

2024 International Fire Code®

First Printing: October 2023

ISBN: 978-1-959851-66-0 (soft-cover edition)

ISBN: 978-1-959851-67-7 (loose-leaf edition)

ISBN: 978-1-959851-68-4 (PDF download)

COPYRIGHT © 2023
by
INTERNATIONAL CODE COUNCIL, INC.

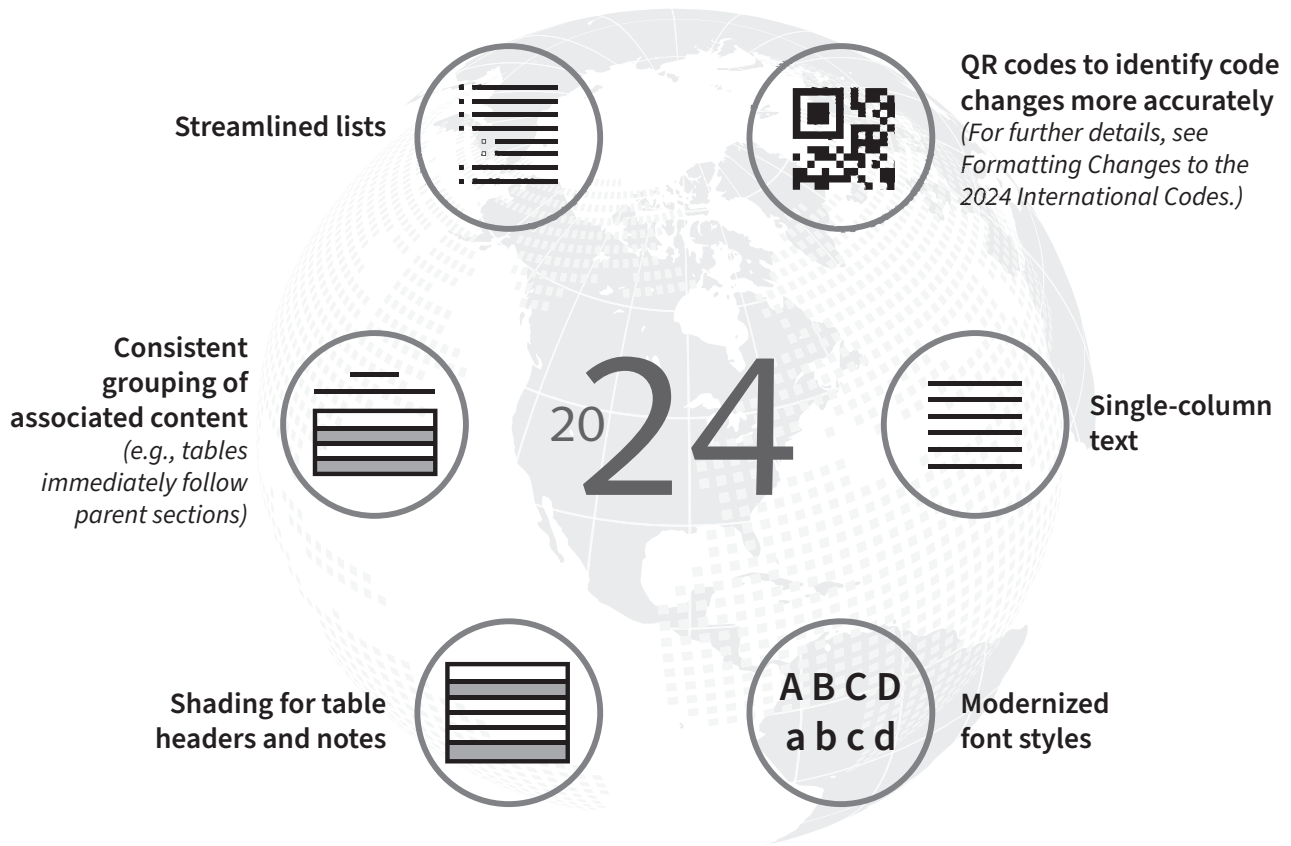
ALL RIGHTS RESERVED. This 2024 *International Fire Code*® is a copyrighted work owned by the International Code Council, Inc. (“ICC”). Without separate written permission from the ICC, no part of this publication may be reproduced, distributed or transmitted in any form or by any means, including, without 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 Fire Code,” “IFC” 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.



PREFACE

FORMATTING CHANGES TO THE 2024 INTERNATIONAL CODES

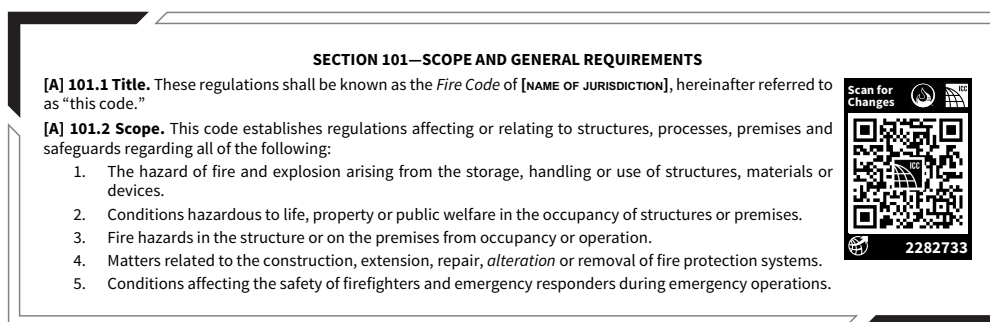
The 2024 International Codes® (I-Codes®) have undergone substantial formatting changes as part of the digital transformation strategy of the International Code Council® (ICC®) to improve the user experience. The resulting product better aligns the print and PDF versions of the I-Codes with the ICC’s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

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 Fire Code*® (IFC®), a QR code indicates there are changes to Section 101 from the 2021 IFC. 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/ (in the above example, “qr.iccsafe.org/2282733”). 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.

ACCESSING ADDITIONAL FEATURES VIA REGISTRATION OF BOOK

Beginning with the 2024 *International Mechanical Code*® (IMC®) and the 2024 *International Plumbing Code* (IPC®), users will be able to validate the authenticity of their book and register it with the ICC to receive incentives. Digital Codes Premium (codes.iccsafe.org) provides advanced features and exclusive content to enhance code compliance. To validate and register, the user will tap the ICC tag (pictured here and located on the front cover) with a near-field communication (NFC) compatible device. Visit iccsafe.org/nfc for more information and troubleshooting tips regarding NFC tag technology.



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*[®], 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/.

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*® (IECC®) and Chapter 11 of the *International 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 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.

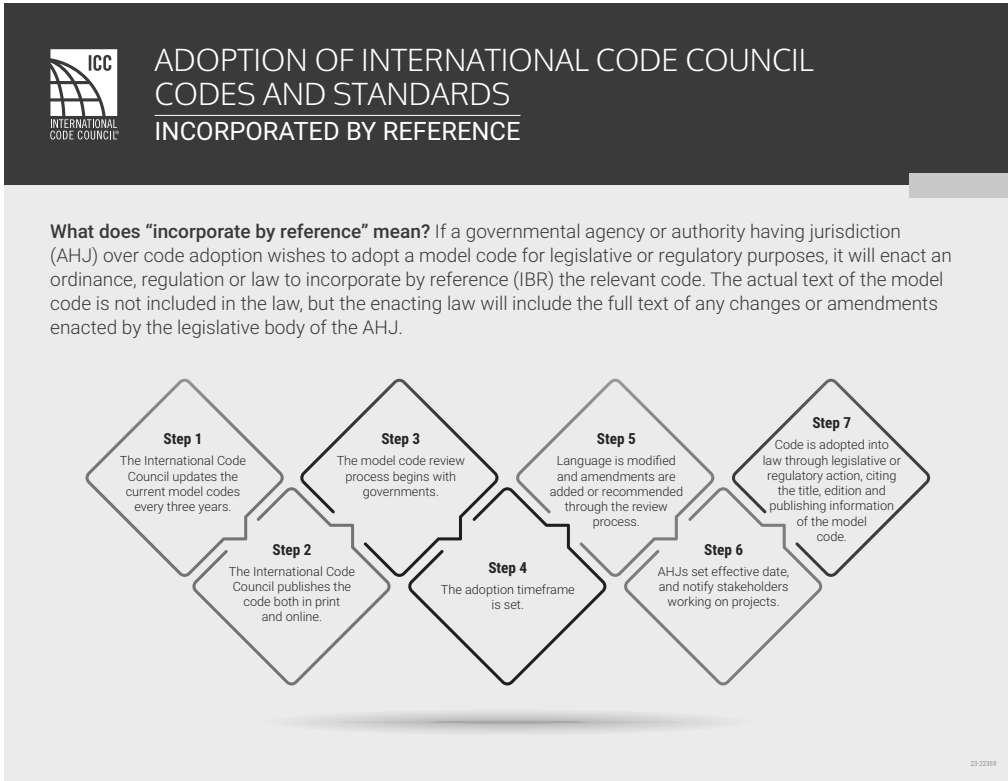
Italicized Terms

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 format. 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.



