

Appendix J Existing Buildings and Structures. Appendix J contains the provisions for the repair, renovation, alteration and reconstruction of existing buildings and structures that are within the scope of this code. To accomplish this objective and to make the rehabilitation process more available, this appendix allows for a controlled departure from full code compliance without compromising minimum life safety, fire safety, structural and environmental features of the rehabilitated existing building or structure.

Appendix K Sound Transmission. Appendix K regulates the sound transmission of wall and floor-ceiling assemblies separating dwelling units and townhouse units. Airborne sound insulation is required for walls. Airborne sound insulation and impact sound insulation are required for floor-ceiling assemblies. The provisions in Appendix K set forth a minimum Sound Transmission Class (STC) rating for common walls and floor-ceiling assemblies between dwelling units. In addition, a
minimum Impact Insulation Class (IIC) rating is also established to limit structureborne sound through common floor-ceiling assemblies separating dwelling units.

**Appendix L Permit Fees.** Appendix L provides guidance to jurisdictions for setting appropriate permit fees. This appendix will aid many jurisdictions to assess permit fees that will assist to fairly and properly administer the code. This appendix can be used for informational purposes only or may be adopted when specifically referenced in the adopting ordinance.

**Appendix M Home Day Care—R-3 Occupancy.** Appendix M provides means of egress and smoke detection requirements for a Group R-3 Occupancy that is to be used as a home day care for more than five children who receive custodial care for less than 24 hours. This appendix is strictly for guidance and/or adoption by those jurisdictions that have Licensed Home Care Provider laws and statutes that allow more than five children to be cared for in a person’s home. When a jurisdiction adopts this appendix, the provisions for day care and child care facilities in the IBC should be considered also.

**Appendix N Venting Methods.** Because venting of sanitary drainage systems is a difficult concept to understand, and Chapter 31 uses only words to describe venting requirements, illustrations can offer greater insight into what the words mean. Appendix N has a number of illustrations for commonly installed sanitary drainage systems in order for the reader to gain a better understanding of this code’s venting requirements.

**Appendix O Automatic Vehicular Gates.** Appendix O provides the requirements for the design and construction of automatic vehicular gates. The provisions are for where automatic gates are installed for use at a vehicular entrance or exit on the lot of a one- or two-family dwelling. The requirements provide protection for individuals from potential entrapment between an automatic gate and a stationary object or surface.

**Appendix P Sizing of Water Piping System.** Appendix P provides two recognized methods for sizing the water service and water distribution piping for a building. The method under Section AP103 provides friction loss diagrams that require the user to “plot” points and read values from the diagrams in order to perform the required calculations and necessary checks. This method is the most accurate of the two presented in this appendix. The method under Section AP201 is known to be conservative; however, very few calculations are necessary in order to determine a pipe size that satisfies the flow requirements of any application.

**Appendix Q Tiny Houses.** For dwelling units that are 400 square feet (37 m²) or less in floor area, excluding lofts, Appendix Q provides relaxed provisions as compared to those in the body of the code. These provisions primarily address reduced ceiling heights for loft areas and specific stair and ladder detail requirements that allow for more compact designs where accessing lofts.

**Appendix R Light Straw-Clay Construction.** This appendix regulates the use of light straw-clay as a construction material. It is limited in application to nonbearing wall infill systems.

**Appendix S Strawbale Construction.** This appendix provides prescriptive requirements for the use of strawbale as a construction material. It is limited in application to the walls of one-story structures, except where additional engineering is provided.

**Appendix T Solar-ready Provisions—Detached One- and Two-family Dwellings and Townhouses.** This appendix provides requirements for preparation of a house for future installation of solar equipment for electrical power or heating. Given the growing popularity of solar power and the possible need for the equipment in the future, this appendix, if adopted, would require an area be provided on the building roof that would accommodate solar equipment. In addition, pathways for routing of plumbing and conduit need to be provided.
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Part I—Administrative

CHAPTER 1
SCOPE AND ADMINISTRATION

User note:

About this chapter: Chapter 1 establishes the limits of applicability of this code and describes how the code is to be applied and enforced. Chapter 1 is in two parts: Part 1—Scope and Application (Sections R101–R102) and Part 2—Administration and Enforcement (Sections R103–R114). Section R101 identifies which buildings and structures come under its purview and references other I-Codes as applicable. Standards and codes are scoped to the extent referenced (see Section R102.4).

