

## 2024 International Residential Code®

First Printing: May 2024

ISBN: 978-1-959851-63-9 (soft-cover edition)

ISBN: 978-1-959851-64-6 (loose-leaf edition)

ISBN:978-1-959851-65-3 (PDF download)

COPYRIGHT © 2024  
by  
INTERNATIONAL CODE COUNCIL, INC.

ALL RIGHTS RESERVED. This 2024 *International Residential Code*® is a copyrighted work owned by the International Code Council, Inc. (“ICC”). Without separate written permission from the ICC, no part of this publication may be reproduced, distributed or transmitted in any form or by any means, including, without limitation, electronic, optical or mechanical means (by way of example, and not limitation, photocopying or recording by or in an information storage and/or retrieval system). For information on use rights and permissions, please contact: ICC Publications, 4051 Flossmoor Road, Country Club Hills, Illinois 60478; 1-888-ICC-SAFE (422-7233); <https://www.iccsafe.org/about/periodicals-and-newsroom/icc-logo-license/>.

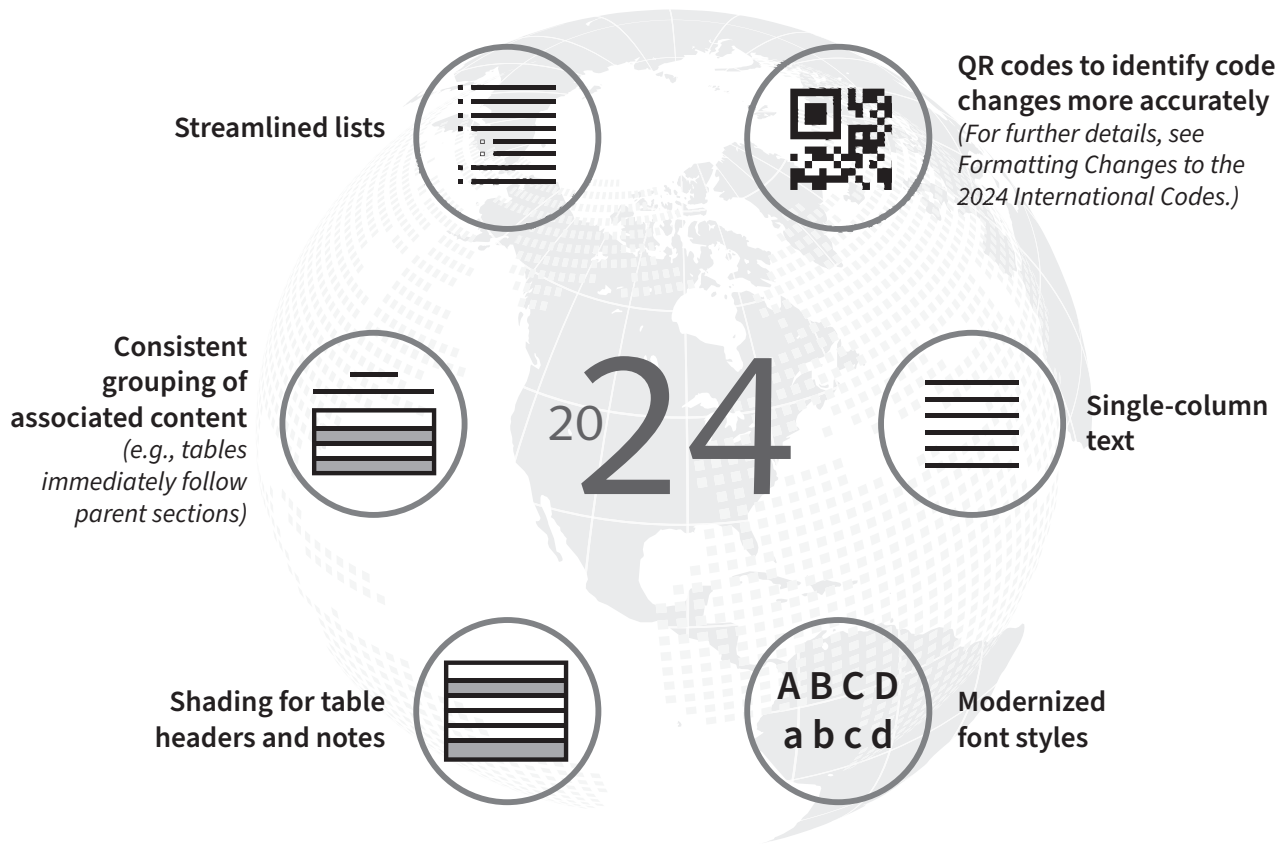
Trademarks: “International Code Council,” the “International Code Council” logo, “ICC,” the “ICC” logo, “International Residential Code,” “IRC” and other names and trademarks appearing in this publication are registered trademarks of the International Code Council, Inc., and/or its licensors (as applicable), and may not be used without permission.

# NEW DESIGN FOR THE 2024 INTERNATIONAL CODES



The 2024 International Codes® (I-Codes®) have undergone substantial formatting changes as part of the digital transformation strategy of the International Code Council® (ICC®) to improve the user experience. The resulting product better aligns the print and PDF versions of the I-Codes with the ICC’s Digital Codes® content.

The changes, promoting a cleaner, more modern look and enhancing readability and sustainability, include:



More information can be found at [iccsafe.org/design-updates](https://iccsafe.org/design-updates).



# PREFACE

## FORMATTING CHANGES TO THE 2024 INTERNATIONAL CODES

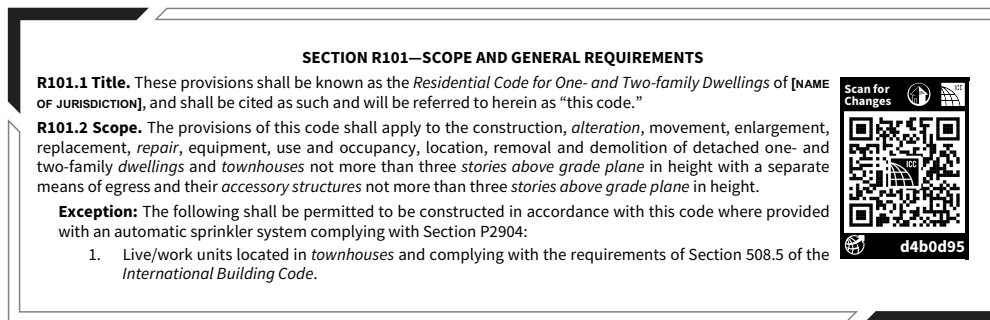
The 2024 International Codes® (I-Codes®) have undergone substantial formatting changes as part of the digital transformation strategy of the International Code Council® (ICC®) to improve the user experience. The resulting product better aligns the print and PDF versions of the I-Codes with the ICC’s Digital Code content. Additional information can be found at [iccsafe.org/design-updates](https://iccsafe.org/design-updates).

### Replacement of Marginal Markings with QR Codes

Through 2021, print editions of the I-Codes identified technical changes from prior code cycles with marginal markings [solid vertical lines for new text, deletion arrows (➔), asterisks for relocations (★)]. The 2024 I-Code print editions replace the marginal markings with QR codes to identify code changes more precisely.

A QR code is placed at the beginning of any section that has undergone technical revision. If there is no QR code, there are no technical changes to that section.

In the following example from the 2024 *International Residential Code*® (IRC®), a QR code indicates there are changes to Section 605 from the 2021 IRC. Note that the change may occur in the main section or in one or more subsections of the main section.



To see the code changes, the user need only scan the QR code with a smart device. If scanning a QR code is not an option, changes can be accessed by entering the 7-digit code beneath the QR code at the end of the following URL: [qr.iccsafe.org/](https://qr.iccsafe.org/) (in the above example, “[qr.iccsafe.org/d4b0d95](https://qr.iccsafe.org/d4b0d95)”). Those viewing the code book via PDF can click on the QR code.

All methods take the user to the appropriate section on ICC’s Digital Codes website, where technical changes from the prior cycle can be viewed. Digital Codes Premium subscribers who are logged in will be automatically directed to the Premium view. All other users will be directed to the Digital Codes Basic free view. Both views show new code language in blue text along with deletion arrows for deleted text and relocation markers for relocated text.

Digital Codes Premium offers additional ways to enhance code compliance research, including revision histories, commentary by code experts and an advanced search function. A full list of features can be found at [codes.iccsafe.org/premium-features](https://codes.iccsafe.org/premium-features).