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. These documents may also be purchased, in both digital and print versions, at 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 IFC contains:

Section 101.1. Insert: **[NAME OF JURISDICTION]**

Section 112.4. Insert: **[OFFENSE, DOLLAR AMOUNT, NUMBER OF DAYS]**

Section 1103.5.3. Insert: **[DATE BY WHICH SPRINKLER SYSTEM MUST BE INSTALLED]**

For further information or assistance with adoption, including a sample ordinance, jurisdictions should contact the Code Council at 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.



INTRODUCTION TO THE INTERNATIONAL FIRE CODE

The IFC is a model code that regulates minimum fire safety requirements for new and existing buildings, facilities, storage and processes. The IFC addresses fire prevention, fire protection, life safety and safe storage and use of hazardous materials in new and existing buildings, facilities and processes. The IFC provides a total approach of controlling hazards in all buildings and sites, regardless of the hazard being indoors or outdoors.

The IFC is a design document. For example, before one constructs a building, the site must be provided with an adequate water supply for firefighting operations and a means of building access for emergency responders in the event of a medical emergency, fire or natural or technological disaster. Depending on the building’s occupancy and uses, the IFC regulates the various hazards that may be housed within the building, including refrigeration systems, application of flammable finishes, fueling of motor vehicles, high-piled combustible storage, and the storage and use of hazardous materials. The IFC sets forth minimum requirements for these and other hazards and contains requirements for maintaining the life safety of building occupants; protecting emergency responders; and limiting the damage to a building and its contents as the result of a fire, explosion or unauthorized hazardous material discharge.

As described, the IFC has many types of requirements for buildings and facilities. The applicability of these requirements varies. An understanding of the applicability of requirements, as addressed in Sections 102.1 and 102.2, is necessary. Section 102.1 addresses when the construction and design provisions are applicable, whereas Section 102.2 addresses when the administrative, operational and maintenance provisions are applicable. Generally, the construction and design provisions apply to only new buildings or existing buildings and occupancies as addressed by Chapter 11. The administrative, maintenance and operational requirements are applicable to all buildings and facilities, whether new or existing.

ARRANGEMENT AND FORMAT OF THE 2024 IFC

Before applying the requirements of the IFC, it is beneficial to understand its arrangement and format. The IFC, like other codes published by the ICC, is arranged and organized to follow sequential steps that generally occur during a plan review or inspection.

The IFC is organized into seven parts. Each part represents a broad subject matter and includes the chapters that logically fit under the subject matter of each part. It is also foreseeable that additional chapters will need to be added in the future as regulations for new processes or operations are developed. Accordingly, the structure was designed to accommodate such future chapters by providing reserved (unused) chapters in several of the parts. This will allow the subject matter parts to be conveniently and logically expanded without requiring a major renumbering of the IFC chapters.

CHAPTER TOPICS	
PARTS AND CHAPTERS	SUBJECTS
Part I—Chapters 1 and 2	Administrative and definitions
Part II—Chapters 3 and 4	General safety provisions
Part III—Chapters 5 through 12	Building and equipment design features
Part III—Chapters 13 through 19	Reserved for future use
Part IV—Chapters 20 through 41	Special occupancies and operations
Part IV—Chapters 42 through 49; 52	Reserved for future use
Part V—Chapters 50, 51 and 53 through 67	Hazardous materials
Part V—Chapters 68 through 79	Reserved for future use
Part VI—Chapter 80	Referenced standards
Part VII—Appendices A through O	Adoptable and informational appendices

International Building Code Correlated Topics

The IFC requirements for fire-resistance-rated construction, interior finish, fire protection systems, means of egress and construction safeguards are directly correlated to the chapters containing parallel requirements in the IBC as follows:

IFC/IBC CORRELATED TOPICS		
IFC CHAPTER/SECTION	IBC CHAPTER/SECTION	SUBJECT
Chapter 7	Chapter 7	Fire and smoke protection features (Fire-resistance-rated construction in the IBC)
Chapter 8	Chapter 8	Interior finish, decorative materials and furnishings
Chapter 9	Chapter 9	Fire protection and life safety systems
Chapter 10	Chapter 10	Means of egress
Section 1203	Chapter 27	Emergency and standby power
Chapter 31	Section 3103	Temporary structures
Chapter 33	Chapter 33	Construction fire safety
Chapters 50–67	Sections 307, 414, 415	Hazardous materials and Group H requirements

PART I—ADMINISTRATIVE

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.

PART II—GENERAL SAFETY PROVISIONS

Chapter 3 General Requirements

General regulations contained in Chapter 3, are intended to improve premises safety for everyone, including construction workers, tenants, operations and maintenance personnel, and emergency response personnel.

Chapter 4 Emergency Planning and Preparedness

Chapter 4 addresses the human contribution to life safety during emergencies. Continuous training and scheduled fire, evacuation and lockdown drills can be as important as the required periodic inspections and maintenance of built-in fire protection features. The level of preparation by the occupants also improves the emergency responders' abilities during an emergency.

PART III—BUILDING AND EQUIPMENT DESIGN FEATURES

Chapter 5 Fire Service Features

The requirements of Chapter 5 apply to all buildings and occupancies and pertain to access roads, access to building openings and roofs, premises identification, key boxes, fire protection water supplies, fire command centers, fire department access to equipment, and in-building emergency responder communication system coverage.

Chapter 6 Building Services and Systems

Chapter 6 provides a more systematic view of building systems and services as they relate to potential safety hazards and when and how they should be installed.

Chapter 7 Fire and Smoke Protection Features

The maintenance of assemblies required to be fire-resistance rated is a key component in a passive fire protection philosophy. Chapter 7 sets forth requirements to maintain required fire-resistance ratings of building elements and limit fire spread. Section 701 addresses the basics of what construction elements such as fire barriers and smoke barriers need to be maintained as well as defining the owner's responsibility. Sections 703 through 708, deals with various fire and smoke protection features that must also be maintained.

Chapter 8 Interior Finish, Decorative Materials and Furnishings

The overall purpose of Chapter 8 is to regulate interior finishes, decorative materials and furnishings in new and existing buildings so that they do not significantly add to or create fire hazards within buildings. This chapter is consistent with Chapter 8 of the IBC, which regulates the interior finishes of new buildings.

Chapter 9 Fire Protection and Life Safety Systems

Chapter 9 prescribes the minimum requirements for active systems of fire protection equipment to perform the following functions: detect a fire, alert the occupants or fire department of a fire emergency, and control smoke and control or extinguish the fire. Generally, the requirements are based on the occupancy, the height and the area of the building because these are the factors that most affect firefighting capabilities and the relative hazard of a specific building or portion thereof. This chapter parallels and is substantially duplicated in Chapter 9 of the IBC; however, this chapter also contains periodic testing criteria that are not contained in the IBC. In addition, the special fire protection system requirements based on use and occupancy found in IBC Chapter 4 are duplicated in IFC Chapter 9 as a user convenience.