The one- and two-family dwelling code is intended to be adopted as a legally enforceable document, and it cannot be effective without adequate provisions for its administration and enforcement. The provisions of Chapter 1 establish the authority and duties of the building official appointed by the authority having jurisdiction and also establish the rights and privileges of the design professional, contractor and property owner.

PART 1—SCOPE AND APPLICATION

SECTION R101
GENERAL

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

R101.2 Scope. The provisions of this code shall apply to the construction, alteration, movement, enlargement, replacement, repair, equipment, use and occupancy, location, removal and demolition 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 and their accessory structures not more than three stories above grade plane in height.

Exception: The following shall be permitted to be constructed in accordance with this code where provided with a residential fire sprinkler system complying with Section P2904:

1. Live/work units located in townhouses and complying with the requirements of Section 419 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.

R101.3 Intent. The purpose of this code is to establish minimum requirements to safeguard the public safety, health and general welfare through affordability, structural strength, means of egress facilities, stability, sanitation, light and ventilation, energy conservation and safety to life and property from fire and other hazards attributed to the built environment, and to provide safety to fire fighters and emergency responders during emergency operations.

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 case, different sections of this code specify different materials, methods of construction or other requirements, the most restrictive shall govern.

R102.2 Other laws. The provisions of this code shall not be deemed to nullify any provisions of local, state or federal law.

R102.3 Application of references. References to chapter or section numbers, or to provisions not specifically identified by number, shall be construed to refer to such chapter, section or provision of this code.

R102.4 Referenced codes and standards. The codes and standards referenced in this code shall be considered part of the requirements of this code to the prescribed extent of each such reference and as further regulated in Sections R102.4.1 and R102.4.2.

Exception: Where enforcement of a code provision would violate the conditions of the listing of the equipment or appliance, the conditions of the listing and manufacturer’s instructions shall apply.

R102.4.1 Conflicts. Where conflicts occur between provisions of this code and referenced codes and standards, the provisions of this code shall apply.

R102.4.2 Provisions in referenced codes and standards. Where the extent of the reference to a referenced code or standard includes subject matter that is within the scope of
this code, the provisions of this code, as applicable, shall take precedence over the provisions in the referenced code or standard.

R102.5 Appendices. Provisions in the appendices shall not apply unless specifically referenced in the adopting ordinance.

R102.6 Partial invalidity. In the event any part or provision of this code is held to be illegal or void, this shall not have the effect of making void or illegal any of the other parts or provisions.

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.

R102.7.1 Additions, alterations or repairs. Additions, alterations or repairs to any structure shall conform to the requirements for a new structure without requiring the existing structure to comply with the requirements of this code, unless otherwise stated. Additions, alterations, repairs and relocations shall not cause an existing structure to become unsafe or adversely affect the performance of the building.

PART 2—ADMINISTRATION AND ENFORCEMENT

SECTION R103
DEPARTMENT OF BUILDING SAFETY

R103.1 Creation of enforcement agency. The department of building safety is hereby created and the official in charge thereof shall be known as the building official.

R103.2 Appointment. The building official shall be appointed by the jurisdiction.

R103.3 Deputies. In accordance with the prescribed procedures of this jurisdiction and with the concurrence of the appointing authority, the building official shall have the authority to appoint a deputy building official, the related technical officers, inspectors, plan examiners and other employees. Such employees shall have powers as delegated by the building official.

SECTION R104
DUTIES AND POWERS OF THE BUILDING OFFICIAL

R104.1 General. The building official is hereby authorized and directed to enforce the provisions of this code. The building official shall have the authority to render interpretations of this code and to adopt policies and procedures in order to clarify the application of its provisions. Such interpretations, policies and procedures shall be in compliance with the intent and purpose of this code. Such policies and procedures shall not have the effect of waiving requirements specifically provided for in this code.

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

R104.3 Notices and orders. The building official shall issue necessary notices or orders to ensure compliance with this code.

