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IBC[®]

CODE AND COMMENTARY

VOLUME 1

The complete IBC with corresponding commentary after each section.



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2018 IBC® Code and Commentary—Volume 1

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PREFACE

The principal purpose of the Commentary is to provide a basic volume of knowledge and facts relating to building construction as it pertains to the regulations set forth in the 2018 *International Building Code*. The person who is serious about effectively designing, constructing and regulating buildings and structures will find the Commentary to be a reliable data source and reference to almost all components of the built environment.

As a follow-up to the *International Building Code*, we offer a companion document, the *IBC® Code and Commentary—Volume 1*. Volume 1 covers Chapters 1 through 15 of the 2018 *International Building Code*. The basic appeal of the Commentary is thus: it provides in a small package and at a reasonable cost thorough coverage of many issues likely to be dealt with when using the *International Building Code*—and then supplements that coverage with historical and technical background. Reference lists, information sources and bibliographies are also included.

Throughout all of this, effort has been made to keep the vast quantity of material accessible and in a method of presentation useful. With a comprehensive yet concise summary of each section, the Commentary provides a convenient reference for regulations applicable to the construction of buildings and structures. In the chapters that follow, discussions focus on the full meaning and implications of the code text. Guidelines suggest the most effective method of application, and the consequences of not adhering to the code text. Illustrations are provided to aid understanding; they do not necessarily illustrate the only methods of achieving code compliance.

The format of the Commentary includes the full text of each section, table and figure in the code, followed immediately by the commentary applicable to that text. At the time of printing, the Commentary reflects the most up-to-date text of the 2018 *International Building Code*. As stated in the preface to the *International Building Code*, the content of sections in the code that begin with a letter designation (i.e., Section [F]307.1) are maintained by another code development committee. Each section's narrative includes a statement of its objective and intent, and usually includes a discussion about why the requirement commands the conditions set forth. Code text and commentary text are easily distinguished from each other. All code text is shown as it appears in the *International Building Code*, and all commentary is indented below the code text and begins with the symbol ❖.

Readers should note that the Commentary is to be used in conjunction with the *International Building Code* and not as a substitute for the code. The Commentary is advisory only; the code official alone possesses the authority and responsibility for interpreting the code.

Comments and recommendations are encouraged, for through your input, we can improve future editions. Please direct your comments to the Codes and Standards Development Department at the Chicago District Office.

The International Code Council would like to extend its thanks to the following individuals for their contributions to the technical content of this commentary:

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S.I. CONVERSION CHART FOR ENGLISH UNITS

English Unit	Metric Equivalent
1 inch (in.)	25.4 millimeters (mm)
1 foot (ft.)	304.8 millimeters (mm)
1 square inch (in ²)	645.2 square millimeters (mm ²)
1 square foot (ft ²)	0.093 square meters (m ²)
1 cubic foot (ft ³)	0.028 cubic meters (m ³)
1 gallon (gal.)	.00379 cubic meters (m ³)
1 gallon (gal.)	3.79 liters (L)
1 pound (lb.)	0.454 kilograms (kg)
1 ton (T)	0.907 metric ton
1 ton (T)	907.2 kilograms (kg)
1 pound per square inch (psi)	6.894 kilopascals (kPa)
1 pound per square inch (psi)	.0703 kilogram force per square centimeter
1 pound per square foot (psf)	47.88 Pascals (Pa)
1 pound per square foot (psf)	47.88 Newton per square meter (N/m ²)
1 foot candle	10.76 lux
1 inch water column	248.84 Pascal
1 degree	0.01745 radian
1 Btu/hr	0.2931 Watt
Temperature degrees Fahrenheit	1.8 × degrees C + 32

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Chapter 1: Scope and Administration

General Comments

This chapter contains provisions for the application, enforcement and administration of subsequent requirements of the code. In addition to establishing the scope of the code, Chapter 1 identifies which buildings and structures come under its purview.

Chapter 1 is subdivided into two parts. Part 1 includes scope and application, Sections 101 and 102. Part 2 deals with administration and enforcement, Sections 103 through 116.

- Section 101 addresses the scope of the *International Building Code*® (IBC®) and references the other *International Codes*® mentioned in the code.
- Section 102 establishes the applicability of the code and addresses existing structures.
- Section 103 establishes the department of building safety and the appointment of department personnel.
- Section 104 outlines the duties and authority of the building official with regard to permits, inspections and right of entry. It also establishes the authority of the building official to approve alternative materials, used materials and modifications.
- Section 105 states when permits are required and establishes procedures for the review of applications and the issuance of permits.
- Section 106 provides requirements for posting live loads greater than 50 pounds per square foot (psf) (2394 Pa).
- Section 107 describes the information that must be included on construction documents submitted with the application.
- Section 108 authorizes the building official to issue permits for temporary structures and uses.
- Section 109 establishes requirements for a fee schedule.
- Section 110 includes inspection duties of the building official or an inspection agency that has been approved by the building official.
- Section 111 details provisions for the issuance of certificates of occupancy.
- Section 112 gives the building official the authority to approve utility connections.
- Section 113 establishes the board of appeals and criteria for making applications for appeal.