## ABOUT THE I-CODES

The 2024 I-Codes, published by the ICC, are 15 fully compatible titles, intended to establish provisions that adequately protect public health, safety and welfare; that do not unnecessarily increase construction costs; that do not restrict the use of new materials, products or methods of construction; and that do not give preferential treatment to particular types or classes of materials, products or methods of construction.

The I-Codes are updated on a 3-year cycle to allow for new construction methods and technologies to be incorporated into the codes. Alternative materials, designs and methods not specifically addressed in the I-Code can be approved by the building official where the proposed materials, designs or methods comply with the intent of the provisions of the code.

The I-Codes are used as the basis of laws and regulations in communities across the US and in other countries. They are also used in a variety of nonregulatory settings, including:

- Voluntary compliance programs.
- The insurance industry.
- Certification and credentialing for building design, construction and safety professionals.
- Certification of building and construction-related products.
- Facilities management.
- “Best practices” benchmarks for designers and builders.
- College, university and professional school textbooks and curricula.
- Reference works related to building design and construction.

## Code Development Process

The code development process regularly provides an international forum for building professionals to discuss requirements for building design, construction methods, safety, performance, technological advances and new products. Proposed changes to the I-Codes, submitted by code enforcement officials, industry representatives, design professionals and other interested parties are deliberated through an open code development process in which all interested and affected parties may participate.

Openness, transparency, balance, due process and consensus are the guiding principles of both the ICC Code Development Process and OMB Circular A-119, which governs the federal government's use of private-sector standards. The ICC process is open to anyone without cost. Remote participation is available through *cdpAccess*<sup>®</sup>, the ICC's cloud-based app.

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:

- American Gas Association (AGA)
- American Institute of Architects (AIA)
- American Society of Plumbing Engineers (ASPE)
- International Association of Fire Chiefs (IAFC)
- National Association of Home Builders (NAHB)
- National Association of State Fire Marshals (NASFM)
- National Council of Structural Engineers Association (NCSEA)
- National Multifamily Housing Council (NMHC)
- Plumbing Heating and Cooling Contractors (PHCC)
- Pool and Hot Tub Alliance (PHTA), formerly The Association of Pool and Spa Professionals (APSP)

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 I-Codes are subject to change through future 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 ICC at [iccsafe.org/products-and-services/i-codes/code-development/](https://iccsafe.org/products-and-services/i-codes/code-development/).

While the I-Code development procedure is thorough and comprehensive, the ICC, its members and those participating in the development of the codes expressly disclaim any liability resulting from the publication or use of the I-Codes, or from compliance or noncompliance with their provisions. NO WARRANTY OF ANY KIND, IMPLIED, EXPRESSED OR STATUTORY, IS GIVEN WITH RESPECT TO THE I-CODES. The ICC does not have the power or authority to police or enforce compliance with the contents of the I-Codes.

## Code Development Committee Responsibilities (Letter Designations in Front of Section Numbers)

In each cycle, proposed changes are considered by the Code Development Committee assigned to a specific code or subject matter. Committee Action Hearings result in recommendations regarding a proposal to the voting membership. Where changes to a code section are not considered by that code's own committee, the code section is preceded by a bracketed letter designation identifying a different committee. Bracketed letter designations for the I-Code committees are:

- [A] = Administrative Code Development Committee
- [BE] = IBC—Egress Code Development Committee
- [BF] = IBC—Fire Safety Code Development Committee
- [BG] = IBC—General Code Development Committee
- [BS] = IBC—Structural Code Development Committee
- [E] = Developed under the ICC's Standard Development Process
- [EB] = International Existing Building Code Development Committee
- [F] = International Fire Code Development Committee
- [FG] = International Fuel Gas Code Development Committee
- [M] = International Mechanical Code Development Committee
- [P] = International Plumbing Code Development Committee
- [SP] = International Swimming Pool and Spa Code Development Committee

For the development of the 2027 edition of the I-Codes, the ICC Board of Directors approved a standing motion from the Board Committee on the Long-Term Code Development Process to revise the code development cycle to incorporate two committee action hearings for each code group. This change expands the current process from two independent 1-year cycles to a single continuous 3-year cycle. There will be two groups of code development committees and they will meet in separate years. The current groups will be reworked. With the energy provisions of the *International Energy Conservation Code*<sup>®</sup> (IECC<sup>®</sup>) and Chapter 11 of the *International*

## PREFACE

*Residential Code*® (IRC®) now moved to the Code Council's Standards Development Process, the reduced volume of code changes will be distributed between Groups A and B.

Code change proposals submitted for code sections that have a letter designation in front of them will be heard by the respective committee responsible for such code sections. Because different committees hold Committee Action Hearings in different years, proposals for most codes will be heard by committees in both the 2024 (Group A) and the 2025 (Group B) code development cycles. It is very important that anyone submitting code change proposals understands which code development committee is responsible for the section of the code that is the subject of the code change proposal.

Please visit the ICC website at [iccsafe.org/products-and-services/i-codes/code-development/current-code-development-cycle](https://iccsafe.org/products-and-services/i-codes/code-development/current-code-development-cycle) for further information on the Code Development Committee responsibilities as it becomes available.

### Coordination of the I-Codes

The coordination of technical provisions allows the I-Codes to be used as a complete set of complementary documents. Individual codes can also be used in subsets or as stand-alone documents. Some technical provisions that are relevant to more than one subject area are duplicated in multiple model codes.

### Italicized Terms

Words and terms defined in Chapter 2, Definitions, are italicized where they appear in code text and the Chapter 2 definitions apply. Although care has been taken to ensure applicable terms are italicized, there may be instances where a defined term has not been italicized or where a term is italicized but the definition found in Chapter 2 is not applicable. For example, Chapter 2 of the *International Building Code*® (IBC®) contains a definition for “*Listed*” that is applicable to equipment, products and services. The term “*listed*” is also used in that code to refer to a list of items within the code or within a referenced document. For the latter, the Chapter 2 definition would not be applicable.

### Adoption of International Code Council Codes and Standards

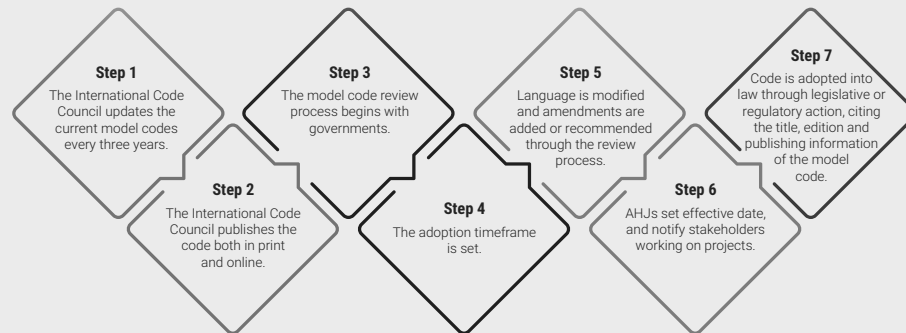
The International Code Council maintains a copyright in all of its codes and standards. Maintaining copyright allows the Code Council to fund its mission through sales of books in both print and digital formats. The Code Council welcomes incorporation by reference of its codes and standards by jurisdictions that recognize and acknowledge the Code Council’s copyright in the codes and standards, and further acknowledge the substantial shared value of the public/private partnership for code development between jurisdictions and the Code Council. By making its codes and standards available for incorporation by reference, the Code Council does not waive its copyright in its codes and standards.

The Code Council’s codes and standards may only be adopted by incorporation by reference in an ordinance passed by the governing body of the jurisdiction. “Incorporation by reference” means that in the adopting ordinance, the governing body cites only the title, edition, relevant sections or subsections (where applicable), and publishing information of the model code or standard, and the actual text of the model code or standard is not included in the ordinance (see graphic, “Adoption of International Code Council Codes and Standards”). The Code Council does not consent to the reproduction of the text of its codes or standards in any ordinance. If the governing body enacts any changes, only the text of those changes or amendments may be included in the ordinance.



## ADOPTION OF INTERNATIONAL CODE COUNCIL CODES AND STANDARDS INCORPORATED BY REFERENCE

**What does “incorporate by reference” mean?** If a governmental agency or authority having jurisdiction (AHJ) over code adoption wishes to adopt a model code for legislative or regulatory purposes, it will enact an ordinance, regulation or law to incorporate by reference (IBR) the relevant code. The actual text of the model code is not included in the law, but the enacting law will include the full text of any changes or amendments enacted by the legislative body of the AHJ.