Chapter 10 Means of Egress

The criteria in Chapter 10 regulating the design of the means of egress system are established as the primary method for protection of occupants by allowing timely relocation or evacuation. Both prescriptive and performance language is utilized for determination of a safe exiting system. It addresses all portions of the means of egress system (i.e., exit access, exits and exit discharge) and includes design requirements as well as provisions regulating individual components. The requirements detail the size, arrangement, number and protection of means of egress components. The means of egress protection requirements work in coordination with other sections of the code, such as protection of vertical openings (see Chapter 7 of the IBC), interior finish (see Chapter 8 of the IBC), fire suppression and detection systems (see Chapter 9) and numerous others, all having an impact on life safety. Chapter 10 of the IBC is duplicated in Chapter 10 of the IFC; however, the IFC contains one additional section on the maintenance of the means of egress system in existing buildings.

Chapter 11 Construction Requirements for Existing Buildings

Chapter 11 applies to existing buildings constructed prior to the adoption of the code and intends to provide a minimum degree of fire and life safety to persons occupying existing buildings by providing for retroactive requirements to install or upgrade fire safety features to such buildings that do not comply with the minimum requirements of the IBC. Prior to the 2009 edition, its content existed in the IFC but in a random manner that was neither efficient nor user-friendly. In the 2007/2008 code development cycle, a

code change (F294-07/ 08) was approved that consolidated the retroactive elements of IFC into a single chapter for easier and more efficient reference and application to existing buildings.

Chapter 12 Energy Systems

Chapter 12 addresses any provisions related to energy systems found in the IFC. The expansion of such energy systems is related to meeting today's energy, environmental and economic challenges. Ensuring appropriate criteria to address the safety of such systems in building and fire codes is an important part of protecting the public at large, building occupants and emergency responders. These requirements also facilitate the successful implementation of new technologies.

All text in Section 1207 of the 2024 IFC with the following designation (Material based on NFPA 855 2023 Ed.) is reproduced with permission from the National Fire Protection Association (NFPA) and is based upon NFPA 855, *Standard for the Installation of Stationary Energy Storage Systems*, Copyright © 2023 NFPA. All designated text is either directly copied from the 2023 edition of NFPA 855 or as modified by the ICC Code Development Process. This material is not the complete and official position of NFPA on the referenced subject, which is represented solely by the standard in its entirety. NFPA shall not be responsible for the manner in which this information is presented, nor for any interpretations thereof.

Chapters 13 through 19 Reserved for future use.

PART IV—SPECIAL OCCUPANCIES AND OPERATIONS

Chapter 20 Aviation Facilities

Chapter 20 specifies minimum requirements for the fire-safe operation of airports, heliports and helistops. The principal nonflight operational hazards associated with aviation involve fuel, facilities and operations. Therefore, safe use of flammable and combustible liquids during fueling and maintenance operations is emphasized. Availability of portable Class B:C-rated fire extinguishers for prompt control or suppression of incipient fires is required.

Chapter 21 Dry Cleaning

The provisions of Chapter 21 are intended to reduce hazards associated with the use of flammable and combustible dry cleaning solvents. These materials, like all volatile organic chemicals, generate significant quantities of static electricity and are thus readily ignitable. Many flammable and nonflammable dry cleaning solvents also create health hazards when involved in a fire.

Chapter 22 Combustible Dust-Producing Operations

The requirements of Chapter 22 seek to reduce the likelihood of dust explosions by managing the hazards of ignitable suspensions of combustible dusts associated with a variety of operations, including woodworking, mining, food processing, agricultural commodity storage and handling, and pharmaceutical manufacturing, among others. Ignition source control and good housekeeping practices in occupancies containing dust-producing operations are emphasized.

Chapter 23 Motor Fuel-Dispensing Facilities and Repair Garages

Chapter 23 provides provisions that regulate the storage and dispensing of both liquid and gaseous motor fuels at public and private automotive, marine and aircraft motor fuel-dispensing facilities, and fleet vehicle motor fuel-dispensing facilities. In addition, this chapter addresses the various hazards created by the use of both liquid and gaseous fuels within repair garages.

Chapter 24 Flammable Finishes

Chapter 24 requirements govern operations where flammable or combustible finishes are applied by spraying, dipping, powder coating or flow-coating processes. As with all operations involving flammable or combustible liquids and combustible dusts or vapors, controlling ignition sources and methods of reducing or controlling flammable vapors or combustible dusts at or near these operations are emphasized.

Chapter 25 Fruit and Crop Ripening

Chapter 25 provides guidance that is intended to reduce the likelihood of explosions resulting from improper use or handling of ethylene gas used for crop ripening and coloring processes. This is accomplished by regulating ethylene gas generation, storage, and distribution systems and controlling ignition sources. Design and construction of facilities for this use are regulated by the IBC to reduce the impact of potential accidents on people and buildings.

Chapter 26 Fumigation and Insecticidal Fogging

Chapter 26 regulates fumigation and insecticidal fogging operations that use toxic pesticide chemicals to kill insects, rodents and other vermin. Fumigants and insecticidal fogging agents pose little hazard if properly applied; however, the inherent toxicity of all these agents and the potential flammability of some makes special precautions necessary when they are used.

Chapter 27 Semiconductor Fabrication Facilities

The requirements of Chapter 27 are intended to control hazards associated with the manufacture of electrical circuit boards or microchips, commonly called semiconductors. Materials commonly associated with semiconductor manufacturing are often quite hazardous and include flammable liquids, pyrophoric and flammable gases, toxic substances, and corrosives. The requirements of this chapter are concerned with both life safety and property protection. However, the fire code official should recognize that the risk of extraordinary property damages is far more common than the risk of personal injuries from fire.

Chapter 28 Lumber Yards and Agro-Industrial, Solid Biomass and Woodworking Facilities

Provisions of Chapter 28 are intended to prevent fires and explosions, facilitate fire control and reduce exposures to and from facilities storing, selling or processing wood and forest products. Also included are solid biomass feedstock and raw products associated with agro-industrial facilities, the outdoor storage of pallets, and manufacturing and recycling facilities. This chapter requires active and passive fire protection features to reduce on- and off-site exposures, limit fire size and development, and facilitate firefighting by employees and the fire service.

Chapter 29 Manufacture of Organic Coatings

Chapter 29 regulates materials and processes associated with the manufacture of paints as well as bituminous, asphaltic and other diverse compounds formulated to protect buildings, machines and objects from the effects of weather, corrosion and hostile environmental exposures. Painting and processes related to the manufacture of nonflammable and noncombustible or water-based products are exempt from the provisions of this chapter. The application of organic coatings is covered by Chapter 24.

Chapter 30 Industrial Ovens

Chapter 30 addresses the fuel supply, ventilation, emergency shutdown equipment, fire protection and the operation and maintenance of industrial ovens, which are sometimes referred to as industrial heat enclosures or industrial furnaces. Compliance with this chapter is intended to reduce the likelihood of fires involving industrial ovens, which are usually the result of the fuel in use or volatile vapors given off by the materials being heated, or to manage the impact if a fire should occur.

Chapter 31 Tents, Temporary Structures and Other Membrane Structures

The requirements in Chapter 31 are intended to protect temporary as well as permanent tents and air-supported and other membrane structures and temporary special event structures from fire and similar hazards. This chapter also addresses outdoor assembly events, which are not limited to those events where tents or other membrane structures are used but are regulated due to the number of people, density of those people and hazards associated with large outdoor events related to egress, fire hazards from cooking and other related concerns.

Chapter 32 High-Piled Combustible Storage

Chapter 32 provides guidance for reasonable protection of life from hazards associated with the storage of combustible materials in closely packed piles or on pallets, in racks, or on shelves where the top of storage is greater than 12 feet in height. This chapter does not cover miscellaneous combustible materials storage regulated in Section 315.

Chapter 33 Fire Safety during Construction and Demolition

Chapter 33 outlines general fire safety precautions for all structures and all occupancies during construction and demolition operations. Most importantly, this chapter addresses owner responsibility and provides requirements for a site safety plan and requires a site safety director. This chapter is consistent with both Chapter 33 of the IBC and Chapter 15 of the IEBC.

Chapter 34 Tire Rebuilding and Tire Storage

The requirements of Chapter 34 are intended to prevent or control fires and explosions associated with the remanufacture and storage of tires and tire byproducts. Additionally, the requirements are intended to minimize the impact of indoor and outdoor tire storage fires by regulating pile volume and location, segregating the various operations, providing for fire department access and a water supply, and controlling ignition sources.