R104.4 Inspections. The building official shall make the required inspections, or the building official shall have the authority to accept reports of inspection by approved agencies or individuals. Reports of such inspections shall be in writing and be certified by a responsible officer of such approved agency or by the responsible individual. The building official is authorized to engage such expert opinion as deemed necessary to report on unusual technical issues that arise, subject to the approval of the appointing authority.

R104.5 Identification. The building official shall carry proper identification when inspecting structures or premises in the performance of duties under this code.

R104.6 Right of entry. Where it is necessary to make an inspection to enforce the provisions of this code, or where the building official has reasonable cause to believe that there exists in a structure or upon a premises a condition that is contrary to or in violation of this code that makes the structure or premises unsafe, dangerous or hazardous, the building official or designee is authorized to enter the structure or premises at reasonable times to inspect or to perform the duties imposed by this code, provided that if such structure or premises be occupied that credentials be presented to the occupant and entry requested. If such structure or premises is unoccupied, the building official shall first make a reasonable effort to locate the owner, the owner’s authorized agent, or other person having charge or control of the structure or premises and request entry. If entry is refused, the building official shall have recourse to the remedies provided by law to secure entry.

R104.7 Department records. The building official shall keep official records of applications received, permits and certificates issued, fees collected, reports of inspections, and notices and orders issued. Such records shall be retained in the official records for the period required for the retention of public records.

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.

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.

R104.9 Approved materials and equipment. Materials, equipment and devices approved by the building official shall be constructed and installed in accordance with such approval.

R104.9.1 Used materials and equipment. Used materials, equipment and devices shall not be reused unless approved by the building official.

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 department of building safety.

R104.10.1 Flood hazard areas. The building official shall not grant modifications to any provisions required in flood hazard areas as established by Table R301.2(1) unless a determination has been made that:

1. There is good and sufficient cause showing that the unique characteristics of the size, configuration or topography of the site render the elevation standards of Section R322 inappropriate.
2. Failure to grant the modification would result in exceptional hardship by rendering the lot undevelopable.
3. The granting of modification will not result in increased flood heights, additional threats to public safety, extraordinary public expense, cause fraud or victimization of the public, or conflict with existing laws or ordinances.
4. The modification is the minimum necessary to afford relief, considering the flood hazard.
5. Written notice specifying the difference between the design flood elevation and the elevation to which the building is to be built, stating that the cost of flood insurance will be commensurate with the increased risk resulting from the reduced floor elevation and stating that construction below the design flood elevation increases risks to life and property, has been submitted to the applicant.

R104.11 Alternative materials, design and methods of construction and equipment. The provisions of this code are not intended to prevent the installation of any material or to prohibit any design or method of construction not specifically prescribed by this code. The building official shall have the authority to approve an alternative material, design or method of construction upon application of the owner or the owner’s authorized agent. The building official shall first find that the proposed design is satisfactory and complies with the intent of the provisions of this code, and that the material, method or work offered is, for the purpose intended, not less than the equivalent of that prescribed in this code in quality, strength, effectiveness, fire resistance, durability and safety. Compliance with the specific performance-based provisions of the International Codes shall be an alternative to the specific requirements of this code. Where the alternative material, design or method of construction is not approved, the building official shall respond in writing, stating the reasons why the alternative was not approved.

R104.11.1 Tests. Where there is insufficient evidence of compliance with the provisions of this code, or evidence that a material or method does not conform to the requirements of this code, or in order to substantiate claims for alternative materials or methods, the building official shall have the authority to require tests as evidence of compliance to be made at no expense to the jurisdiction. Test methods shall be as specified in this code or by other recognized test standards. In the absence of recognized and accepted test methods, the building official shall approve the testing procedures. Tests shall be performed by an approved agency. Reports of such tests shall be retained by the building official for the period required for retention of public records.

SECTION R105
PERMITS

R105.1 Required. Any owner or owner’s authorized agent who intends to construct, enlarge, alter, repair, move, demolish or change the occupancy of a building or structure, or to erect, install, enlarge, alter, repair, remove, convert or replace any electrical, gas, mechanical or plumbing system, the installation of which is regulated by this code, or to cause any such work to be performed, shall first make application to the building official and obtain the required permit.