23-2259

The Code Council also recognizes the need for jurisdictions to make laws accessible to the public. Accordingly, all I-Codes and I-Standards, along with the laws of many jurisdictions, are available to view for free at [codes.iccsafe.org/codes/i-codes](https://codes.iccsafe.org/codes/i-codes). These documents may also be purchased, in both digital and print versions, at [shop.iccsafe.org](https://shop.iccsafe.org).

To facilitate adoption, some I-Code sections contain blanks for fill-in information that needs to be supplied by the adopting jurisdiction as part of the adoption legislation. For example, the IRC contains:

Section R101.1. Insert: **[NAME OF JURISDICTION]**

Table R301.2. Jurisdictions to fill in details as directed by provisions of the code.

Section P2603.5.1. Insert: **[NUMBER OF INCHES IN TWO LOCATIONS]**

For further information or assistance with adoption, including a sample ordinance, jurisdictions should contact the Code Council at [incorporation@iccsafe.org](mailto:incorporation@iccsafe.org).

For a list of frequently asked questions (FAQs) addressing a range of foundational topics about the adoption of model codes by jurisdictions and to learn more about the Code Council’s code adoption resources, scan the QR code or visit [iccsafe.org/code-adoption-resources](https://iccsafe.org/code-adoption-resources).



### INTRODUCTION TO THE INTERNATIONAL RESIDENTIAL CODE

The IRC establishes minimum requirements for one- and two-family dwellings and townhouses using prescriptive provisions. It is founded on broad-based principles that make possible the use of new materials and new building designs. This 2024 edition is fully compatible with all of the International Codes® (I-Codes®) published by the ICC.

The 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 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. Therefore, the IRC contains several references 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.

### **ARRANGEMENT AND FORMAT OF THE 2024 IRC**

The IRC is divided into nine main parts, specifically: Part I—Administrative, Part II—Definitions, Part III—Building Planning and Construction, Part IV—Energy Conservation, Part V—Mechanical, Part VI—Fuel Gas, Part VII—Plumbing, Part VIII—Electrical and Part IX—Referenced Standards. The following provides a brief description of the content of each chapter and appendix of the IRC:

#### **Chapter 1 Scope and Administration.**

Chapter 1 establishes the limits of applicability of the code and describes how the code is to be applied and enforced. The provisions of Chapter 1 establish the authority and duties of the code official appointed by the authority having jurisdiction and also establish the rights and privileges of the design professional, contractor and property owner.

#### **Chapter 2 Definitions.**

Chapter 2 is the repository of the definitions of terms used in the body of the code. 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 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 activity.

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, windborne 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.**

Chapter 17 consists 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. Chapter 24 is applicable to fuel gas appliances.

**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 *International Fuel Gas Code* (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. Chapter 32 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. Chapter 33 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.**

Chapter 34 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 add to or change the meaning of a technical requirement. 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.**

Chapter 36 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.**

Chapter 39 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.**

Chapter 40 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.**

Chapter 42 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.**

Chapter 43 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.**

Chapter 44 lists all of the product and installation standards and codes that are referenced throughout Chapters 1 through 43 and includes identification of the promulgators and the section numbers in which the standards and codes are referenced. As stated in Section 102.4, these standards and codes become an enforceable part of the code (to the prescribed extent of the reference) as if printed in the body of the code.

**Appendix AA Board of Appeals.**

Appendix AA contains the provisions for appeal and the establishment of a board of appeals. The provisions include the application for an appeal, the make-up of the board of appeals and the conduct of the appeal process.

**Appendix AB Permit Fees.**

Appendix AB 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 BA 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 BA are not applicable to the design and construction of manufactured homes. Appendix BA 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 BB Tiny Houses.**

For dwelling units that are 400 square feet (37 m<sup>2</sup>) or less in floor area, excluding lofts, Appendix BB 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 BC Accessory Dwelling Units.**

Appendix BC provides for the design and construction of accessory dwelling units (ADUs), an alternative to two- and multiple-family residential construction that promotes increased housing supply and affordability.

**Appendix BD Home Day Care—R-3 Occupancy.**

Appendix BD 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 BE Radon Control 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 BE contains requirements to mitigate the transfer of radon gases from the soil into the dwelling. The provisions of this Appendix BE 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 BF Patio Covers.**

Appendix BF 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 BG Sound Transmission.**

Appendix BG 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 BG 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 BH Automatic Vehicular Gates.**

Appendix BH 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 BI Light Straw-Clay Construction.**

Appendix BI regulates the use of light straw-lay as a construction material. It is limited in application to nonbearing wall infill systems.

**Appendix BJ Strawbale Construction.**

Appendix BJ 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 BK Cob Construction (Monolithic Adobe).**

Appendix BK provides prescriptive requirements for the use of natural cob (monolithic adobe) as a construction material. It is limited in application to the walls of one-story structures, except where additional engineering is provided.

**Appendix BL Hemp-Lime (Hempcrete) Construction.**

Appendix BL contains requirements for hemp-lime construction. Hemp-lime, commonly referred to as hempcrete, is a nonstructural, biocomposite insulation infill material composed of hemp hurd and a lime-based binder. The benefits of hemp-lime include high thermal performance, low embodied carbon emissions in production, high carbon sequestration in service, healthy living environments and high fire-resistance. These benefits, along with the 2018 United States legalization of hemp as a commercial crop, are driving rapid growth in interest and projects across the US.

**Appendix BM 3D-printed Building Construction.**

Appendix BM provides for the design, construction and inspection of buildings, structures and building elements fabricated by 3D-printed construction techniques.

**Appendix BN Extended Plate Wall Construction.**

Appendix BN contains requirements for extended plate wall (EPW) construction. EPW construction provides a practical compliance option for meeting energy code requirements for above-grade walls using conventional wood-framing materials.

**Appendix BO Existing Buildings and Structures.**

Appendix BO 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 CA Sizing and Capacities of Gas Piping.**

Appendix CA 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 CB Sizing of Venting Systems Serving Appliances Equipped with Draft Hoods, Category I Appliances, and Appliances Listed for Use with Type B Vents.**

Appendix CB 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 CC Recommended Procedure for Safety Inspection of an Existing Appliance Installation.**

Appendix CC 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 CD Piping Standards for Various Applications.**

Appendix CD provides standards for various types of plastic piping products. This appendix is informative and is not part of the code.

**Appendix CE Venting Methods.**

Appendix CE 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. 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 CF Sizing of Water Piping System.**

Appendix CF provides two recognized methods for sizing the water service and water distribution piping for a building. The method under Section CF103 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 CF201 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 CG Nonsewered Sanitation Systems.**

Appendix CG addresses the considerations that need to be taken into account by building officials regarding the placement and installation of nonsewered sanitation systems in buildings. This appendix would permit the installation of these systems and provide an exception to the general requirement in the *International Plumbing Code* and this code that sanitation devices be connected to the building drainage system.

**Appendix CH Private Sewage Disposal.**

Appendix CH 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 NA Reserved.****Appendix NB (RB) Solar-Ready Provisions—Detached One- and Two-Family Dwellings and Townhouses.**

Appendix NB addresses provisions for solar capacity in new structures.

**Appendix NC (RC) Zero Net Energy Residential Building Provisions.**

Appendix NC provides requirements intended to bring about zero net energy consumption in residential buildings.

**Appendix ND (RD) Electric Energy Storage Provisions.**

Appendix ND provides requirements for electric energy storage readiness.

**Appendix NE (RE) Electric Vehicle Charging Infrastructure.**

Appendix NE provides guidance for an authority having jurisdiction wishing to provide electric vehicle readiness provisions.

**Appendix NF (RF) Alternative Building Thermal Envelope Insulation R-value Options.**

The purpose of Appendix NF is to provide expanded *R*-value options for determining compliance with the *U*-factor criteria in Section N1102.

**Appendix NG (RG) 2024 IECC Stretch Code.**

Appendix NG provides requirements for residential buildings intended to lower energy consumption beyond the requirements of the 2024 IECC.

**Appendix NH (RH) Operational Carbon Rating and Energy Reporting.**

Appendix NH provides a means to evaluate a building's greenhouse gas performance in accordance with ANSI/RESNET/ICC 301.

**Appendix NI (RI) On-site Renewable Energy.**

Appendix NI describes requirements for prescriptive solar PV to be installed at the time of construction.

**PREFACE**

**Appendix NJ (RJ) Demand Responsive Controls.**

Appendix NJ provides guidance for demand responsive controls for building appliances and systems.