Chapter 35 Welding and Other Hot Work

Chapter 35 covers requirements for safety in welding and other types of hot work by reducing the potential for fire ignitions that often result in large losses. Several different types of hot work would fall under the requirements found in Chapter 35, including both gas and electric arc methods and any open-torch operations. Many of the activities of this chapter focus on the actions of the occupants.

Chapter 36 Marinas

Chapter 36 addresses the fire protection and prevention requirements for marinas. It was developed in response to the complications encountered by a number of fire departments responsible for the protection of marinas as well as fire loss history in marinas that lacked fire protection. Compliance with this chapter intends to establish safe practices in marina areas, provide an identifica-

tion method for mooring spaces in the marina, and provide firefighters with safe operational areas and fire protection methods to extend hose lines in a safe manner.

Chapter 37 Combustible Fibers

Chapter 37 establishes the requirements for storage and handling of combustible fibers, including animal, vegetable and synthetic fibers, whether woven into textiles, baled, packaged or loose. Operations involving combustible fibers are typically associated with salvage, paper milling, recycling, cloth manufacturing, carpet and textile mills and agricultural operations, among others. The primary hazard associated with these operations is the abundance of materials and their ready ignitability.

Chapter 38 Higher Education Laboratories

Chapter 38 addresses the unique needs of laboratories in higher education academic institutions for both new and existing buildings and new and existing laboratories. This chapter offers unique solutions for laboratories that allow the necessary quantities of hazardous materials while not requiring a Group H occupancy classification. For laboratories in existing buildings, this chapter also provides more flexibility by allowing the use of certain typically prohibited materials by using inert atmosphere glove boxes or fume hoods, proper separation and an appropriately located fire extinguisher.

Chapter 39 Processing and Extraction Facilities

Chapter 39 focuses on the plant processing, solvent based, and extraction of oils and fats from various plants, and cultivation and related activities. The processes used are not necessarily typical hazardous material processes and often the systems and equipment associated with such processes are not listed. This chapter provides the tools to appropriately enforce the IFC and provide an appropriate level of safety to meet the unique needs of the industry while providing the appropriate level of safety.

Chapter 40 Storage of Distilled Spirits and Wines

Chapter 40 provides specific requirements for the storage of distilled spirits and wines, including basic fire prevention requirements, fire protection features, storage configuration and signage. Additionally, in accordance with Section 307.1.1 of the IBC, these occupancies are not classified as a Group H occupancy. Instead, as listed in Sections 311.2 and 311.3 of the IBC, the storage of beverages that contain up to and including 20-percent alcohol are classified as a Group S-2 occupancy, and those that contain over 20-percent alcohol content are classified as a Group S-1 occupancy.

Chapter 41 Temporary Heating and Cooking Operations

Chapter 41 provides all requirements relative to temporary heating and cooking operations in a single chapter. Some of these provisions were originally found in Chapters 3, 6 and 31. This chapter is intended to facilitate consistent enforcement of temporary heating and cooking operations by making the requirements more straightforward. Temporary heating on construction sites is addressed in Chapter 33.

Chapters 42 through 49
Reserved for future use.

PART V—HAZARDOUS MATERIALS

Chapter 50 Hazardous Materials—General Provisions

Chapter 50 contains the general requirements for all hazardous chemicals in all occupancies. The general provisions of this chapter are intended to be companion provisions with the specific requirements of Chapters 51 through 67 regarding a given classification of hazardous material.

Chapter 51 Aerosols

Chapter 51 addresses the prevention, control and extinguishment of fires and explosions in facilities where retail aerosol products are displayed or stored. Requirements for storing aerosol products are dependent on the level of aerosol product, level of sprinkler protection, type of storage condition and quantity of aerosol products.

Chapter 52
Reserved for future use.

Chapter 53 Compressed Gases

Chapter 53 regulates the storage, use and handling of all flammable and nonflammable compressed gases, such as those that are used in medical facilities, air separation plants, industrial plants, agricultural equipment facilities and in systems such as carbon dioxide beverage dispensing and carbon dioxide enrichment. Where classified as a hazardous material, Chapter 50 would apply along with specific applications such as those used in welding and cutting (Chapter 35), cryogenic liquids (Chapter 55) and liquefied petroleum gases (Chapter 61).

Chapter 54 Corrosive Materials

Chapter 54 addresses materials whose primary hazard is corrosivity; that is, the ability to destroy or irreparably damage living tissue on contact. Although corrosive gases exist, most corrosive materials are solid or liquid and classified as either acids or bases (alkalis). These materials may pose a wide range of hazards other than corrosivity, such as combustibility, reactivity or oxidizing hazards, and must conform to the requirements of this code with respect to all known hazards.

Chapter 55 Cryogenic Fluids

Chapter 55 regulates the hazards associated with the storage, use and handling of cryogenic fluids through regulation of such things as pressure relief mechanisms and proper container storage. These hazards are in addition to the code requirements that address the other hazards of cryogenic fluids, such as flammability and toxicity (Chapters 50, 58 and 60).

Chapter 56 Explosives and Fireworks

Chapter 56 prescribes minimum requirements for the safe manufacture, storage, handling and use of explosives, ammunition and blasting agents for commercial and industrial occupancies. These provisions are intended to protect the general public, emergency responders and individuals who handle explosives. Chapter 56 also regulates the manufacturing, retail sale, display and wholesale distribution of fireworks.

Chapter 57 Flammable and Combustible Liquids

The requirements of Chapter 57 are intended to reduce the likelihood of fires involving the storage, handling, use or transportation of flammable and combustible liquids. The danger associated with flammable and combustible liquids is that the vapors from these liquids, when combined with air in their flammable range, will burn or explode at temperatures near normal living and working environment.

Chapter 58 Flammable Gases and Flammable Cryogenic Fluids

Chapter 58 sets requirements for the storage and use of flammable gases. For safety purposes, there is a limit on the quantities of flammable gas allowed per control area. Exceeding these limitations increases the possibility of damage to both property and individuals. The principal hazard posed by flammable gas is its ready ignitability, or even explosivity, when mixed with air in the proper proportions. Consequently, occupancies storing or handling large quantities of flammable gas are classified as Group H- 2 (high hazard) by the IBC.

Chapter 59 Flammable Solids

Chapter 59 addresses general requirements for storage and handling of flammable solids, especially magnesium; however, it is important to note that several other solid materials, primarily metals, can be explosion hazards under the right conditions. Some of these metals are almost exclusively laboratory materials but because of where they are used, fire service personnel must be trained to handle emergency situations.

Chapter 60 Highly Toxic and Toxic Materials

The main purpose of Chapter 60 is to protect occupants, emergency responders and those in the immediate area of the building and facility from short-term, acute hazards associated with a release or general exposure to toxic and highly toxic materials. This chapter deals with all three states of toxic and highly toxic materials: solids, liquids and gases. This code does not address long-term exposure effects of these materials, which are addressed by agencies such as the Environmental Protection Agency (EPA) and Occupational Safety and Health Administration (OSHA).

Chapter 61 Liquefied Petroleum Gases

Chapter 61 establishes requirements for the safe handling, storing and use of LP-gas to reduce the possibility of damage to containers, accidental releases of LP-gas and exposure of flammable concentrations of LP-gas to ignition sources. LP-gas (notably propane) is well known as a camping fuel for cooking, lighting, heating and refrigerating and also remains a popular standby fuel supply for auxiliary generators as well as being widely used as an alternative motor vehicle fuel.

Chapter 62 Organic Peroxides

Chapter 62 addresses the hazards associated with the storage, handling and use of organic peroxides and intends to prevent their uncontrolled release. These chemicals possess the characteristics of flammable or combustible liquids and are also strong oxidizers. The requirements of this chapter pertain to industrial applications in which significant quantities of organic peroxides are stored or used; however, smaller quantities of organic peroxides still pose a significant hazard and, therefore, must be stored and used in accordance with the applicable provisions of this chapter and Chapter 50.

Chapter 63 Oxidizers, Oxidizing Gases and Oxidizing Cryogenic Fluids

Chapter 63 addresses the hazards associated with solid, liquid, gaseous and cryogenic fluid oxidizing materials, including oxygen in home use, and establishes criteria for their safe storage and protection in indoor and outdoor storage facilities, minimizing the

PREFACE

potential for uncontrolled releases and contact with fuel sources. Although oxidizers themselves do not burn, they pose unique fire hazards because of their ability to support combustion by breaking down and giving off oxygen.