R105.2 Work exempt from permit. Exemption from permit requirements of this code 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 laws or ordinances of this jurisdiction. Permits shall not be required for the following:

Building:

1. One-story detached accessory structures, provided that the floor area does not exceed 200 square feet (18.58 m²).
2. Fences not over 7 feet (2134 mm) high.
3. Retaining walls that are not over 4 feet (1219 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.
6. Painting, papering, tiling, carpeting, cabinets, counter tops and similar finish work.

7. Prefabricated swimming pools that are less than 24 inches (610 mm) deep.

8. Swings and other playground equipment.

9. Window awnings supported by an exterior wall that do not project more than 54 inches (1372 mm) from the exterior wall and do not require additional support.

10. 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 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.

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 repairs.** Where equipment replacements and repairs must be performed in an emergency situation, the permit application shall be submitted within the next working business day to the building official.

**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. 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, or rearrangement of parts of a structure affecting the egress requirements; nor shall ordinary repairs include addition to, alteration of, replacement or relocation of any water supply, sewer, drainage, drain leader, gas, soil, waste, vent or similar piping, electric wiring or mechanical or other work affecting public health or general safety.

**R105.2.3 Public service agencies.** A permit shall not be required for the installation, alteration or repair of generation, transmission, distribution, metering or other related equipment that is under the ownership and control of public service agencies by established right.

**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 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 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.

**R105.3.1 Action on application.** The building official shall examine or cause to be examined applications for permits and amendments thereto within a reasonable time after filing. If the application or the construction documents do not conform to the requirements of pertinent laws, the building official shall reject such application in writing stating the reasons therefor. If the building official is satisfied that the proposed work conforms to the requirements of this code and laws and ordinances applicable thereto, the building official shall issue a permit therefor as soon as practicable.

**R105.3.1.1 Determination of substantially improved or substantially damaged existing buildings in flood hazard areas.** For applications for reconstruction, rehabilitation, addition, alteration, repair or other improvement of existing buildings or structures located in a flood hazard area as established by Table R301.2(1), the building official shall examine or cause to be examined the construction documents and shall make a determination with regard to the value of the proposed work. For buildings that have sustained damage of any origin, the value of the proposed work shall include the cost to repair the building or structure to its predamaged condition. If the building official finds that the value of proposed work equals or exceeds 50 percent of the market value of the building or structure before the damage has occurred or the improvement is started, the proposed work is a substantial improvement or repair of substantial damage and the building official shall require existing portions of the entire building or structure to meet the requirements of Section R322.

For the purpose of this determination, a substantial improvement shall mean any repair, reconstruction, rehabilitation, addition or improvement of a building or structure, the cost of which equals or exceeds 50 percent of the market value of the building or structure before the improvement or repair is started. Where the building or structure has sustained substantial damage, repairs necessary to restore the building or structure to its predamaged condition shall be considered substantial improvements regardless of the actual repair work performed. The term shall not include either of the following:

1. Improvements to a building or structure that are required to correct existing health, sanitary or safety code violations identified by the building official and that are the minimum necessary to ensure safe living conditions.

2. Any alteration of a historic building or structure, provided that the alteration will not preclude the continued designation as a historic building or structure. For the purposes of this exclusion, a historic building shall be any of the following:

2.1. Listed or preliminarily determined to be eligible for listing in the National Register of Historic Places.

2.2. Determined by the Secretary of the U.S. Department of Interior as contributing to the historical significance of a registered historic district or a district preliminarily determined to qualify as an historic district.

2.3. Designated as historic under a state or local historic preservation program that is approved by the Department of Interior.

**R105.3.2 Time limitation of application.** 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.** 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 unless the work authorized by such permit is commenced 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.

**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.

**R105.7 Placement of permit.** The building permit or a copy shall be kept on the site of the work until the completion of the project.

**R105.8 Responsibility.** It shall be the duty of every person who performs work for the installation or repair of building, structure, electrical, gas, mechanical or plumbing systems, for which this code is applicable, to comply with this code.

**R105.9 Preliminary inspection.** Before issuing a permit, the building official is authorized to examine or cause to be examined buildings, structures and sites for which an application has been filed.
SECTION R106
CONSTRUCTION DOCUMENTS

R106.1 Submittal documents. Submittal documents consisting of construction documents, and other data shall be submitted in two or more sets with each application for a permit. The construction documents shall be prepared by a registered design professional where required by the statutes of the jurisdiction in which the project is to be constructed. Where special conditions exist, the building official is authorized to require additional construction documents to be prepared by a registered design professional.