**Appendix NK (RK) Electric-Ready Residential Building Provisions.**

Appendix NK provides guidance on how to prepare residential buildings to be electric ready.

**Appendix NL (RL) Renewable Energy Infrastructure.**

Appendix NL addresses provisions for solar capacity in new structures.

**Resource A All-Electric Residential Buildings.**

Resource A is not part of this code. It is provided as a resource.

**RELOCATION OF TEXT OR TABLES**

The following table indicates relocation of sections and tables in the 2024 edition of the IRC from the 2021 edition.

<b>RELOCATIONS</b>	
<b>2024 LOCATION</b>	<b>2021 LOCATION</b>
R101.2.1	R102.5
R104.2.2	R104.11
R104.2.3	R104.10
R104.2.3.1	R104.10.1
R104.3.1	R105.3.1.1
R104.6	R104.3
R104.7.2	R104.4
R302.3.4	R302.3.1
R302.15–R302.15.10	R802.1.5–R802.1.5.10
R303(all)	R316(all)
R304(all)	R317(all)
R305(all)	R318(all)
R306(all)	R322(all)
R307(all)	R323(all)
R308(all)	R319(all)
R309(all)	R313(all)
R310(all)	R314(all)
R311(all)	R315(all)
R312(all)	R304(all)
R313(all)	R305(all)
R314(all)	R325(all)
R315(all)	New
R316(all)	R326(all)
R317(all)	R309(all)
R318(all)	R311(all)
R319(all)	R310(all)
R320(all)	R311.7.8.1–311.7.8.6
R321(all)	R312(all)
R322(all)	R320(all)
R323(all)	R321(all)
R324(all)	R308(all)
R325(all)	R303(all)

<b>RELOCATIONS—continued</b>	
<b>2024 LOCATION</b>	<b>2021 LOCATION</b>
R326(all)	R306(all)
R327(all)	R307(all)
R328(all)	R327(all)
R329(all)	R324(all)
R330(all)	R328(all)
R331(all)	R329(all)
R332(all)	R330(all)
N1102.1.6	N1102.4.4
N1102.2.4	N1102.2.3
N1102.2.5	N1102.2.4
N1102.2.5.1	N1102.2.4.1
N1102.2.6	N1102.2.5
N1102.2.7	N1102.2.6
N1102.2.8	N1102.2.7
N1102.2.9	N1102.2.8
N1102.2.9.1	N1102.2.8.1
N1102.2.10	N1102.2.9
N1102.2.10.1	N1102.2.9.1
N1102.2.11	N1102.2.10
N1102.2.11.1	N1102.2.10.1
N1102.2.12	N1102.2.11
N1102.2.13	N1102.2.12
N1102.4	N1102.3
N1102.4.1	N1102.3.1
N1102.4.2	N1102.3.2
N1102.4.3	N1102.3.3
N1102.4.4	N1102.3.4
N1102.4.5	N1102.3.5
N1102.5	N1102.4
N1102.5.1	N1102.4.1
N1102.5.1.1	N1102.4.1.1
Table N1102.5.1.1	Table N1102.4.1.1
N1102.5.1.2	N1102.4.1.2
N1102.5.1.3	N1102.4.1.3
N1102.5.2	N1102.4.2
N1102.5.3	N1102.4.3
N1102.5.4	N1102.4.5
N1102.5.5	N1102.4.6
N1102.6	N1102.5
N1103.3.2	N1103.3.7
N1103.3.3	N1103.3.1
N1103.3.4	N1103.3.2
N1103.3.5	N1103.3.3
N1103.3.5.1	N1103.3.3.1
N1103.3.6	N1103.3.4
N110.3.3.6.1	N1103.3.4.1



<b>RELOCATIONS—continued</b>	
<b>2024 LOCATION</b>	<b>2021 LOCATION</b>
N1103.3.7	N1103.3.5
N1103.3.8	N1103.3.6
N1104.1.5	N1104.1.2
N1105.4.3	N1105.5.3
N1105.5.4	N1105.3.2
N1105.5.4.1	N1105.3.2.1
N1105.5.4.2	N1105.3.2.2
N1106.3	N1106.3.1
N1109.4	N1109.5
N1109.5	N1109.6
N1110.2	N1110.3
N1110.2.1	N1110.3.1
N1110.2.2	N1119.3.2
N1110.2.3	N1110.3.3
N1110.2.4	N1110.3.4
Appendix AA	Appendix AV
Appendix AB	Appendix AL
Appendix BA	Appendix AE
Appendix BB	Appendix AQ
Appendix BC	New
Appendix BD	Appendix AM
Appendix BE	Appendix AF
Appendix BF	Appendix AH
Appendix BG	Appendix AK
Appendix BH	Appendix AO
Appendix BI	Appendix AR
Appendix BJ	Appendix AS
Appendix BK	Appendix AU
Appendix BL	New
Appendix BM	Appendix AW
Appendix BN	New
Appendix BO	Appendix AJ
BO102.2	AJ105.1
BO103(All)	AJ106(All)
BO104(All)	AJ107(All)
BO105(All)	AJ109(All)
BO106(All)	AJ110(All)
BO108(All)	AJ111(All)
Appendix CA	Appendix AA
Appendix CB	Appendix AB
Appendix CC	Appendix AD
Appendix CD	Appendix AG
Appendix CE	Appendix AN
Appendix CF	Appendix AP
Appendix CG	New
Appendix CH	Appendix AI

<b>RELOCATIONS—continued</b>	
<b>2024 LOCATION</b>	<b>2021 LOCATION</b>
Appendix NA	New
Appendix NB	Appendix AT
Appendix NC	Appendix AX
Appendix ND	New
Appendix NE	New
Appendix NF	New
Appendix NG	New
Appendix NH	New
Appendix NI	New
Appendix NJ	New
Appendix NK	New
Appendix NL	New

# CONTENTS

<b>Part I— Administrative</b> .....	<b>26</b>	R322—Accessibility .....	108
<b>CHAPTER 1 SCOPE AND ADMINISTRATION</b> .....	<b>26</b>	R323—Elevators and Platform Lifts .....	109
<i>Part 1—Scope and Application</i> .....	26	R324—Glazing .....	109
R101—Scope and General Requirements .....	26	R325—Light, Ventilation and Heating .....	112
R102—Applicability .....	26	R326—Sanitation .....	113
<i>Part 2—Administration and Enforcement</i> .....	27	R327—Toilet, Bath and Shower Spaces .....	114
R103—Code Compliance Agency .....	27	R328—Swimming Pools, Spas and Hot Tubs .....	114
R104—Duties and Powers of the Building Official .....	27	R329—Solar Energy Systems .....	115
R105—Permits .....	29	R330—Energy Storage Systems .....	116
R106—Construction Documents .....	31	R331—Stationary Engine Generators .....	119
R107—Temporary Structures and Uses .....	32	R332—Stationary Fuel Cell Power Systems .....	119
R108—Fees .....	32	<b>CHAPTER 4 FOUNDATIONS</b> .....	<b>120</b>
R109—Inspections .....	33	R401—General .....	120
R110—Certificate of Occupancy .....	33	R402—Materials .....	121
R111—Service Utilities .....	34	R403—Footings .....	123
R112—Means of Appeals .....	34	R404—Foundation and Retaining Walls .....	146
R113—Violations .....	34	R405—Foundation Drainage .....	165
R114—Stop Work Order .....	35	R406—Foundation Waterproofing and Dampproofing .....	166
<b>Part II— Definitions</b> .....	<b>36</b>	R407—Columns .....	167
<b>CHAPTER 2 DEFINITIONS</b> .....	<b>36</b>	R408—Under-Floor Space .....	167
R201—General .....	36	<b>CHAPTER 5 FLOORS</b> .....	<b>169</b>
R202—Definitions .....	36	R501—General .....	169
<b>Part III— Building Planning and Construction</b> .....	<b>58</b>	R502—Wood Floor Framing .....	169
<b>CHAPTER 3 BUILDING PLANNING</b> .....	<b>58</b>	R503—Floor Sheathing .....	178
R301—Design Criteria .....	58	R504—Pressure Preservative-Treated Wood Floors (On Ground) .....	180
R302—Fire-Resistant Construction .....	80	R505—Cold-Formed Steel Floor Framing .....	180
R303—Foam Plastic .....	88	R506—Concrete Floors (On Ground) .....	192
R304—Protection of Wood and Wood-Based Products Against Decay .....	90	R507—Exterior Decks .....	192
R305—Protection Against Subterranean Termites .....	92	<b>CHAPTER 6 WALL CONSTRUCTION</b> .....	<b>210</b>
R306—Flood-Resistant Construction .....	93	R601—General .....	210
R307—Storm Shelters .....	97	R602—Wood Wall Framing .....	210
R308—Site Address .....	98	R603—Cold-Formed Steel Wall Framing .....	261
R309—Automatic Sprinkler Systems .....	98	R604—Wood Structural Panels .....	301
R310—Smoke Alarms .....	98	R605—Particleboard .....	301
R311—Carbon Monoxide Alarms .....	99	R606—General Masonry Construction .....	301
R312—Minimum Room Areas .....	100	R607—Glass Unit Masonry .....	314
R313—Ceiling Height .....	100	R608—Exterior Concrete Wall Construction .....	315
R314—Mezzanines .....	101	R609—Exterior Windows And Doors .....	380
R315—Sleeping Lofts .....	101	R610—Structural Insulated Panel Wall Construction .....	383
R316—Habitable Attics .....	102	<b>CHAPTER 7 WALL COVERING</b> .....	<b>392</b>
R317—Garages and Carports .....	102	R701—General .....	392
R318—Means of Egress .....	103	R702—Interior Covering .....	392
R319—Emergency Escape and Rescue Openings .....	105	R703—Exterior Wall Covering .....	399
R320—Handrails .....	107	R704—Exterior Soffits and Fascias .....	423
R321—Guards and Window Fall Protection .....	108	R705—BIPV Systems for Exterior Wall Coverings and Fenestration .....	426