Chapter 64 Pyrophoric Materials

Chapter 64 regulates the hazards associated with pyrophoric materials, which are capable of spontaneously igniting in the air at or below a temperature of 130°F (54°C). Many pyrophoric materials also pose severe flammability or reactivity hazards. This chapter addresses only the hazards associated with pyrophoric materials. Materials that pose multiple hazards must conform to the requirements of the code with respect to all hazards.

Chapter 65 Pyroxylin (Cellulose Nitrate) Plastics

Chapter 65 addresses the significant hazards associated with pyroxylin (cellulose nitrate) plastics, which are the most dangerous and unstable of all plastic compounds. Strict compliance with the provisions of this chapter, along with proper housekeeping and storage arrangements, helps to reduce the hazards associated with pyroxylin (cellulose nitrate) plastics in a fire or other emergencies.

Chapter 66 Unstable (Reactive) Materials

Chapter 66 addresses the hazards of unstable (reactive) liquid and solid materials as well as unstable (reactive) compressed gases. Materials that pose multiple hazards, such as toxicity, corrosivity, explosivity, flammability or oxidizing potential, must conform to the requirements of the code with respect to all hazards. Strict compliance with the provisions of this chapter, along with proper housekeeping and storage arrangements, help reduce the exposure hazards associated with unstable (reactive) materials in a fire or other emergency.

Chapter 67 Water-Reactive Solids and Liquids

Chapter 67 addresses the hazards associated with water-reactive materials that are solid or liquid at normal temperatures and pressures. In addition to their water reactivity, these materials may pose a wide range of other hazards, such as toxicity, flammability, corrosiveness or oxidizing potential. Strict compliance with the requirements of this chapter, along with proper housekeeping and storage arrangements, helps to reduce the exposure hazards associated with water-reactive materials in a fire or other emergency.

Chapters 68 through 79 Reserved for future use.

PART VI—REFERENCED STANDARDS

Chapter 80 Referenced Standards

Chapter 80 lists all of the product and installation standards and codes that are referenced throughout Chapters 1 through 67 and includes identification of the promulgators and the section numbers in which the standards and codes are referenced. As stated in Section 102.7, 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.

PART VII—APPENDICES

Appendix A Board of Appeals

Appendix A contains the provisions for appeal and the establishment of a board of appeals. The provisions include the application for an appeal, the makeup of the board of appeals and the conduct of the appeal process.

Appendix B Fire-Flow Requirements for Buildings

Appendix B provides a tool for the use of jurisdictions in establishing a policy for determining fire-flow requirements in accordance with Section 507.3. The primary tool used in this appendix is a table that presents fire flow based on construction type and building area based on the correlation of the Insurance Services Office (ISO) method and the construction types used in the *IBC*.

Appendix C Fire Hydrant Locations and Distribution

Appendix C focuses on the location and spacing of fire hydrants, which is important to the success of firefighting operations. This particular appendix gives one methodology based on the required fire flow that fire departments can work with to set a policy for hydrant distribution around new buildings and facilities in conjunction with Section 507.5.

Appendix D Fire Apparatus Access Roads

Appendix D contains more detailed elements for use with the basic access requirements found in Section 503. This appendix, like Appendices B and C, is a tool for jurisdictions looking for guidance in establishing access requirements and includes criteria for multiple-family residential developments, large one- and two-family subdivisions, specific examples for various types of turnarounds for fire department apparatus and parking regulatory signage.

Appendix E Hazard Categories

Appendix E contains guidance in the classifying of hazardous materials so that proposed designs can be evaluated intelligently and accurately. The descriptive materials and explanations of hazardous materials and how to report and evaluate them on a Safety Data Sheet (SDS) are intended to be instructional as well as informative.

Appendix F Hazard Ranking

The information in Appendix F is intended to be a companion to the specific requirements of Chapters 51 through 67, which regulate the storage, handling and use of all hazardous materials classified as either physical or health hazards. This appendix lists the various hazardous materials categories that are defined in this code, along with the NFPA 704 hazard ranking for each.

Appendix G Cryogenic Fluids—Weight and Volume Equivalents

Appendix G gives the fire code official and design professional a ready reference tool for the conversion of the liquid weight and volume of cryogenic fluid to their corresponding volume of gas and vice versa and is a companion to the provisions of Chapter 55 of this code. Note that this appendix is for information purposes and is not intended for adoption.

Appendix H Hazardous Materials Management Plan (HMMP) and Hazardous Materials Inventory Statement (HMIS) Instructions

Appendix H is intended to assist businesses in establishing a Hazardous Materials Management Plan (HMMP) and Hazardous Materials Inventory Statement (HMIS) based on the classification and quantities of materials that would be found on-site, in storage or in use. The sample forms and available Safety Data Sheets (SDS) provide the basis for the evaluations. It is also a companion to IFC Sections 407.5 and 407.6, which provide the requirement that the HMIS and HMMP be submitted when required by the fire code official.

Appendix I Fire Protection Systems—Noncompliant Conditions

The purpose of Appendix I, which was developed by the ICC Hazard Abatement in Existing Buildings Committee, is to provide the fire code official with a list of conditions that are readily identifiable by the inspector during the course of an inspection utilizing the IFC. The specific conditions identified in this appendix are primarily derived from applicable NFPA standards and pose a hazard to the proper operation of the respective systems.

Appendix J Building Information Sign

Appendix J provides design, installation and maintenance requirements for a Building Information Sign (BIS), a fire service tool to be utilized in the crucial, initial response of firefighters to a structure fire. The BIS placard, which is in the shape of a fire service Maltese Cross, is designed to be utilized within the initial response time frame of an incident to assist firefighters in their tactical assessment of the construction type and hourly rating, fire protection systems, occupancy type, content hazards and special features that could affect tactical decisions and operations.

Appendix K Construction Requirements for Existing Ambulatory Care Facilities

Appendix K was created by the ICC Ad Hoc Committee on Healthcare (AHC) and is intended to provide jurisdictions with an option for assessing minimum fire and life safety requirements for buildings containing ambulatory care facilities. These requirements are presented as an appendix so that the adopting authority can exercise judgment in the adoption and application of this section since the ambulatory care facility requirements are fairly new to the codes. The technical requirements are based on the IBC language, which is consistent with the overall concept of the current federal requirements.

Appendix L Requirements for Firefighter Air Replenishment Systems

Appendix L provides for the design, installation and maintenance of permanently installed firefighter breathing air systems in buildings designated by the jurisdiction. The system has been called a “standpipe for air” and consists of stainless steel, high-pressure piping that is supplied by on-site air storage or fire department air supply units. Air-filling stations are then located throughout the building, allowing firefighters to refill breathing air cylinders inside the fire building.

Appendix M High-Rise Buildings—Retroactive Automatic Sprinkler Requirement

Appendix M was created with the intent to provide an option for adoption by jurisdictions that choose to require existing high-rise buildings to be retrofitted with automatic sprinklers.

Appendix N Indoor Trade Shows and Exhibitions

Appendix N was created to address the hazards associated with larger, more complex trade shows and exhibitions. Although many of these requirements are already included in various locations in this code, some of the more important items, such as requirements for covered booths and multiple-story booths, are not. The intent is to have the requirements covering these events in a single location. This assists those organizing exhibitions and individual exhibitors unfamiliar with the fire code.

Appendix O Valet Trash and Recycling Collection in Group R-2 Occupancies

Appendix O provides requirements to facilitate the enforcement of safety requirements for valet trash and recycling collection services in Group R-2 occupancies. These collection services are formally defined in Section 202 as “*Valet Trash Collection*,” which includes recycling. Occupants receiving this service place trash and recyclables in the corridor outside of their residence for pickup by a collection service on a regularly scheduled basis in accordance with restrictions, as prescribed by this appendix.