Exception: The building official is authorized to waive the submission of construction documents and other data not required to be prepared by a registered design professional if it is found that the nature of the work applied for is such that reviewing of construction documents is not necessary to obtain compliance with this code.

R106.1.1 Information on construction documents. Construction documents shall be drawn upon suitable material. Electronic media documents are permitted to be submitted where approved by the building official. Construction documents shall be of sufficient clarity to indicate the location, nature and extent of the work proposed and show in detail that it will conform to the provisions of this code and relevant laws, ordinances, rules and regulations, as determined by the building official.

R106.1.2 Manufacturer’s installation instructions. Manufacturer’s installation instructions, as required by this code, shall be available on the job site at the time of inspection.

R106.1.3 Information on braced wall design. For buildings and structures utilizing braced wall design, and where required by the building official, braced wall lines shall be identified on the construction documents. Pertinent information including, but not limited to, bracing methods, location and length of braced wall panels and foundation requirements of braced wall panels at top and bottom shall be provided.

R106.1.4 Information for construction in flood hazard areas. For buildings and structures located in whole or in part in flood hazard areas as established by Table R301.2(1), construction documents shall include:

1. Delineation of flood hazard areas, floodway boundaries and flood zones and the design flood elevation, as appropriate.

2. The elevation of the proposed lowest floor, including basement; in areas of shallow flooding (AO Zones), the height of the proposed lowest floor, including basement, above the highest adjacent grade.

3. The elevation of the bottom of the lowest horizontal structural member in coastal high-hazard areas (V Zone) and in Coastal A Zones where such zones are delineated on flood hazard maps identified in Table R301.2(1) or otherwise delineated by the jurisdiction.

4. If design flood elevations are not included on the community’s Flood Insurance Rate Map (FIRM), the building official and the applicant shall obtain and reasonably utilize any design flood elevation and floodway data available from other sources.

R106.2 Site plan or plot plan. The construction documents submitted with the application for permit shall be accompanied by a site plan showing the size and location of new construction and existing structures on the site and distances from lot lines. In the case of demolition, the site plan shall show construction to be demolished and the location and size of existing structures and construction that are to remain on the site or plot. The building official is authorized to waive or modify the requirement for a site plan where the application for permit is for alteration or repair or where otherwise warranted.

R106.3 Examination of documents. The building official shall examine or cause to be examined construction documents for code compliance.

R106.3.1 Approval of construction documents. Where the building official issues a permit, the construction documents shall be approved in writing or by a stamp that states “REVIEWED FOR CODE COMPLIANCE.” One set of construction documents so reviewed shall be retained by the building official. The other set shall be returned to the applicant, shall be kept at the site of work and shall be open to inspection by the building official or a duly authorized representative.

R106.3.2 Previous approvals. This code shall not require changes in the construction documents, construction or designated occupancy of a structure for which a lawful permit has been heretofore issued or otherwise lawfully authorized, and the construction of which has been pursued in good faith within 180 days after the effective date of this code and has not been abandoned.

R106.3.3 Phased approval. The building official is authorized to issue a permit for the construction of foundations or any other part of a building or structure before the construction documents for the whole building or structure have been submitted, provided that adequate information and detailed statements have been filed complying with pertinent requirements of this code. The holder of such permit for the foundation or other parts of a building or structure shall proceed at the holder’s own risk with the building operation and without assurance that a permit for the entire structure will be granted.

R106.4 Amended construction documents. Work shall be installed in accordance with the approved construction documents, and any changes made during construction that are not in compliance with the approved construction documents shall be resubmitted for approval as an amended set of construction documents.

R106.5 Retention of construction documents. One set of approved construction documents shall be retained by the building official for a period of not less than 180 days from date of completion of the permitted work, or as required by state or local laws.
SECTION R107
TEMPORARY STRUCTURES AND USES

R107.1 General. The building official is authorized to issue a permit for temporary structures and temporary uses. Such permits shall be limited to as time of service, but shall not be permitted for more than 180 days. The building official is authorized to grant extensions for demonstrated cause.