<b>CHAPTER 8 ROOF-CEILING CONSTRUCTION.....</b>	<b>427</b>	<b>CHAPTER 13 GENERAL MECHANICAL SYSTEM REQUIREMENTS.....</b>	<b>578</b>
R801—General .....	427	M1301—General.....	578
R802—Wood Roof Framing .....	427	M1302—Approval.....	578
R803—Roof Sheathing.....	454	M1303—Labeling of Appliances.....	578
R804—Cold-formed Steel Roof Framing.....	455	M1304—Type of Fuel.....	578
R805—Ceiling Finishes .....	468	M1305—Appliance Access .....	578
R806—Roof Ventilation.....	468	M1306—Clearances from Combustible Construction .....	579
R807—Attic Access.....	470	M1307—Appliance Installation.....	582
<b>CHAPTER 9 ROOF ASSEMBLIES .....</b>	<b>471</b>	M1308—Mechanical Systems Installation .....	583
R901—General .....	471	<b>CHAPTER 14 HEATING AND COOLING EQUIPMENT AND APPLIANCES.....</b>	<b>584</b>
R902—Fire Classification .....	471	M1401—General.....	584
R903—Weather Protection.....	471	M1402—Central Furnaces .....	584
R904—Materials .....	472	M1403—Heat Pump Equipment.....	584
R905—Requirements For Roof Coverings.....	472	M1404—Refrigeration Cooling Equipment .....	585
R906—Roof Insulation.....	487	M1405—Baseboard Convectors.....	585
R907—Rooftop-Mounted Photovoltaic Panel Systems .....	487	M1406—Radiant Heating Systems.....	585
R908—Reroofing.....	487	M1407—Duct Heaters .....	585
R909—Roof Coatings.....	488	M1408—Vented Floor Furnaces .....	585
<b>CHAPTER 10 CHIMNEYS AND FIREPLACES.....</b>	<b>489</b>	M1409—Vented Wall Furnaces .....	586
R1001—Masonry Fireplaces.....	489	M1410—Vented Room Heaters.....	586
R1002—Masonry Heaters .....	493	M1411—Heating and Cooling Equipment .....	587
R1003—Masonry Chimneys .....	493	M1412—Absorption Cooling Equipment .....	588
R1004—Factory-Built Fireplaces.....	498	M1413—Evaporative Cooling Equipment.....	588
R1005—Factory-Built Chimneys.....	498	M1414—Fireplace Stoves.....	589
R1006—Exterior Air Supply .....	499	M1415—Masonry Heaters .....	589
<b>Part IV— Energy Conservation .....</b>	<b>500</b>	<b>CHAPTER 15 EXHAUST SYSTEMS.....</b>	<b>590</b>
<b>CHAPTER 11 ENERGY EFFICIENCY .....</b>	<b>500</b>	M1501—General.....	590
N1101 (R101)—General.....	500	M1502—Clothes Dryer Exhaust.....	590
N1102 (R402)—Building Thermal Envelope .....	540	M1503—Domestic Cooking Exhaust Equipment.....	590
N1103 (R403)—Systems .....	548	M1504—Exhaust Ducts and Exhaust Openings.....	592
N1104 (R404)—Electrical Power, Lighting and Renewable Energy Systems .....	554	M1505—Mechanical Ventilation.....	593
N1105 (R405)—Simulated Building Performance .....	555	<b>CHAPTER 16 DUCT SYSTEMS .....</b>	<b>595</b>
N1106 (R406)—Energy Rating Index Compliance Alternative.....	562	M1601—Duct Construction .....	595
N1107 (R407)—Tropical Climate Region Compliance Path.....	565	M1602—Return Air.....	598
N1108 (R408)—Additional Efficiency Requirements.....	566	<b>CHAPTER 17 COMBUSTION AIR .....</b>	<b>599</b>
N1109 (R501)—Existing Buildings—General.....	572	M1701—General.....	599
N1110 (R502)—Additions .....	573	<b>CHAPTER 18 CHIMNEYS AND VENTS .....</b>	<b>600</b>
N1111 (R503)—Alterations .....	574	M1801—General.....	600
N1112 (R504)—Repairs .....	575	M1802—Vent Components .....	601
N1113 (R505)—Change of Occupancy or Use.....	576	M1803—Chimney and Vent Connectors .....	601
<b>Part V— Mechanical.....</b>	<b>577</b>	M1804—Vents.....	602
<b>CHAPTER 12 MECHANICAL ADMINISTRATION.....</b>	<b>577</b>	M1805—Masonry and Factory-Built Chimneys.....	603
M1201—General .....	577	<b>CHAPTER 19 SPECIAL APPLIANCES, EQUIPMENT AND SYSTEMS .....</b>	<b>604</b>
M1202—Existing Mechanical Systems.....	577	M1901—Ranges and Ovens.....	604
		M1902—Sauna Heaters .....	604