- Section 114 addresses administrative provisions for violations, including provisions for unlawful acts, violation notices, prosecution and penalties.
- Section 115 describes procedures for stop work orders.
- Section 116 establishes the criteria for unsafe structures and equipment, and the procedures to be followed by the building official for abatement and notification to the responsible party.

Each state's building code enabling legislation, which is grounded within the police power of the state, is the source of all authority to enact building codes. In terms of how it is used, police power is the power of the state to legislate for the general welfare of its citizens. This power enables passage of such laws as building codes. If the state legislature has limited this power in any way, the municipality may not exceed these limitations. While the municipality may not further delegate its police power (or, by delegating the burden of determining code compliance to the building owner, contractor or architect), it may turn over the administration of the building code to a municipal official, such as a building official, provided that sufficient criteria are given to establish clearly the basis for decisions as to whether a proposed building conforms to the code.

Chapter 1 is largely concerned with maintaining "due process of law" in enforcing the building performance criteria contained in the body of the code. Only through careful observation of the administrative provisions can the building official reasonably hope to demonstrate that "equal protection under the law" has been provided. While it is generally assumed that the administration and enforcement section of a code is geared toward a building official, this is not entirely true. The provisions also establish the rights and privileges of the design professional, contractor and building owner. The position of the building official is merely to review the proposed and completed work and to determine if the construction conforms to the code requirements. The design professional is responsible for the design of a safe structure. The contractor is responsible for constructing the structure in compliance with the plans.

During the course of construction, the building official reviews the activity to ascertain that the spirit and intent of the law are being met and that the safety, health and welfare of the public will be protected. As a public servant, the building official enforces the code in an unbiased, proper manner. Every individual is guaranteed equal enforcement of the provisions of the code. Furthermore, design professionals, contractors and building owners have the right of due process for any requirement in the code.

Purpose

The IBC, as with any other I-Code®, is intended to be adopted as a legally enforceable document to provide a reasonable level of safety, and protection of public health, general welfare and property. A building code cannot be effective without adequate provisions for its administration and enforcement. The official charged with the administration and enforcement of building regulations has a great responsibility, and with this responsibility goes authority. No matter how detailed the building code may be, the building official must, to some extent, exercise his or her own judgment in determining code compliance. The building official has the responsibility to establish that the homes in which the citizens of the community reside and the buildings in which they

work are designed and constructed to be structurally stable with adequate means of egress, accessibility, light and ventilation, and to provide a minimum acceptable level of protection to life and property from fire.

Chapter 1 contains two parts. Part 1, Scope and Application, contains all issues related to the scope and intent of the code, as well as the applicability of this code relative to other standards and laws that might also be applicable on a given building project, such as federal or state. Part 2, Administration and Enforcement, contains all issues related to the duties and powers of the building official, the issuance of permits and certificates of occupancy, and other related operational items.

PART 1—SCOPE AND APPLICATION

SECTION 101 GENERAL

[A] 101.1 Title. These regulations shall be known as the *Building Code* of [NAME OF JURISDICTION], hereinafter referred to as “this code.”

❖ The purpose of this section is to identify the adopted regulations by inserting the name of the adopting jurisdiction into the code.

[A] 101.2 Scope. The provisions of this code shall apply to the construction, *alteration*, relocation, enlargement, replacement, *repair*, equipment, use and occupancy, location, maintenance, removal and demolition of every building or structure or any appurtenances connected or attached to such buildings or structures.

Exception: Detached one- and two-family dwellings and townhouses not more than three stories above grade plane in height with a separate means of egress, and their accessory structures not more than three stories above grade plane in height, shall comply with this code or the *International Residential Code*.

❖ This section establishes when the regulations contained in the code must be followed, whether all or in part. Something must happen (construction of a new building, modification to an existing one or allowing an existing building or structure to become unsafe) for the code to be applicable. While such activity may not be as significant as a new building, a fence is considered a structure and, therefore, its erection is within the scope of the code. The IBC is not a maintenance document requiring periodic inspections that will, in turn, result in an enforcement action, although periodic inspections are addressed by the *International Fire Code*® (IFC®).

The exception applies to detached one- and two-family dwellings and townhouses that are not more than three stories above grade and have separate means of egress have the option of complying with the *International Residential Code*® (IRC®). The definition of townhouse adds that in order to be able to use the IRC, a townhouse must meet four criteria:

1. It is not more than three stories in height.
2. It has a separate means of egress.
3. Each unit extends from foundation to roof.
4. There is open space on two or more sides.

This applies to all such structures, whether or not there are lot lines separating them, and also to accessory structures such as garages and pools. Accessory structures are also limited to not more than three stories in height. Such structures four stories or more in height are beyond the scope of the IRC and must comply with the provisions of the IBC and its referenced codes.

There are five exceptions in the IRC that allow for buildings otherwise required to be constructed in accordance with the IRC. These include live/work units (see Section 419), small bed-and-breakfast style hotels where there are five or fewer guestrooms and the owner also lives in the hotel (see Section 310.4.2), and care facilities within a dwelling unit with five or fewer persons receiving care (see Sections 305.2.2, 308.2.4, 308.3.2, 308.5.4 and 310.4.1).