R107.2 Conformance. Temporary structures and uses shall conform to the structural strength, fire safety, means of egress, light, ventilation and sanitary requirements of this code as necessary to ensure the public health, safety and general welfare.

R107.3 Temporary power. The building official is authorized to give permission to temporarily supply and use power in part of an electric installation before such installation has been fully completed and the final certificate of completion has been issued. The part covered by the temporary certificate shall comply with the requirements specified for temporary lighting, heat or power in NFPA 70.

R107.4 Termination of approval. The building official is authorized to terminate such permit for a temporary structure or use and to order the temporary structure or use to be discontinued.

SECTION R108
FEES

R108.1 Payment of fees. A permit shall not be valid until the fees prescribed by law have been paid, nor shall an amendment to a permit be released until the additional fee, if any, has been paid.

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

R108.3 Building permit 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.

R108.4 Related fees. The payment of the fee for the construction, alteration, removal or demolition for work done in connection to or concurrently with the work authorized by a building permit shall not relieve the applicant or holder of the permit from the payment of other fees that are prescribed by law.

R108.5 Refunds. The building official is authorized to establish a refund policy.

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 that shall be in addition to the required permit fees.

SECTION R109
INSPECTIONS

R109.1 Types of inspections. For on-site construction, from time to time the building official, upon notification from the permit holder or his agent, shall make or cause to be made any necessary inspections and shall either approve that portion of the construction as completed or shall notify the permit holder or his or her agent wherein the same fails to comply with this code.

R109.1.1 Foundation inspection. Inspection of the foundation shall be made after piers or piers are set or trenches or basement areas are excavated and any required forms erected and any required reinforcing steel is in place and supported prior to the placing of concrete. The foundation inspection shall include excavations for thickened slabs intended for the support of bearing walls, partitions, structural supports, or equipment and special requirements for wood foundations.

R109.1.2 Plumbing, mechanical, gas and electrical systems inspection. Rough inspection of plumbing, mechanical, gas and electrical systems shall be made prior to covering or concealment, before fixtures or appliances are set or installed, and prior to framing inspection.

Exception: Backfilling of ground-source heat pump loop systems tested in accordance with Section M2105.28 prior to inspection shall be permitted.

R109.1.3 Floodplain inspections. For construction in flood hazard areas as established by Table R301.2(1), upon placement of the lowest floor, including basement, and prior to further vertical construction, the building official shall require submission of documentation, prepared and sealed by a registered design professional, of the elevation of the lowest floor, including basement, required in Section R322.

R109.1.4 Frame and masonry inspection. Inspection of framing and masonry construction shall be made after the roof, masonry, framing, firestoppage, drafstoppage and bracing are in place and after the plumbing, mechanical and electrical rough inspections are approved.

R109.1.5 Other inspections. In addition to inspections in Sections R109.1.1 through R109.1.4, the building official shall have the authority to make or require any other inspections to ascertain compliance with this code and other laws enforced by the building official.

R109.1.5.1 Fire-resistance-rated construction inspection. Where fire-resistance-rated construction is required between dwelling units or due to location on property, the building official shall require an inspection of such construction after lathing or gypsum board or gypsum panel products are in place, but before any plaster is applied, or before board or panel joints and fasteners are taped and finished.

R109.1.6 Final inspection. Final inspection shall be made after the permitted work is complete and prior to occupancy.

R109.1.6.1 Elevation documentation. If located in a flood hazard area, the documentation of elevations
required in Section R322.1.10 shall be submitted to the building official prior to the final inspection.

R109.2 Inspection agencies. The building official is authorized to accept reports of approved agencies, provided such agencies satisfy the requirements as to qualifications and reliability.

R109.3 Inspection requests. It shall be the duty of the permit holder or their agent to notify the building official that such work is ready for inspection. It shall be the duty of the person requesting any inspections required by this code to provide access to and means for inspection of such work.

R109.4 Approval required. Work shall not be done beyond the point indicated in each successive inspection without first obtaining the approval of the building official. The building official, upon notification, shall make the requested inspections and shall either indicate the portion of the construction that is satisfactory as completed, or shall notify the permit holder or an agent of the permit holder wherein the same fails to comply with this code. Any portions that do not comply shall be corrected and such portion shall not be covered or concealed until authorized by the building official.