## CONTENTS

M1903—Stationary Fuel Cell Power Plants . . . . .	604	G2422 (411)—Appliance Connections . . . . .	674
M1904—Gaseous Hydrogen Systems . . . . .	604	G2423 (413)—Compressed Natural Gas Motor Vehicle Fuel-Dispensing Facilities . . . . .	675
<b>CHAPTER 20 BOILERS AND WATER HEATERS . . . . .</b>	<b>605</b>	G2424 (415)—Piping Support Intervals . . . . .	675
M2001—Boilers . . . . .	605	G2425 (501)—General . . . . .	675
M2002—Operating and Safety Controls . . . . .	605	G2426 (502)—Vents . . . . .	677
M2003—Expansion Tanks . . . . .	606	G2427 (503)—Venting of Appliances . . . . .	677
M2004—Water Heaters used for Space Heating . . . . .	606	G2428 (504)—Sizing of Category I Appliance Venting Systems . . . . .	687
M2005—Water Heaters . . . . .	606	G2429 (505)—Direct-Vent, Integral Vent, Mechanical Vent and Ventilation/Exhaust Hood Venting . . . . .	703
M2006—Pool Heaters . . . . .	607	G2430 (506)—Factory-Built Chimneys . . . . .	703
<b>CHAPTER 21 HYDRONIC PIPING . . . . .</b>	<b>608</b>	G2431 (601)—General . . . . .	703
M2101—Hydronic Piping Systems Installation . . . . .	608	G2432 (602)—Decorative Appliances for Installation in Fireplaces . . . . .	703
M2102—Baseboard Convectors . . . . .	612	G2433 (603)—Log Lighters . . . . .	703
M2103—Floor Heating Systems . . . . .	612	G2434 (604)—Vented Gas Fireplaces (Decorative Appliances) . . . . .	703
M2104—Low Temperature Piping . . . . .	612	G2435 (605)—Vented Gas Fireplace Heaters . . . . .	703
M2105—Ground-Source Heat-Pump System Loop Piping . . . . .	613	G2436 (608)—Vented Wall Furnaces . . . . .	703
<b>CHAPTER 22 SPECIAL PIPING AND STORAGE SYSTEMS . . . . .</b>	<b>616</b>	G2437 (609)—Floor Furnaces . . . . .	704
M2201—Oil Tanks . . . . .	616	G2438 (613)—Clothes Dryers . . . . .	704
M2202—Oil Piping, Fitting and Connections . . . . .	616	G2439 (614)—Clothes Dryer Exhaust . . . . .	704
M2203—Installation . . . . .	616	G2440 (615)—Sauna Heaters . . . . .	706
M2204—Oil Pumps and Valves . . . . .	617	G2441 (617)—Pool and Spa Heaters . . . . .	706
<b>CHAPTER 23 SOLAR THERMAL ENERGY SYSTEMS . . . . .</b>	<b>618</b>	G2442 (618)—Forced-Air Warm-Air Furnaces . . . . .	706
M2301—Solar Thermal Energy Systems . . . . .	618	G2443 (619)—Conversion Burners . . . . .	707
<b>Part VI— Fuel Gas . . . . .</b>	<b>620</b>	G2444 (620)—Unit Heaters . . . . .	707
<b>CHAPTER 24 FUEL GAS . . . . .</b>	<b>620</b>	G2445 (621)—Unvented Room Heaters . . . . .	707
G2401 (101)—General . . . . .	620	G2446 (622)—Vented Room Heaters . . . . .	708
G2402 (201)—General . . . . .	620	G2447 (623)—Cooking Appliances . . . . .	708
G2403 (202)—General Definitions . . . . .	620	G2448 (624)—Water Heaters . . . . .	708
G2404 (301)—General . . . . .	627	G2449 (627)—Air-Conditioning Appliances . . . . .	708
G2405 (302)—Structural Safety . . . . .	627	G2450 (628)—Illuminating Appliances . . . . .	709
G2406 (303)—Appliance Location . . . . .	628	G2451 (630)—Infrared Radiant Heaters . . . . .	709
G2407 (304)—Combustion, Ventilation and Dilution Air . . . . .	628	G2452 (631)—Boilers . . . . .	709
G2408(305)—Installation . . . . .	632	G2453 (635)—Outdoor Decorative Appliances . . . . .	709
G2409 (308)—Clearance Reduction . . . . .	633	<b>PART VII PLUMBING . . . . .</b>	<b>710</b>
G2410 (309)—Electrical . . . . .	636	<b>CHAPTER 25 PLUMBING ADMINISTRATION . . . . .</b>	<b>710</b>
G2411 (310)—Electrical Bonding . . . . .	636	P2501—General . . . . .	710
G2412 (401)—General . . . . .	636	P2502—Existing Plumbing Systems . . . . .	710
G2413 (402)—Pipe Sizing . . . . .	637	P2503—Inspection and Tests . . . . .	710
G2414 (403)—Piping Materials . . . . .	665	<b>CHAPTER 26 GENERAL PLUMBING REQUIREMENTS . . . . .</b>	<b>712</b>
G2415 (404)—Piping System Installation . . . . .	667	P2601—General . . . . .	712
G2416 (405)—Piping Bends and Changes in Direction . . . . .	669	P2602—Individual Water Supply and Sewage Disposal . . . . .	712
G2417 (406)—Inspection, Testing and Purging . . . . .	669	P2603—Structural and Piping Protection . . . . .	712
G2418 (407)—Piping Support . . . . .	672	P2604—Trenching and Backfilling . . . . .	713
G2419 (408)—Drips and Sloped Piping . . . . .	672	P2605—Support . . . . .	713
G2420 (409)—Shutoff Valves . . . . .	672	P2606—Penetrations . . . . .	714
G2421 (410)—Flow Controls . . . . .	673	P2607—Waterproofing of Openings . . . . .	714

P2608—Workmanship . . . . .	714	<b>CHAPTER 30 SANITARY DRAINAGE . . . . .</b>	<b>757</b>
P2609—Materials Evaluation and Listing . . . . .	714	P3001—General . . . . .	757
<b>CHAPTER 27 PLUMBING FIXTURES . . . . .</b>	<b>716</b>	P3002—Materials . . . . .	757
P2701—Fixtures, Faucets and Fixture Fittings . . . . .	716	P3003—Joints and Connections . . . . .	759
P2702—Fixture Accessories . . . . .	717	P3004—Determining Drainage Fixture Units . . . . .	761
P2703—Tail Pieces . . . . .	717	P3005—Drainage System . . . . .	762
P2704—Slip-Joint Connections . . . . .	717	P3006—Sizing of Drain Pipe Offsets . . . . .	765
P2705—Installation . . . . .	717	P3007—Sumps And Ejectors . . . . .	765
P2706—Waste Receptors . . . . .	717	P3008—Backwater Valves . . . . .	766
P2707—Directional Fittings . . . . .	718	P3009—Graywater Soil Absorption Systems . . . . .	767
P2708—Showers . . . . .	718	P3010—Replacement of Underground Building Sewers and Building Drains by Pipe Bursting Methods . . . . .	769
P2709—Shower Receptors . . . . .	718	P3011—Relining of Building Sewers and Building Drains . . . . .	769
P2710—Shower Walls . . . . .	719	<b>CHAPTER 31 VENTS . . . . .</b>	<b>771</b>
P2711—Lavatories . . . . .	719	P3101—Vent Systems . . . . .	771
P2712—Water Closets . . . . .	719	P3102—Vent Stacks and Stack Vents . . . . .	771
P2713—Bathtubs . . . . .	720	P3103—Vent Terminals . . . . .	771
P2714—Sinks . . . . .	720	P3104—Vent Connections and Grades . . . . .	772
P2715—Laundry Tubs . . . . .	720	P3105—Fixture Vents . . . . .	772
P2716—Food-Waste Disposer . . . . .	720	P3106—Individual Vent . . . . .	772
P2717—Dishwashing Machines . . . . .	720	P3107—Common Vent . . . . .	772
P2718—Clothes Washing Machine . . . . .	720	P3108—Wet Venting . . . . .	773
P2719—Floor Drains . . . . .	721	P3109—Waste Stack Vent . . . . .	774
P2720—Whirlpool Bathtubs . . . . .	721	P3110—Circuit Venting . . . . .	774
P2721—Bidet Installations . . . . .	721	P3111—Combination Waste and Vent System . . . . .	774
P2722—Fixture Fitting . . . . .	721	P3112—Island Fixture Venting . . . . .	775
P2723—Macerating Toilet Systems . . . . .	721	P3113—Vent Pipe Sizing . . . . .	775
P2724—Specialty Temperature Control Devices and Valves . . . . .	721	P3114—Air Admittance Valves . . . . .	776
P2725—Nonliquid Saturated Treatment Systems . . . . .	721	<b>CHAPTER 32 TRAPS . . . . .</b>	<b>777</b>
<b>CHAPTER 28 WATER HEATERS . . . . .</b>	<b>722</b>	P3201—Fixture Traps . . . . .	777
P2801—General . . . . .	722	<b>CHAPTER 33 STORM DRAINAGE . . . . .</b>	<b>779</b>
P2802—Solar Water Heating Systems . . . . .	722	P3301—General . . . . .	779
P2803—Water Heaters used for Space Heating . . . . .	723	P3302—Subsoil Drains . . . . .	779
P2804—Relief Valves . . . . .	723	P3303—Sumps and Pumping Systems . . . . .	779
<b>CHAPTER 29 WATER SUPPLY AND DISTRIBUTION . . . . .</b>	<b>724</b>	<b>Part VIII— Electrical . . . . .</b>	<b>780</b>
P2901—General . . . . .	724	<b>CHAPTER 34 GENERAL REQUIREMENTS . . . . .</b>	<b>780</b>
P2902—Protection of Potable Water Supply . . . . .	725	E3401—General . . . . .	780
P2903—Water Supply System . . . . .	728	E3402—Building Structure Protection . . . . .	781
P2904—Dwelling Unit Automatic Sprinkler Systems . . . . .	732	E3403—Inspection and Approval . . . . .	781
P2905—Heated Water Distribution Systems . . . . .	744	E3404—General Equipment Requirements . . . . .	781
P2906—Materials, Joints and Connections . . . . .	744	E3405—Equipment Location and Clearances . . . . .	783
P2907—Changes in Direction . . . . .	748	E3406—Electrical Conductors and Connections . . . . .	785
P2908—Support . . . . .	748	E3407—Conductor and Terminal Identification . . . . .	787
P2909—Drinking Water Treatment Units . . . . .	748	<b>CHAPTER 35 ELECTRICAL DEFINITIONS . . . . .</b>	<b>789</b>
P2910—Nonpotable Water Systems . . . . .	748	E3501—General . . . . .	789
P2911—On-site Nonpotable Water Reuse Systems . . . . .	751		
P2912—Nonpotable Rainwater Collection and Distribution Systems . . . . .	753		
P2913—Reclaimed Water Systems . . . . .	755		