[A] 101.2.1 Appendices. Provisions in the appendices shall not apply unless specifically adopted.

❖ The provisions contained in Appendices A through N are not considered part of the code and are, therefore, not enforceable unless they are specifically included in the ordinance or other adopting law or regulation of the jurisdiction.

[A] **101.3 Intent.** The purpose of this code is to establish the minimum requirements to provide a reasonable level of safety, public health and general welfare through structural strength, *means of egress* facilities, stability, sanitation, adequate light and ventilation, energy conservation, and safety to life and property from fire, explosion and other hazards, and to provide a reasonable level of safety to fire fighters and emergency responders during emergency operations.

❖ The code is intended to establish regulations providing for the safety, health and general welfare of building occupants, as well as for fire fighters and emergency responders during building emergencies. The intent becomes important in the application of such sections as Sections 102, 104.11 and 114, as well as any enforcement-oriented interpretive action or judgment. Like any code, the written text is subject to interpretation. Interpretations should not be affected by economics or the potential impact on any party. The only considerations should be safety, health and welfare of occupants and emergency responders.

[A] **101.4 Referenced codes.** The other codes listed in Sections 101.4.1 through 101.4.7 and referenced elsewhere in this code shall be considered to be part of the requirements of this code to the prescribed extent of each such reference.

❖ The International Code Council® (ICC®) promulgates a complete set of codes to regulate the built environment. These codes are coordinated with each other so as to avoid conflicting provisions. When the code is adopted by a jurisdiction, the codes that regulate a building's electrical, fuel gas, mechanical and plumbing systems are also included in the adoption and are considered a part of the code. The *International Property Maintenance Code*® (IPMC®), *International Existing Building Code*® (IEBC®) and the IFGC are also referenced and enable the building official to address unsafe conditions in existing structures. Various other sections of the IBC also specifically refer to those codes. Note that those codes are listed in Chapter 35 and further identified by the specific year of issue. Only that edition of the code is legally adopted and any future editions are not enforceable. New editions of the I-Codes are issued concurrently and new editions of the referenced codes are adopted with each new edition of the IBC. Adoption is done in this manner so that there are not conflicting provisions in the codes.

[A] **101.4.1 Gas.** The provisions of the *International Fuel Gas Code* shall apply to the installation of gas piping from the point of delivery, gas appliances and related accessories as provided in this code. These requirements apply to gas piping systems extending from the point of delivery to the inlet connections of appliances and the installation and operation of residential and commercial gas appliances and related accessories.

❖ The *International Fuel Gas Code*® (IFGC®) regulates gas piping and appliances and is adopted by refer-

ence from this section, as well as other sections in the IBC, as the enforceable document for regulating gas systems. This section also establishes the scope of the IFGC as extending from the point of delivery to the inlet connections of each gas appliance. The "point of delivery" is defined in the IFGC as the outlet of the service meter, regulator or shutoff valve.

[A] **101.4.2 Mechanical.** The provisions of the *International Mechanical Code* shall apply to the installation, *alteration, repairs* and replacement of mechanical systems, including equipment, appliances, fixtures, fittings and appurtenances, including ventilating, heating, cooling, air conditioning and refrigeration systems, incinerators and other energy-related systems.

❖ The IMC regulates all aspects of a building's mechanical system, including ventilating, heating, air-conditioning and refrigeration systems, incinerators and other energy-related systems, and is adopted by reference from this section, as well as other sections in this code, as the enforceable document for regulating these systems.

[A] **101.4.3 Plumbing.** The provisions of the *International Plumbing Code* shall apply to the installation, *alteration, repair* and replacement of plumbing systems, including equipment, appliances, fixtures, fittings and appurtenances, and where connected to a water or sewage system and all aspects of a medical gas system. The provisions of the *International Private Sewage Disposal Code* shall apply to private sewage disposal systems.

❖ The *International Plumbing Code*® (IPC®) regulates the components of a building's plumbing system, including water supply and distribution piping; sanitary and storm drainage systems; the fixtures and appliances connected thereto; and medical gas and oxygen systems. The IPC is adopted by reference from this section, as well as other sections in this code, as the enforceable document for regulating these systems. The *International Private Sewage Disposal Code*® (IPSDC®) is also adopted as the enforceable document for regulating on-site sewage disposal systems.

[A] **101.4.4 Property maintenance.** The provisions of the *International Property Maintenance Code* shall apply to existing structures and premises; equipment and facilities; light, ventilation, space heating, sanitation, life and fire safety hazards; responsibilities of *owners*, operators and occupants; and occupancy of existing premises and structures.

❖ The applicability of the code to existing structures is set forth in the IEBC and is generally limited to new work or changes in use that occur in these buildings. The IPMC, however, is specifically intended to apply to existing structures and their premises, providing a jurisdiction with an enforceable document protecting occupant safety, public health and general welfare, including in buildings that were constructed prior to the adoption of the current building code.