SECTION R110
CERTIFICATE OF OCCUPANCY

R110.1 Use and occupancy. A building or structure shall not be used or occupied, and a change of occupancy or change of use of a building or structure or portion thereof shall not be made, until the building official has issued a certificate of occupancy therefor as provided herein. Issuance of a certificate of occupancy shall not be construed as an approval of a violation of the provisions of this code or 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. Certificates of occupancy are not required for work exempt from permits under Section R105.2.
2. Accessory buildings or structures.

R110.2 Change in use. Changes in the character or use of an existing structure shall not be made except as specified in Sections 407 and 408 of the International Existing Building Code.

R110.3 Certificate issued. After the building official inspects the building or structure and does not find violations of the provisions of this code or other laws that are enforced by the department of building safety, the building official shall issue a certificate of occupancy containing the following:
1. The building permit number.
2. The address of the structure.
3. The name and address of the owner or the owner’s authorized agent.
4. A description of that portion of the structure for which the certificate is issued.
5. A statement that the described portion of the structure has been inspected for compliance with the requirements of this code.
6. The name of the building official.
7. The edition of the code under which the permit was issued.
8. If an automatic sprinkler system is provided and whether the sprinkler system is required.
9. Any special stipulations and conditions of the building permit.

R110.4 Temporary occupancy. The building official is authorized to issue a temporary certificate of 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 occupancy is valid.

R110.5 Revocation. The building official shall, in writing, suspend or revoke a certificate of occupancy issued under the provisions of this code wherever the certificate is issued in error, or on the basis of incorrect information supplied, or where it is determined that the building or structure or portion thereof is in violation of any ordinance or regulation or any of the provisions of this code.

SECTION R111
SERVICE UTILITIES

R111.1 Connection of service utilities. A person shall not make connections from a utility, source of energy, fuel or power to any building or system that is regulated by this code for which a permit is required, until approved by the building official.

R111.2 Temporary connection. The building official shall have the authority to authorize the temporary connection of the building or system to the utility, source of energy, fuel or power.

R111.3 Authority to disconnect service utilities. The building official shall have the authority to authorize disconnection of utility service to the building, structure or system regulated by this code and the referenced codes and standards set forth in Section R102.4 in case of emergency where necessary to eliminate an immediate hazard to life or property or where such utility connection has been made without the approval required by Section R111.1 or R111.2. The building official shall notify the serving utility and where possible the owner or the owner’s authorized agent and occupant of the building, structure or service system of the decision to disconnect prior to taking such action. If not notified prior to disconnection, the owner, the owner’s authorized agent or occupant of the building, structure or service system shall be notified in writing as soon as practical thereafter.
SECTION R112
BOARD OF APPEALS

R112.1 General. In order to 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 Limitations on authority. An application for appeal shall be based on a claim that the true intent of this code or the rules legally adopted thereunder have been incorrectly interpreted, the provisions of this code do not fully apply or an equally good or better form of construction is proposed. The board shall not have authority to waive requirements of this code.

R112.3 Qualifications. The board of appeals shall consist of members who are qualified by experience and training to pass judgment on matters pertaining to building construction and are not employees of the jurisdiction.

R112.4 Administration. The building official shall take immediate action in accordance with the decision of the board.

SECTION R113
VIOLATIONS

R113.1 Unlawful acts. It shall be unlawful for any person, firm or corporation to erect, construct, alter, extend, repair, move, remove, demolish or occupy any building, structure or equipment regulated by this code, or cause same to be done, in conflict with or in violation of any of the provisions of this code.

R113.2 Notice of violation. The building official is authorized to serve a notice of violation or order on the person responsible for the erection, construction, alteration, extension, repair, moving, removal, demolition or occupancy of a building or structure in violation of the provisions of this code, or in violation of a detail statement or a plan approved thereunder, or in violation of a permit or certificate issued under the provisions of this code. Such order shall direct the discontinuance of the illegal action or condition and the abatement of the violation.