RELOCATION OF TEXT OR TABLES

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

RELOCATIONS	
2024 LOCATION	2021 LOCATION
104.2.2	104.8.2
104.2.3	104.10
104.2.3.5	104.10.2
104.2.3.6	104.10.1
104.2.4	104.9
105.5.30	105.5.27
203	202 OCCUPANCY CLASSIFICATION
903.3.9	903.4.3
914.1.1.3	914.3.1.1.1
SECTION 3303 ADMINISTRATIVE SAFETY CONTROLS	SECTION 3303 OWNER’S RESPONSIBILITY FOR FIRE PROTECTION
3303.2.1	3303.6
3303.5	3305.5
3303.5.1	3305.5.1
3303.5.2	3305.5.2
3303.5.2.1	3305.5.2.1
3303.5.2.2	3305.5.2.2
3303.5.2.3	3305.5.2.3
3303.5.3	3305.5.3
3303.5.4	3305.5.4
3303.6	3310.1
SECTION 3304 PROTECTION OF COMBUSTIBLE MATERIALS	SECTION 3304 TEMPORARY HEATING EQUIPMENT
3304.1	3305.2
3304.1.1	3305.2.1
3304.1.2	3305.2.2
3304.1.3	3305.2.3
3304.2	3305.2.4
SECTION 3305 IGNITION SOURCE CONTROLS	SECTION 3305 PRECAUTIONS AGAINST FIRE
3305.1	3304.1
3305.1.1	3304.2
3305.1.2	3304.3
3305.1.3	3304.4
3305.1.4	3304.5
3305.1.5	3304.6
3305.2	3305.1
3305.5	3305.6
3305.6	3305.7

RELOCATIONS—continued	
2024 LOCATION	2021 LOCATION
3305.7	3305.8
3305.8	3309.1
3305.9	3303.8
3305.10	3318.1
3305.10.1	3318.2
3305.10.2	3318.3
SECTION 3306 FIRE PROTECTION SYSTEMS AND DEVICES	SECTION 3306 FLAMMABLE AND COMBUSTIBLE LIQUIDS
3306.1	3303.7
3306.2	3303.9
3306.3	3303.9.1
3306.4	3303.10
3306.5	3315.1
3306.5.1	3315.2
3306.6	3316.1
SECTION 3307 FIRE DEPARTMENT SITE ACCESS AND WATER SUPPLY	SECTION 3307 FLAMMABLE GAS
3307.1	3311.1
3307.1.1	3311.2
3307.1.2	3312.1
3307.1.3	3312.2
3307.2	3313.1
3307.2.1	3313.2
3307.2.2	3313.3
3307.2.2.1	3313.3.1
3307.2.2.2	3313.3.2
3307.2.2.3	3313.3.3
3307.3	3313.4
3307.4	3313.5
3307.5	3314.1
3307.5.1	3314.2
3307.5.2	3314.3
SECTION 3008 MOTORIZED CONSTRUCTION EQUIPMENT	SECTION 3308 EXPLOSIVE MATERIALS
3308.1	3317.1
SECTION 3309 HAZARDOUS MATERIALS	SECTION 3309 PORTABLE GENERATORS
3309.1	3306.1
3309.1.1	3306.2
3309.1.2	3306.3
3309.1.3	3306.4
3309.1.4	3306.5
3309.1.5	3306.6
3309.2	307.1
3309.2.1	3307.2
3309.2.2	3307.2.1
3309.3	3308.1

RELOCATIONS—continued	
2024 LOCATION	2021 LOCATION
3309.3.1	3308.2
3309.3.2	3308.3
SECTION 3310 ADDITIONAL SAFEGUARDS FOR OCCUPIED BUILDINGS	SECTION 3310 FIRE REPORTING
3310.1	3312.3
SECTION 3311 ADDITIONAL SAFEGUARDS FOR TYPES I AND II CONSTRUCTION	SECTION 3311 ACCESS FOR FIRE FIGHTING
3311.1	3305.9
SECTION 3312 ADDITIONAL SAFEGUARDS FOR TYPE IV CONSTRUCTION	SECTION 3312 MEANS OF EGRESS
3312.1	3303.5
4101.5	3107.12.7
4101.6	3107.13
4102.1	603.9
4103.1	605.5
4104.2	308.1.4
4104.4	3107.12.6
4104.5	3107.12.5
4104.6	3107.12.4
4106	319

CONTENTS

CHAPTER 1 SCOPE AND ADMINISTRATION	24	CHAPTER 4 EMERGENCY PLANNING AND PREPAREDNESS.	97
<i>Part 1—General Provisions</i>	24	401 General	97
101 Scope and General Requirements	24	402 Definitions	97
102 Applicability	24	403 Emergency Preparedness Requirements	97
<i>Part 2—Administration and Enforcement</i>	25	404 Fire Safety, Evacuation and Lockdown Plans	103
103 Code Compliance Agency	25	405 Emergency Evacuation Drills	104
104 Duties and Powers of the Fire Code Official	26	406 Employee Training and Response Procedures	106
105 Permits	28	407 Hazard Communication	106
106 Construction Documents	37	CHAPTER 5 FIRE SERVICE FEATURES	107
107 Temporary Structures, Uses, Equipment and Systems	37	501 General	107
108 Fees	38	502 Definitions	107
109 Inspections	38	503 Fire Apparatus Access Roads	107
110 Maintenance	38	504 Access to Building Openings and Roofs	109
111 Service Utilities	39	505 Premises Identification	109
112 Means of Appeals	39	506 Key Boxes	109
113 Violations	39	507 Fire Protection Water Supplies	109
114 Stop Work Order	40	508 Fire Command Center	110
115 Unsafe Structures or Equipment	40	509 Fire Protection and Utility Equipment Identification and Access	111
CHAPTER 2 DEFINITIONS	42	510 Emergency Responder Communications Enhancement Systems	112
201 General	42	CHAPTER 6 BUILDING SERVICES AND SYSTEMS.	116
202 General Definitions	42	601 General	116
203 Occupancy Classification and Use	71	602 Definitions	116
CHAPTER 3 GENERAL REQUIREMENTS	82	603 Electrical Equipment, Wiring and Hazards	116
301 General	82	604 Elevator Operation, Maintenance and Fire Service Keys	118
302 Definitions	82	605 Fuel-Fired Appliances	119
303 Asphalt Kettles	82	606 Commercial Cooking Equipment and Systems	121
304 Combustible Waste Material	83	607 Commercial Cooking Oil Storage	122
305 Ignition Sources	84	608 Mechanical Refrigeration	123
306 Motion Picture Projection Rooms and Film	84	609 Hyperbaric Facilities	125
307 Open Burning, Recreational Fires and Portable Outdoor Fireplaces	84	610 Clothes Dryer Exhaust Systems	125
308 Open Flames	85	CHAPTER 7 FIRE AND SMOKE PROTECTION FEATURES	126
309 Powered Industrial Trucks and Equipment	86	701 General	126
310 Smoking	87	702 Definitions	126
311 Vacant Premises	87	703 Penetrations	127
312 Vehicle Impact Protection	89	704 Joints and Voids	127
313 Fueled Equipment	89	705 Door and Window Openings	127
314 Indoor Displays	89	706 Duct and Air Transfer Openings	128
315 General Storage	89	707 Concealed Spaces	128
316 Hazards to Firefighters	91	708 Spray Fire-Resistant Materials and Intumescent Fire-Resistant Materials	128
317 Vegetative and Landscaped Roofs	92		
318 Laundry Carts	92		
319 Additive Manufacturing (3D Printing)	93		
320 Lithium-Ion and Lithium Metal Battery Storage	94		
321 Artificial Combustible Vegetation	95		
322 Powered Micromobility Devices	95		

