2012 IMC®
CODE AND COMMENTARY

The complete IMC with commentary after each section

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INTERNATIONAL CODE COUNCIL®

2012 International Mechanical Code® Commentary

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PREFACE

Internationally, code officials recognize the need for a modern, up-to-date mechanical code addressing the design and installation of mechanical systems through requirements emphasizing performance. The *International Mechanical Code* is designed to meet these needs through model code regulations that safeguard the public health and safety in all communities, large and small.

The principal purpose of this Commentary is to provide a basic volume of knowledge and facts relating to the code. The Commentary provides it in a small package and at reasonable cost thorough coverage of many issues likely to be dealt with when using the *International Mechanical Code*—and then supplements that coverage with historical and technical background. Reference lists, information sources and bibliographies are also included.

Strenuous effort has been put into keeping the vast quantity of material accessible and its method of presentation useful. With a comprehensive yet concise summary of each section, the Commentary is a convenient reference for mechanical regulations. 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 2012 *International Mechanical Code*. 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 Mechanical 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 Mechanical 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.

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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 mechanical equipment, appliances and systems it covers. Sections 101 and 102 establish the scope and applicability of the code and address existing equipment and systems. Section 103 establishes the department of mechanical inspection and the appointment of department personnel. Section 104 contains the duties and authority of the code official for rulemaking, permits, inspections and right of entry. Section 105 deals with approval of modifications, alternative materials, methods and equipment. Section 106 states when permits, construction document submittals, permit issuance and fees are required. Section 107 includes inspection duties of the code official or an inspection agency that has been approved by the code official, mechanical system testing, contractor responsibilities, notice of approval and temporary connections for testing mechanical systems. Administrative provisions for violations are addressed in Section 108, including provisions covering unlawful acts, violation notices, prosecution, penalties, stop work orders and unsafe mechanical systems. Section 109 establishes the board of appeals and includes provisions for application for appeal, membership of the board, board meeting notices, open hearing requirements, when postponements are in order, appeals board decisions and court review.

The law of building regulation is based on the police power of the state. This police power is the source of all authority to enact building regulations. 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 a mechanical code. It is from the police power delegated by the state legislature that local governments are able to enact building regulations. If the state legislature has limited this power in any way, the municipality may not exceed these limitations. Although the municipality may not further delegate its police power by delegating the burden of determining code compliance to the building owner, contractor or architect, it may turn over the administration of building regulations to a municipal official, such as a code official, if he or she is given sufficient criteria to clearly establish the basis for deciding whether or not a proposed building, including its mechanical systems, conforms to the code.

Chapter 1 of the code is largely concerned with maintaining "due process of law" in enforcing the performance criteria contained in the body of the code. Only through careful observation of the administrative provisions can the code official demonstrate "equal protection under the law." Although the administrative and enforcement section of a code is geared toward the code official, the provisions also establish the rights and privileges of the design professional, the contractor and the building owner. The position of the code official is to review the proposed and completed work and to determine whether a mechanical system installation conforms to the code requirements. The design professional is responsible for the design of a safe mechanical system. The contractor is responsible for installing the system in strict accordance with the plans. During the construction of a mechanical system, the code official reviews the activity to see that the spirit and intent of the law are being met and that the mechanical system provides adequate protection of public health. As a public servant, the code official enforces the code in an unbiased, proper manner. Every individual is guaranteed equal enforcement of the code. Furthermore, design professionals, contractors and building owners have the right of due process for any requirement in the code.

Purpose

A mechanical code, as with any other code, is intended for adoption as a legally enforceable document to safeguard health, safety, property and public welfare. A mechanical code cannot be effective without adequate provisions for its administration and enforcement. The official charged with the administration and enforcement of mechanical regulations has a great responsibility, and with this responsibility goes authority. No matter how detailed the mechanical code may be, the code official must, to some extent, exercise judgment in determining code compliance. The code official has the responsibility for establishing that the homes in which the citizens of the community reside and the buildings in which they work are designed and constructed to be reasonably free from hazards associated with the presence and use of mechanical equipment, appliances and systems. The code intends to establish a minimum acceptable level of safety.