R113.3 Prosecution of violation. If the notice of violation is not complied with in the time prescribed by such notice, the building official is authorized to request the legal counsel of the jurisdiction to institute the appropriate proceeding at law or in equity to restrain, correct or abate such violation, or to require the removal or termination of the unlawful occupancy of the building or structure in violation of the provisions of this code or of the order or direction made pursuant thereto.

R113.4 Violation penalties. Any person who violates a provision of this code or fails to comply with any of the requirements thereof or who erects, constructs, alters or repairs a building or structure in violation of the approved construction documents or directive of the building official, or of a permit or certificate issued under the provisions of this code, shall be subject to penalties as prescribed by law.

SECTION R114
STOP WORK ORDER

R114.1 Notice to owner or the owner’s authorized agent. Upon notice from the building official that work on any building or structure is being executed contrary to the provisions of this code or in an unsafe and dangerous manner, such work shall be immediately stopped. The stop work order shall be in writing and shall be given to the owner of the property involved, or to the owner’s authorized agent or to the person performing the work and shall state the conditions under which work will be permitted to resume.

R114.2 Unlawful continuance. Any person who shall continue any work in or about the structure after having been served with a stop work order, except such work as that person is directed to perform to remove a violation or unsafe condition, shall be subject to penalties as prescribed by law.
Part II—Definitions

CHAPTER 2
DEFINITIONS

SECTION R201
GENERAL

R201.1 Scope. Unless otherwise expressly stated, the following words and terms shall, for the purposes of this code, have the meanings indicated in this chapter.

R201.2 Interchangeability. Words used in the present tense include the future; words in the masculine gender include the feminine and neuter; the singular number includes the plural and the plural, the singular.

R201.3 Terms defined in other codes. Where terms are not defined in this code such terms shall have the meanings ascribed in other code publications of the International Code Council.

R201.4 Terms not defined. Where terms are not defined through the methods authorized by this section, such terms shall have ordinarily accepted meanings such as the context implies.

SECTION R202
DEFINITIONS

[RE] ABOVE-GRADE WALL. For the definition applicable in Chapter 11, see Section N1101.6.

[RB] ACCESS (TO). That which enables a device, an appliance or equipment to be reached by ready access or by a means that first requires the removal or movement of a panel, door or similar obstruction.

[RE] ACCESSIBLE. For the definition applicable in Chapter 11, see Section N1101.6.

[RB] ACCESSORY STRUCTURE. A structure that is accessory to and incidental to that of the dwelling(s) and that is located on the same lot.

[RB] ADDITION. An extension or increase in floor area, number of stories or height of a building or structure. For the definition applicable in Chapter 11, see Section N1101.6.

[RB] ADHERED STONE OR MASONRY VENEER. Stone or masonry veneer secured and supported through the adhesion of an approved bonding material applied to an approved backing.

[MP] AIR ADMITTANCE VALVE. A one-way valve designed to allow air into the plumbing drainage system where a negative pressure develops in the piping. This device shall close by gravity and seal the terminal under conditions of zero differential pressure (no flow conditions) and under positive internal pressure.

[RE] AIR BARRIER. For the definition applicable in Chapter 11, see Section N1101.6.

[MP] AIR BREAK (DRAINAGE SYSTEM). An arrangement where a discharge pipe from a fixture, appliance or device drains indirectly into a receptor below the flood-level rim of the receptor and above the trap seal.

[MP] AIR CIRCULATION, FORCED. A means of providing space conditioning utilizing movement of air through ducts or plenums by mechanical means.

[MP] AIR-CONDITIONING SYSTEM. A system that consists of heat exchangers, blowers, filters, supply, exhaust and return-air systems, and shall include any apparatus installed in connection therewith.

[MP] AIR GAP, DRAINAGE SYSTEM. The unobstructed vertical distance through free atmosphere between the outlet of a waste pipe and the flood-level rim of the fixture or receptor into which it is discharging.

[MP] AIR GAP, WATER-DISTRIBUTION SYSTEM. The unobstructed vertical distance between free atmosphere between the lowest opening from a water supply discharge to the flood-level rim of a plumbing fixture.

[RB] AIR-IMPERMEABLE INSULATION. An insulation having an air permanence equal to or less than 0.02 L/s-m² at 75 Pa pressure differential as tested in accordance with ASTM E2178 or E283. For the definition applicable in Chapter 11, see Section N1101.6.