CHAPTER 8 INTERIOR FINISH, DECORATIVE MATERIALS AND FURNISHINGS 129

801 General129

802 Definitions129

803 Interior Wall and Ceiling Finish in Existing Buildings129

804 Interior Wall and Ceiling Trim and Interior Floor Finish in New and Existing Buildings131

805 Upholstered Furniture and Mattresses in New and Existing Buildings132

806 Natural Decorative Vegetation in New and Existing Buildings135

807 Decorative Materials and Artificial Decorative Vegetation in New and Existing Buildings135

808 Furnishings Other than Upholstered Furniture and Mattresses or Decorative Materials in New and Existing Buildings137

CHAPTER 9 FIRE PROTECTION AND LIFE SAFETY SYSTEMS 138

901 General138

902 Definitions141

903 Automatic Sprinkler Systems142

904 Alternative Automatic Fire-Extinguishing Systems . . .151

905 Standpipe Systems154

906 Portable Fire Extinguishers157

907 Fire Alarm and Detection Systems160

908 Emergency Alarm Systems171

909 Smoke Control Systems172

910 Smoke and Heat Removal180

911 Explosion Control181

912 Fire Department Connections183

913 Fire Pumps184

914 Fire Protection Based on Special Detailed Requirements of Use and Occupancy185

915 Carbon Monoxide (CO) Detection188

916 Gas Detection Systems190

917 Mass Notification Systems191

CHAPTER 10 MEANS OF EGRESS 192

1001 Administration192

1002 Definitions192

1003 General Means of Egress193

1004 Occupant Load195

1005 Means of Egress Sizing197

1006 Numbers of Exits and Exit Access Doorways198

1007 Exit and Exit Access Doorway Configuration201

1008 Means of Egress Illumination202

1009 Accessible Means of Egress203

1010 Doors, Gates and Turnstiles206

1011 Stairways216

1012 Ramps219

1013 Exit Signs 221

1014 Handrails 222

1015 Guards 223

1016 Exit Access 225

1017 Exit Access Travel Distance 226

1018 Aisles 227

1019 Exit Access Stairways and Ramps 228

1020 Corridors 228

1021 Egress Balconies 230

1022 Exits 230

1023 Interior Exit Stairways and Ramps 231

1024 Exit Passageways 233

1025 Luminous Egress Path Markings 234

1026 Horizontal Exits 235

1027 Exterior Exit Stairways and Ramps 236

1028 Exit Discharge 237

1029 Egress Courts 238

1030 Assembly 238

1031 Emergency Escape and Rescue 245

1032 Maintenance of the Means of Egress 246

CHAPTER 11 CONSTRUCTION REQUIREMENTS FOR EXISTING BUILDINGS 248

1101 General 248

1102 Definitions 248

1103 Fire Safety Requirements for Existing Buildings . . . 248

1104 Means of Egress for Existing Buildings 255

1105 Construction Requirements for Existing Group I-2 260

1106 Requirements for Outdoor Operations 264

1107 Energy Storage Systems 264

CHAPTER 12 ENERGY SYSTEMS 265

1201 General 265

1202 Definitions 265

1203 Emergency and Standby Power Systems 265

1204 Portable Generators 267

1205 Solar Photovoltaic Power Systems 268

1206 Stationary Fuel Cell Power Systems 271

1207 Electrical Energy Storage Systems (ESS) 272

CHAPTERS 13–19 RESERVED 289

CHAPTER 20 AVIATION FACILITIES 290

2001 General 290

2002 Definitions 290

2003 General Precautions 290

2004 Aircraft Maintenance 290

2005 Portable Fire Extinguishers 291

2006 Aircraft Fueling 291

2007 Helistops and Heliports 296

CHAPTER 21 DRY CLEANING	297	2505 Combustible Waste	334
2101 General	297	2506 Ethylene Generators	334
2102 Definitions	297	2507 Warning Signs	334
2103 Classifications	297		
2104 General Requirements	297	CHAPTER 26 FUMIGATION AND INSECTICIDAL	
2105 Operating Requirements	298	FOGGING	335
2106 Spotting and Pretreating	298	2601 General	335
2107 Dry Cleaning Systems	299	2602 Definitions	335
2108 Fire Protection	299	2603 Fire Safety Requirements	335
		CHAPTER 27 SEMICONDUCTOR FABRICATION	
CHAPTER 22 COMBUSTIBLE DUST-PRODUCING		FACILITIES	337
OPERATIONS	301	2701 General	337
2201 General	301	2702 Definitions	337
2202 Definitions	301	2703 General Safety Provisions	337
2203 Dust Explosion Prevention	301	2704 Storage	342
2204 Dust Explosion Screening Tests	304	2705 Use and Handling	343
2205 Standards	304		
CHAPTER 23 MOTOR FUEL-DISPENSING FACILITIES		CHAPTER 28 LUMBER YARDS AND AGRO-INDUSTRIAL,	
AND REPAIR GARAGES	306	SOLID BIOMASS AND WOODWORKING FACILITIES.	346
2301 General	306	2801 General	346
2302 Definitions	306	2802 Definitions	346
2303 Location of Dispensing Devices	306	2803 General Requirements	346
2304 Dispensing Operations	307	2804 Fire Protection	347
2305 Operational Requirements	308	2805 Plywood, Veneer and Composite Board Mills	347
2306 Flammable and Combustible Liquid Motor		2806 Log Storage Areas	347
Fuel-Dispensing Facilities	309	2807 Storage of Wood Chips and Hogged Materials	
2307 Liquefied Petroleum Gas Motor Fuel-Dispensing		Associated with Timber and Lumber	
Facilities	313	Production Facilities	347
2308 Compressed Natural Gas Motor Fuel-Dispensing		2808 Storage and Processing of Wood Chips, Hogged	
Facilities	315	Materials, Fines, Compost, Solid Biomass	
2309 Hydrogen Motor Fuel-Dispensing and Generation		Feedstock and Raw Product Associated with	
Facilities	316	Yard Waste, Agro-Industrial and Recycling	
2310 Marine Motor Fuel-Dispensing Facilities	318	Facilities	348
2311 Repair Garages	319	2809 Exterior Storage of Finished Lumber and	
		Solid Biofuel Products	348
CHAPTER 24 FLAMMABLE FINISHES.	323	2810 Outdoor Storage of Pallets at Pallet	
2401 General	323	Manufacturing and Recycling Facilities	349
2402 Definitions	323		
2403 Protection of Operations	323	CHAPTER 29 MANUFACTURE OF ORGANIC COATINGS. . .	350
2404 Spray Finishing	325	2901 General	350
2405 Dipping Operations	329	2902 Definition	350
2406 Powder Coating	330	2903 General Precautions	350
2407 Electrostatic Apparatus	331	2904 Electrical Equipment and Protection	350
2408 Organic Peroxides And Dual-Component		2905 Process Structures	351
Coatings	332	2906 Process Mills and Kettles	351
2409 Indoor Manufacturing of Reinforced Plastics	332	2907 Process Piping	351
2410 Floor Surfacing and Finishing Operations	333	2908 Raw Materials in Process Areas	352
		2909 Raw Materials and Finished Products	352
CHAPTER 25 FRUIT AND CROP RIPENING	334	CHAPTER 30 INDUSTRIAL OVENS	353
2501 General	334	3001 General	353
2502 Definitions	334	3002 Definitions	353
2503 Ethylene Gas	334	3003 Location	353
2504 Sources of Ignition	334		