PART 1–SCOPE AND APPLICATION

SECTION 101
GENERAL

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

❖ This section identifies the adopted regulations by the insertion of the name of the adopting jurisdiction into the code. This is one of several places in the code that the adopting agency must "fill in the brackets" to insert information that is specific to the local jurisdiction (see the sample ordinance in the front of the code book).

[A] 101.2 Scope. This code shall regulate the design, installation, maintenance, *alteration* and inspection of mechanical systems that are permanently installed and utilized to provide control of environmental conditions and related processes within buildings. This code shall also regulate those mechanical systems, system components, *equipment* and appliances specifically addressed herein. The installation of fuel gas distribution piping and *equipment*, fuel gas-fired appliances and fuel gas-fired *appliance* venting systems shall be regulated by the *International Fuel Gas Code*.

Exception: Detached one- and two-family dwellings and multiple single-family dwellings (townhouses) not more than three stories high with separate means of egress and their accessory structures shall comply with the *International Residential Code*.

❖ This section describes the types of mechanical systems covered by the code. The code is applicable from the initial design of mechanical systems, through installation and construction and into the maintenance of operating systems. The scope of the code is primarily focused on heating, ventilating and air-conditioning (HVAC) systems, those items specifically addressed in the code and those building "service" items that make a building comfortable, functional and safe. The code is intended to cover all mechanical appliances, equipment and systems that are specifically intended, designed and necessary for the general safety and well-being of the occupants of a building. The code intends to regulate the installation, operation and maintenance of any and all equipment and appliances that can affect the health, safety and welfare of building occupants.

Note that this section references the *International Fuel Gas Code*® (IFGC®) for fuel-gas-related regulations. This is a result of a written cooperative agreement between the International Code Council® (ICC®) and the American Gas Association (AGA) to promulgate the IFGC. All regulations for the installation of fuel gas distribution piping and equipment, fuel gas-fired appliances and fuel gas-fired appliance venting systems have been removed from the code. See the IFGC for fuel-gas-related requirements.

The exception sends the user to the *International Residential Code*® (IRC®) for one- and two-family dwellings and townhouses not more than three stories in height. It is the intent of the ICC family of codes that the *International Mechanical Code*® (IMC®) be applied to structures not within the scope of the IRC. For example, a four-story single-family dwelling would be subject to the provisions of the IMC.

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

❖ This section clarifies that the appendices are not part of the code unless specifically included in the adopting ordinance of the jurisdiction. Otherwise, the appendices are not intended to be enforceable.

[A] 101.3 Intent. The purpose of this code is to provide minimum standards to safeguard life or limb, health, property and public welfare by regulating and controlling the design, construction, installation, quality of materials, location, operation and maintenance or use of mechanical systems.

❖ The intent of the code is to set forth requirements that establish the minimum acceptable level to safeguard life or limb, health, property and public welfare. The intent becomes important in the application of such sections as Sections 102, 104.2, 105.2 and 108, as well as any enforcement-oriented interpretive action or judgement. 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 consideration should be protection of the public health, safety and welfare.

[A] 101.4 Severability. If a section, subsection, sentence, clause or phrase of this code is, for any reason, held to be unconstitutional, such decision shall not affect the validity of the remaining portions of this code.

❖ Once the code is adopted, only a court can set aside any provisions of the code. This is essential to safeguard the application of the code text if a provision of the code is declared illegal or unconstitutional. This section would preserve the legislative action that put the legal provisions in place.

SECTION 102
APPLICABILITY

[A] 102.1 General. Where there is a conflict between a general requirement and a specific requirement, the specific requirement shall govern. Where, in a specific case, different sections of this code specify different materials, methods of construction or other requirements, the most restrictive shall govern.

❖ Bear in mind that conflicts within the code rarely, if ever, occur, but if they do, this section applies. Specific requirements of the code override or take precedence over general requirements. For example, in the 2006 edition of the code, Section 401.4 required a 10-foot (3048 mm) separation between all exhaust openings and property lines, whereas Section 501.2.1, Item 3 required a 3-foot (914.4 mm) separa-

tion for a specific type of exhaust. In this case, Section 501.2.1 would overrule. This conflict was resolved in the 2009 edition of the code.