**CONTENTS**

<b>CHAPTER 36 SERVICES</b> . . . . .	<b>795</b>	<b>CHAPTER 42 SWIMMING POOLS</b> . . . . .	<b>871</b>
E3601—General Services . . . . .	795	E4201—General . . . . .	871
E3602—Service Size and Rating . . . . .	796	E4202—Wiring Methods for Pools, Spas, Hot Tubs and Hydromassage Bathtubs . . . . .	871
E3603—Service, Feeder and Grounding Electrode Conductor Sizing . . . . .	796	E4203—Equipment Location and Clearances . . . . .	872
E3604—Overhead Service and Service-Entrance Conductor Installation . . . . .	798	E4204—Equipotential Bonding . . . . .	874
E3605—Service-Entrance Conductors . . . . .	800	E4205—Bonding and Grounding . . . . .	877
E3606—Service Equipment—General . . . . .	801	E4206—Equipment Installation . . . . .	878
E3607—System Grounding . . . . .	801	E4207—Storable Swimming Pools, Storable Spas and Storable Hot Tubs . . . . .	881
E3608—Grounding Electrode System . . . . .	802	E4208—Spas and Hot Tubs . . . . .	881
E3609—Bonding . . . . .	803	E4209—Hydromassage Bathtubs . . . . .	882
E3610—Grounding Electrode Conductors . . . . .	805		
E3611—Grounding Electrode Conductor Connection to the Grounding Electrodes . . . . .	805	<b>CHAPTER 43 CLASS 2 REMOTE-CONTROL, SIGNALING AND POWER-LIMITED CIRCUITS</b> . . . . .	<b>883</b>
		E4301—General . . . . .	883
<b>CHAPTER 37 BRANCH CIRCUIT AND FEEDER REQUIREMENTS</b> . . . . .	<b>807</b>	E4302—Power Sources . . . . .	883
E3701—General . . . . .	807	E4303—Wiring Methods . . . . .	883
E3702—Branch Circuit Ratings . . . . .	807	E4304—Installation Requirements . . . . .	884
E3703—Required Branch Circuits . . . . .	809	<i>Part IX—Referenced Standards</i> . . . . .	<b>886</b>
E3704—Feeder Requirements . . . . .	810	<b>CHAPTER 44 REFERENCED STANDARDS</b> . . . . .	<b>886</b>
E3705—Conductor Sizing and Overcurrent Protection . . . . .	811		
E3706—Panelboards . . . . .	815	<b>APPENDIX AA BOARD OF APPEALS</b> . . . . .	<b>923</b>
		AA101—General . . . . .	923
<b>CHAPTER 38 WIRING METHODS</b> . . . . .	<b>817</b>	<b>APPENDIX AB PERMIT FEES</b> . . . . .	<b>925</b>
E3801—General Requirements . . . . .	817	AB101—General . . . . .	925
E3802—Above-Ground Installation Requirements . . . . .	818	<b>APPENDIX AC RESERVED</b> . . . . .	<b>926</b>
E3803—Underground Installation Requirements . . . . .	820		
<b>CHAPTER 39 POWER AND LIGHTING DISTRIBUTION</b> . . . . .	<b>823</b>	<b>APPENDIX BA MANUFACTURED HOUSING USED AS DWELLINGS</b> . . . . .	<b>927</b>
E3901—Receptacle Outlets . . . . .	823	BA101—Scope . . . . .	927
E3902—Ground-Fault and Arc-Fault Circuit-Interrupter Protection . . . . .	827	BA102—Application to Existing Manufactured Homes and Building Service Equipment . . . . .	927
E3903—Lighting Outlets . . . . .	829	BA103—Definitions . . . . .	928
E3904—General Installation Requirements . . . . .	830	BA104—Permits . . . . .	928
E3905—Boxes, Conduit Bodies and Fittings . . . . .	846	BA105—Application for Permit . . . . .	928
E3906—Installation of Boxes, Conduit Bodies and Fittings . . . . .	850	BA106—Permits Issuance . . . . .	929
E3907—Cabinets and Panelboards . . . . .	852	BA107—Fees . . . . .	929
E3908—Grounding and Bonding . . . . .	855	BA108—Inspections . . . . .	930
E3909—Flexible Cords and Flexible Cables . . . . .	859	BA109—Special Inspections . . . . .	931
		BA110—Utility Service . . . . .	931
<b>CHAPTER 40 DEVICES AND LUMINAIRES</b> . . . . .	<b>860</b>	BA111—Occupancy Classification . . . . .	931
E4001—Switches . . . . .	860	BA112—Location on Property . . . . .	931
E4002—Receptacles . . . . .	862	BA113—Design . . . . .	931
E4003—Luminaires . . . . .	864	BA114—Foundation Systems . . . . .	932
E4004—Luminaire Installation . . . . .	866	BA115—Skirting and Perimeter Enclosures . . . . .	932
E4005—Track Lighting . . . . .	867	BA116—Structural Additions . . . . .	932
		BA117—Building Service Equipment . . . . .	932
<b>CHAPTER 41 APPLIANCE INSTALLATION</b> . . . . .	<b>868</b>	BA118—Exits . . . . .	932
E4101—General . . . . .	868		

BA119—Occupancy, Fire Safety and Energy Conservation Standards . . . . .	933	BH102—Definition . . . . .	954
BA120—Special Requirements for Foundation Systems . . . . .	933	BH103—Automatic Vehicular Gates . . . . .	954
BA121—Footings and Foundations . . . . .	933	BH104—Referenced Standards . . . . .	954
BA122—Pier Construction . . . . .	933	<b>APPENDIX BI LIGHT STRAW-CLAY CONSTRUCTION . . . . .</b>	<b>955</b>
BA123—Height Of Piers . . . . .	933	BI101—General . . . . .	955
BA124—Anchorage Installations . . . . .	933	BI102—Definitions . . . . .	955
BA125—Ties, Materials and Installation . . . . .	934	BI103—Nonbearing Light Straw-Clay Construction . . . . .	955
BA126—Referenced Standards . . . . .	934	BI104—Thermal Performance . . . . .	958
<b>APPENDIX BB TINY HOUSES . . . . .</b>	<b>935</b>	BI105—Referenced Standards . . . . .	959
BB101—General . . . . .	935	<b>APPENDIX BJ STRAWBALE CONSTRUCTION . . . . .</b>	<b>960</b>
BB102—Definitions . . . . .	935	BJ101—General . . . . .	960
BB103—Ceiling Height . . . . .	935	BJ102—Definitions . . . . .	961
BB104—Lofts . . . . .	935	BJ103—Bales . . . . .	962
BB105—Emergency Escape and Rescue Openings . . . . .	936	BJ104—Finishes . . . . .	963
BB106—Energy Conservation . . . . .	936	BJ105—Strawbale Walls—General . . . . .	964
<b>APPENDIX BC ACCESSORY DWELLING UNITS (ADU) . . . . .</b>	<b>937</b>	BJ106—Strawbale Walls—Structural . . . . .	968
BC101—General . . . . .	937	BJ107—Fire Resistance . . . . .	974
BC102—Definitions . . . . .	937	BJ108—Thermal Insulation . . . . .	974
BC103—Permits . . . . .	937	BJ109—Referenced Standards . . . . .	974
BC104—ADU Planning . . . . .	937	<b>APPENDIX BK COB CONSTRUCTION (MONOLITHIC ADOBE) . . . . .</b>	<b>976</b>
BC105—Utilities . . . . .	938	BK101—General . . . . .	976
<b>APPENDIX BD HOME DAY CARE OCCUPANCY . . . . .</b>	<b>939</b>	BK102—Definitions . . . . .	977
BD101—General . . . . .	939	BK103—Materials, Mixing and Installation . . . . .	977
BD102—Definition . . . . .	939	BK104—Finishes . . . . .	978
BD103—Means of Egress . . . . .	939	BK105—Cob Walls—General . . . . .	979
BD104—Smoke Detection . . . . .	940	BK106—Cob Walls—Structural . . . . .	981
<b>APPENDIX BE RADON CONTROL METHODS . . . . .</b>	<b>941</b>	BK107—Cob Floors . . . . .	993
BE101—Scope . . . . .	941	BK108—Fire Resistance . . . . .	993
BE102—Definitions . . . . .	946	BK109—Thermal Performance . . . . .	993
BE103—Requirements . . . . .	946	BK110—Referenced Standards . . . . .	994
BE104—Testing . . . . .	949	<b>APPENDIX BL HEMP-LIME (HEMPCRETE) CONSTRUCTION . . . . .</b>	<b>995</b>
<b>APPENDIX BF PATIO COVERS . . . . .</b>	<b>950</b>	BL101—General . . . . .	995
BF101—General . . . . .	950	BL102—Definitions . . . . .	995
BF102—Definition . . . . .	950	BL103—Hemp-Lime Construction . . . . .	996
BF103—Exterior Walls and Openings . . . . .	950	BL104—Finishes . . . . .	1001
BF104—Height . . . . .	950	BL105—Fire Resistance . . . . .	1002
BF105—Structural Provisions . . . . .	950	BL106—Thermal Performance . . . . .	1002
BF106—Special Provisions for Aluminum Screen Enclosures in Hurricane-Prone Regions . . . . .	950	BL107—Mechanical Performance . . . . .	1003
<b>APPENDIX BG SOUND TRANSMISSION . . . . .</b>	<b>953</b>	BL108—Referenced Standards . . . . .	1003
BG101—General . . . . .	953	<b>APPENDIX BM 3D-PRINTED BUILDING CONSTRUCTION . . . . .</b>	<b>1004</b>
BG102—Airborne Sound . . . . .	953	BM101—General . . . . .	1004
BG103—Structural-Borne Sound . . . . .	953	BM102—Definitions . . . . .	1004
BG104—Referenced Standards . . . . .	953	BM103—Building Design . . . . .	1004
<b>APPENDIX BH AUTOMATIC VEHICULAR GATES . . . . .</b>	<b>954</b>	BM104—Building Construction . . . . .	1004
BH101—General . . . . .	954	BM105—Special Inspections . . . . .	1004