4005	Fire Protection.....	403	5505	Use and Handling.....	464
4006	Signage.....	410	CHAPTER 56	EXPLOSIVES AND FIREWORKS.....	466
CHAPTER 41	TEMPORARY HEATING AND COOKING OPERATIONS.....	411	5601	General.....	466
4101	General.....	411	5602	Definitions.....	469
4102	Portable Electric Heating Appliances.....	412	5603	Recordkeeping and Reporting.....	470
4103	Portable Fuel-Fired Heating Appliances.....	412	5604	Explosive Materials Storage and Handling.....	470
4104	Portable Fuel-Fired Cooking Appliances.....	413	5605	Manufacture, Assembly and Testing of Explosives, Explosive Materials and Fireworks ..	477
4105	Portable Electric Cooking Appliances.....	413	5606	Small Arms Ammunition and Small Arms Ammunition Components.....	480
4106	Mobile Food Preparation Vehicles.....	414	5607	Blasting.....	482
CHAPTERS 42–40	RESERVED.....	415	5608	Fireworks Display.....	483
CHAPTER 50	HAZARDOUS MATERIALS—GENERAL PROVISIONS.....	416	5609	Temporary Storage of Consumer Fireworks.....	484
5001	General.....	416	CHAPTER 57	FLAMMABLE AND COMBUSTIBLE LIQUIDS.....	485
5002	Definitions.....	419	5701	General.....	485
5003	General Requirements.....	420	5702	Definitions.....	485
5004	Storage.....	435	5703	General Requirements.....	486
5005	Use, Dispensing and Handling.....	438	5704	Storage.....	490
CHAPTER 51	AEROSOLS.....	442	5705	Dispensing, Use, Mixing and Handling.....	513
5101	General.....	442	5706	Special Operations.....	519
5102	Definitions.....	442	5707	On-Demand Mobile Fueling Operations.....	528
5103	Classification of Aerosol Products.....	442	CHAPTER 58	FLAMMABLE GASES AND FLAMMABLE CRYOGENIC FLUIDS.....	531
5104	Inside Storage of Aerosol Products.....	443	5801	General.....	531
5105	Outside Storage.....	446	5802	Definitions.....	531
5106	Retail Display.....	446	5803	General Requirements.....	531
5107	Manufacturing Facilities.....	448	5804	Storage.....	532
CHAPTER 52	RESERVED.....	449	5805	Use.....	532
CHAPTER 53	COMPRESSED GASES.....	450	5806	Flammable Cryogenic Fluids.....	532
5301	General.....	450	5807	Metal Hydride Storage Systems.....	533
5302	Definitions.....	450	5808	Hydrogen Fuel Gas Rooms.....	535
5303	General Requirements.....	450	5809	On-Demand Hydrogen Mobile Fueling Operations.....	535
5304	Storage of Compressed Gases.....	454	CHAPTER 59	FLAMMABLE SOLIDS.....	537
5305	Use and Handling of Compressed Gases.....	454	5901	General.....	537
5306	Medical Gases.....	455	5902	Definitions.....	537
5307	Compressed Gases Not Otherwise Regulated.....	455	5903	General Requirements.....	537
CHAPTER 54	CORROSIVE MATERIALS.....	458	5904	Storage.....	537
5401	General.....	458	5905	Use.....	537
5402	Definition.....	458	5906	Magnesium.....	537
5403	General Requirements.....	458	CHAPTER 60	HIGHLY TOXIC AND TOXIC MATERIALS.....	540
5404	Storage.....	458	6001	General.....	540
5405	Use.....	458	6002	Definitions.....	540
CHAPTER 55	CRYOGENIC FLUIDS.....	460	6003	Highly Toxic and Toxic Solids and Liquids.....	540
5501	General.....	460	6004	Highly Toxic and Toxic Compressed Gases.....	541
5502	Definitions.....	460	6005	Ozone-Gas Generators.....	545
5503	General Requirements.....	460			
5504	Storage.....	462			

CHAPTER 61 LIQUEFIED PETROLEUM GASES	547	6702 Definition	567
6101 General	547	6703 General Requirements	567
6102 Definitions	547	6704 Storage	567
6103 Installation of Equipment	547	6705 Use	568
6104 Location of LP-Gas Containers	548	CHAPTERS 68—79 RESERVED	569
6105 Prohibited Use of LP-Gas	549	CHAPTER 80 REFERENCED STANDARDS	570
6106 Dispensing and Overfilling	549	APPENDIX A BOARD OF APPEALS	584
6107 Safety Precautions and Devices	549	A101 General	584
6108 Fire Protection	549	APPENDIX B FIRE-FLOW REQUIREMENTS FOR BUILDINGS	586
6109 Storage of Portable LP-Gas Containers Awaiting Use or Resale	550	B101 General	586
6110 LP-Gas Containers Not in Service	552	B102 Definitions	586
6111 Parking and Garaging of LP-Gas Tank Vehicles	552	B103 Modifications	586
CHAPTER 62 ORGANIC PEROXIDES	553	B104 Fire-Flow Calculation Area	586
6201 General	553	B105 Fire-Flow Requirements for Buildings	586
6202 Definition	553	B106 Referenced Standards	588
6203 General Requirements	553	APPENDIX C FIRE HYDRANT LOCATIONS AND DISTRIBUTION	589
6204 Storage	554	C101 General	589
6205 Use	555	C102 Number of Fire Hydrants	589
CHAPTER 63 OXIDIZERS, OXIDIZING GASES AND OXIDIZING CRYOGENIC FLUIDS	556	C103 Fire Hydrant Spacing	589
6301 General	556	C104 Consideration of Existing Fire Hydrants	590
6302 Definitions	556	C105 Referenced Standard	590
6303 General Requirements	556	APPENDIX D FIRE APPARATUS ACCESS ROADS	591
6304 Storage	557	D101 General	591
6305 Use	559	D102 Required Access	591
6306 Liquid Oxygen in Home Health Care	559	D103 Minimum Specifications	591
CHAPTER 64 PYROPHORIC MATERIALS	561	D104 Commercial and Industrial Developments	592
6401 General	561	D105 Aerial Fire Apparatus Access Roads	592
6402 Definition	561	D106 Multiple-Family Residential Developments	593
6403 General Requirements	561	D107 One- or Two-Family Residential Developments	593
6404 Storage	561	D108 Referenced Standards	593
6405 Use	562	APPENDIX E HAZARD CATEGORIES	594
CHAPTER 65 PYROXYLIN (CELLULOSE NITRATE) PLASTICS	563	E101 General	594
6501 General	563	E102 Hazard Categories	594
6502 Definitions	563	E103 Evaluation of Hazards	598
6503 General Requirements	563	E105 Referenced Standards	611
6504 Storage and Handling	563	APPENDIX F HAZARD RANKING	612
CHAPTER 66 UNSTABLE (REACTIVE) MATERIALS	565	F101 General	612
6601 General	565	F102 Referenced Standards	613
6602 Definition	565	APPENDIX G CRYOGENIC FLUIDS—WEIGHT AND VOLUME EQUIVALENTS	614
6603 General Requirements	565	G101 General	614
6604 Storage	566		
6605 Use	566		
CHAPTER 67 WATER-REACTIVE SOLIDS AND LIQUIDS	567		
6701 General	567		

APPENDIX H HAZARDOUS MATERIALS MANAGEMENT PLAN (HMMP) AND HAZARDOUS MATERIALS INVENTORY STATEMENT (HMIS) INSTRUCTIONS.	616	APPENDIX M HIGH-RISE BUILDINGS—RETROACTIVE AUTOMATIC SPRINKLER REQUIREMENT.	636
H101 HMMP	616	M101 Scope	636
H102 HMIS	619	M102 Where Required	636
H103 Emergency Plan	621	M103 Compliance	636
H104 Security.	622	APPENDIX N INDOOR TRADE SHOWS AND EXHIBITIONS	637
H105 Referenced Standards.	622	N101 General.	637
APPENDIX I FIRE PROTECTION SYSTEMS—NONCOMPLIANT CONDITIONS	623	N102 Definitions.	637
I101 Noncompliant Conditions	623	N103 Public Safety for Events	638
I102 Referenced Standards	625	N104 Interior Finish and Decorative Materials	638
APPENDIX J BUILDING INFORMATION SIGN	626	N105 Multiple-Level Booths.	638
J101 General	626	N106 Covered Booths	638
J102 Referenced Standards	628	N107 Display and Storage of Hazardous and Combustible Materials	638
APPENDIX K CONSTRUCTION REQUIREMENTS FOR EXISTING AMBULATORY CARE FACILITIES.	629	N108 Means of Egress	639
K101 General	629	N109 Referenced Standards	639
K102 Fire Safety Requirements for Existing Ambulatory Care Facilities	629	APPENDIX O VALET TRASH AND RECYCLING COLLECTION IN GROUP R-2 OCCUPANCIES	640
K103 Incidental Uses in Existing Ambulatory Care Facilities.	631	O101 Scope	640
K104 Means of Egress Requirements for Existing Ambulatory Care Facilities	631	O102 Containers.	640
K105 Referenced Standards.	632	O103 Container Location	640
APPENDIX L REQUIREMENTS FOR FIREFIGHTER AIR REPLENISHMENT SYSTEMS	633	O104 Additional Requirements.	640
L101 General	633	O105 Referenced Standards	641
L102 Definitions	633	INDEX.	642
L103 Permits	633		
L104 Design and Installation	633		
L105 Acceptance Tests	635		
L106 Inspection, Testing and Maintenance	635		
L107 Referenced Standards	635		