[A] 102.2 Existing installations. Except as otherwise provided for in this chapter, a provision in this code shall not require the removal, *alteration* or abandonment of, nor prevent the continued utilization and maintenance of, a mechanical system lawfully in existence at the time of the adoption of this code.

❖ An existing mechanical system is generally considered to be "grandfathered" in with code adoption if the system meets a minimum level of safety. Frequently, the criteria for this level are the regulations (or code) under which the existing building was originally constructed. If there are no previous code criteria to apply, the code official is to apply those provisions of the code that are reasonably applicable to existing buildings. A specific level of safety is dictated by provisions dealing with hazard abatement in existing buildings and maintenance provisions, as contained in this code, the *International Property Maintenance Code*® (IPMC®) and the *International Fire Code*® (IFC®)

[A] 102.3 Maintenance. Mechanical systems, both existing and new, and parts thereof shall be maintained in proper operating condition in accordance with the original design and in a safe and sanitary condition. Devices or safeguards which are required by this code shall be maintained in compliance with the code edition under which they were installed. The owner or the owner's designated agent shall be responsible for maintenance of mechanical systems. To determine compliance with this provision, the code official shall have the authority to require a mechanical system to be reinspected. The inspection for maintenance of HVAC systems shall be done in accordance with ASHRAE/ACCA/ANSI Standard 180.

❖ All mechanical systems and equipment are subject to deterioration resulting from aging, wear, accumulation of dirt and debris, corrosion and other factors. Maintenance is necessary to keep mechanical systems and equipment in proper operating condition. All required safety devices and controls must be maintained to continue providing the protection that they afford. Existing equipment and systems could be equipped with safety devices or other measures that were necessary because of the nature of the equipment, and such safeguards may have been required by a code that predates the current code. All safeguards required by previous or present codes must be maintained for the life of the equipment or system served by those safeguards.

Maintenance inspections must be performed in accordance with ASHRAE/ACCA/ANSI Standard 180 so that all components of the mechanical system requiring maintenance are properly addressed.

The maintenance of mechanical systems as prescribed in this section is the responsibility of the property owner. The owner may authorize another party to be responsible for the property, in which case that party is responsible for the maintenance of the mechanical systems involved.

The reinspection authority of the code official is needed to accomplish compliance with the maintenance requirements in this section.

[A] 102.4 Additions, alterations or repairs. Additions, alterations, renovations or repairs to a mechanical system shall conform to that required for a new mechanical system without requiring the existing mechanical system to comply with all of the requirements of this code. Additions, alterations or repairs shall not cause an existing mechanical system to become unsafe, hazardous or overloaded.

Minor additions, alterations, renovations and repairs to existing mechanical systems shall meet the provisions for new construction, unless such work is done in the same manner and arrangement as was in the existing system, is not hazardous and is *approved*.

❖ Simply stated, new work must comply with the current requirements for new work. Any alteration or addition to an existing system involves some extent of new work and that new work is subject to the requirements of the code. Additions or alterations can place additional loads or different demands on an existing system and those loads or demands could necessitate changing all or part of the existing system. Additions and alterations must not cause an existing system to be any less in compliance with the code than it was before the changes.

[A] 102.5 Change in occupancy. It shall be unlawful to make a change in the *occupancy* of any structure which will subject the structure to any special provision of this code applicable to the new *occupancy* without approval. The code official shall certify that such structure meets the intent of the provisions of law governing building construction for the proposed new *occupancy* and that such change of *occupancy* does not result in any hazard to the public health, safety or welfare.

❖ When a building undergoes a change of occupancy, the mechanical system must be evaluated to determine what effect the change of occupancy has on it. If an existing system serves an occupancy that is different from the occupancy it served when the code went into effect, the mechanical system must comply with the applicable code requirements for a mechanical system serving the newer occupancy. Depending on the nature of the previous occupancy, changing a building's occupancy classification could result in a change to the mechanical system. For example, if a mercantile building was converted to a restaurant, additional ventilation would be required for the public based on the increased occupant load.

[A] 102.6 Historic buildings. The provisions of this code relating to the construction, *alteration*, repair, enlargement, restoration, relocation or moving of buildings or structures shall not be mandatory for existing buildings or structures identified and classified by the state or local jurisdiction as historic buildings when such buildings or structures are judged by the code official to be safe and in the public inter-