**CONTENTS**

BM106—Referenced Standards . . . . .1005

**APPENDIX BN EXTENDED PLATE WALL CONSTRUCTION. . . . . 1006**

BN101—General . . . . .1006

BN102—Construction Requirements . . . . .1006

**APPENDIX BO EXISTING BUILDINGS AND STRUCTURES . . . . . 1010**

BO101—Purpose and Intent. . . . .1010

BO102—Compliance . . . . .1010

BO103—Definitions . . . . .1011

BO104—Repairs . . . . .1011

BO105—Alterations . . . . .1011

BO106—Addition. . . . .1013

BO107—Relocated Buildings . . . . .1013

BO108—Referenced Standards . . . . .1014

**APPENDIX CA SIZING AND CAPACITIES OF GAS PIPING. . . . . 1015**

CA101—General Piping Considerations. . . . .1015

CA102—Description of Tables . . . . .1015

CA103—Use of Capacity Tables . . . . .1018

CA104—Use of Sizing Equations . . . . .1020

CA105—Pipe and Tube Diameters . . . . .1021

CA106—Examples of Piping System Design and Sizing . . .1022

**APPENDIX CB SIZING OF VENTING SYSTEMS SERVING APPLIANCES EQUIPPED WITH DRAFT HOODS, CATEGORY I APPLIANCES AND APPLIANCES LISTED FOR USE WITH TYPE B VENTS . . . . . 1028**

CB101—Examples Using Single-Appliance Venting Tables. . . . .1028

CB102—Examples Using Common Venting Tables . . . . .1032

**APPENDIX CC RECOMMENDED PROCEDURE FOR SAFETY INSPECTION OF AN EXISTING APPLIANCE INSTALLATION . . . . . 1042**

CC101—General . . . . .1042

CC102—Occupant and Inspector Safety . . . . .1042

CC103—Gas Piping and Connections Inspections. . . . .1043

CC104—Inspections to be Performed with the Appliance Not Operating . . . . .1043

CC105—Inspections to be Performed with the Appliance Operating . . . . .1044

CC106—Appliance-Specific Inspections . . . . .1045

**APPENDIX CD PIPING STANDARDS FOR VARIOUS APPLICATIONS. . . . . 1048**

CD101—Plastic Piping Standards . . . . .1048

CD102—Referenced Standards. . . . .1051

**APPENDIX CE VENTING METHODS. . . . . 1053**

CE101—Venting Methods . . . . .1053

**APPENDIX CF SIZING OF WATER PIPING SYSTEM . . . . . 1059**

CF101—General . . . . .1059

CF102—Information Required. . . . .1059

CF103—Selection of Pipe Size. . . . .1059

CF201—Selection of Pipe Size. . . . .1074

**APPENDIX CG NONSEWERED SANITATION SYSTEMS . . 1078**

CG101—General . . . . .1078

CG102—Definitions . . . . .1078

CG103—Installation. . . . .1078

CG104—Manual Required . . . . .1078

CG105—System Output . . . . .1078

CG106—Referenced Standards. . . . .1078

**APPENDIX CH PRIVATE SEWAGE DISPOSAL. . . . . 1080**

CH101—General . . . . .1080

**APPENDIX NA RESERVED. . . . . 1081**

**APPENDIX NB SOLAR-READY PROVISIONS—DETACHED ONE- AND TWO-FAMILY DWELLINGS AND TOWNHOUSES. . . . . 1082**

NB101 (RB101)—Scope. . . . .1082

NB102 (RB102)—General Definition. . . . .1082

NB103 (RB103)—Solar-Ready Zone . . . . .1082

**APPENDIX NC ZERO NET ENERGY RESIDENTIAL BUILDING PROVISIONS . . . . . 1083**

NC101 (RC101)—Compliance . . . . .1083

NC102 (RC102)—General Definitions. . . . .1083

NC103 (RC103)—Zero Net Energy Residential Buildings . . . . .1083

NC104 (RC104)—Referenced Standards . . . . .1084

**APPENDIX ND ELECTRIC ENERGY STORAGE PROVISIONS . . . . . 1085**

ND101 (RD101)—Scope. . . . .1085

ND102 (RD102)—General Definition. . . . .1085

ND103 (RD103)—Electrical Energy Storage . . . . .1085

**APPENDIX NE ELECTRIC VEHICLE CHARGING INFRASTRUCTURE . . . . . 1086**

NE101 (RE101)—Electric Vehicle Power Transfer. . . . .1086

**APPENDIX NF ALTERNATIVE BUILDING THERMAL ENVELOPE INSULATION R-VALUE OPTIONS. . . . . 1088**

NF101 (RF101)—General. . . . .1088

NF102 (RF102)—Above-Grade Wall Assemblies. . . . .1088

NF103 (RF103)—Roof And Ceiling Assemblies—Reserved . . . . .1093

NF104 (RF104)—Floor Assemblies—Reserved . . . . .1093

NF105 (RF105)—Basement and Crawl Space Walls . . . . .1093

NF106 (RF106)—Slabs-on-Grade . . . . .1094

**APPENDIX NG 2024 IECC STRETCH CODE .....1096**  
 NG101 (RG101)—Compliance .....1096

**APPENDIX NH OPERATIONAL CARBON RATING AND ENERGY REPORTING.....1098**  
 NH101 (RH101)—General Definitions.....1098  
 NH102 (RH102)—Compliance .....1098

**APPENDIX NI ON-SITE RENEWABLE ENERGY..... 1100**  
 NI101 (RI101)—General.....1100  
 NI102 (RI102)—General Definitions .....1100  
 NI103 (RI103)—On-Site Renewable Energy.....1100

**APPENDIX NJ DEMAND RESPONSIVE CONTROLS.....1102**  
 NJ101 (RJ101)—Demand Responsive Water Heating. ....1102  
 NJ102 (RJ102)—Referenced Standards.....1102

**APPENDIX NK ELECTRIC-READY RESIDENTIAL BUILDING PROVISIONS .....1103**  
 NK101 (RK101)—Electric Readiness.....1103

**APPENDIX NL RENEWABLE ENERGY INFRASTRUCTURE .....1104**  
 NL101 (RL101)—Renewable Energy Infrastructure.....1104

**INDEX .....1106**

**RESOURCE A ALL-ELECTRIC RESIDENTIAL BUILDINGS .....1115**  
 A101 (RRA101)—General.....1115  
 A102 (RRA102)—General Definitions .....1115  
 A103 (RRA103)—All-Electric Residential Buildings .....1115