Jamaican Standard

# 2024 Jamaica Mechanical Code

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# PREFACE

## Introduction

The *Jamaica Mechanical Code* (JMC) establishes minimum requirements for mechanical systems using prescriptive and performance-related provisions. It is founded on broad-based principles that make possible the use of new materials and new mechanical designs. This 2024 edition is fully compatible with all of the *Jamaica Codes* (J-Codes) published by the International Code Council® (ICC®), and the Bureau of Standards, including the *Jamaica Building Code, Jamaica Energy Conservation Code, Jamaica Existing Building Code, Jamaica Fire Code, Jamaica Fuel Gas Code*, *Jamaica Plumbing Code, Jamaica Private Sewage Disposal Code, Jamaica Property Maintenance Code,* and the *Jamaica Small Building/Residential Code*.

The I-Codes and their Jamaican counterparts, including this *Jamaica Mechanical Code*, are being used in a variety of ways in both the public and private sectors. Most building industry professionals are familiar with the I-Codes/J-Codes as the basis of building laws and regulations in Jamaica. However, the impact of the codes extends well beyond the regulatory arena, as they are being used in a variety of nonregulatory settings, including:

- Voluntary compliance programmes such as those promoting sustainability, energy efficiency and disaster resistance.
- The insurance industry, to estimate and manage risk, and as a tool in underwriting and rate decisions.
- Certification and credentialing of individuals involved in the fields of building design, construction and safety.
- Certification of building and construction-related products.
- Jamaica Government agencies, to guide construction in an array of government-owned properties.
- Facilities management.
- “Best practices” benchmarks for designers and builders, including those who are engaged in projects with a governmental enforcement mechanism.
- College, university and professional school textbooks and curricula.
- Reference works related to building design and construction.

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

## Development

This 2024 edition presents this code as issued by the ICC 2003 version, with changes reflected in the 2012 through 2018 editions and local changes approved by the BSJ Code Development Process through 2018. A new edition such as this is targeted for promulgation every 6 years.

This code is founded on principles intended to establish provisions consistent with the scope of a mechanical code that adequately protects public health, safety and welfare; provisions that do not unnecessarily increase construction costs; provisions that do not restrict the use of new materials, products or methods of construction; and provisions that do not give preferential treatment to particular types or classes of materials, products or methods of construction.

## Maintenance

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

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

In order to ensure that organizations with a direct and material interest in the codes have a voice in the process, the BSJ has developed partnerships with key industry segments that will be impacted by the use of the code. Some code development committee members were nominated by the following industry partners and approved by the BSJ Council:

- Jamaica Institution of Architects (JIE)
- Construction Industry Council (CIC)

The code development committee evaluates and makes recommendations regarding proposed changes to the codes both from its expertise and from suggestions advanced by BSJ appointed consultants. Their recommendations are then subject to public comment and alterations emanating there from ICC's review, clarification and formatting of the proposed draft code and acceptance by the BSJ's Standards Council (Board of Directors).

The contents of this work are subject to change through the code development cycles and by any governmental entity that enacts the code into law. For more information regarding the code development process, contact the Standards Division of the Bureau of Standards Jamaica.

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

## Code Development Committee Responsibilities

In each code development cycle, consultant-proposed changes to this code are considered at the BSJ's Building Code Committee meetings and its approved alterations constitute the recommendation to the Jamaican public for final proposed change. Code change proposals are further altered as warranted from the public comments and the draft document submitted to the ICC for their review, suggested clarifications and formatting. The draft document is then finally presented to the BSJ's Standards Council where reasons for significant section changes are given and approval sought. Any significant condition for approval is factored into the draft code by the BSJ's Building Code Committee before it is sent to the Ministry of Industry and Commerce to be declared and gazzetted as a national Jamaican code.

In establishing the BCTRC the Standards Act requires that the broadest stakeholder's representation be built into this committee. The committee has been made large to facilitate the diverse codes and subject matter to be reviewed, ensure that meetings have the best chance of a quorum whenever they are called and the mandatory virtual meetings which the Covid Pandemic has imposed. The following are the persons who served on the BCTRC and the organization they represented:

1. Mr. Roosevelt DaCosta—Chief Code Consultant, Endacosta Limited
2. Mrs. Lise Walter—Jamaica Institution of Engineers
3. Mr. Peter Jervis—Jamaica Institution of Engineers
4. Mr. Percival Stewart—Jamaica Institution of Engineers
5. Dr. Marva Blankson—Jamaica Institution of Engineers

6. Mr. Oneil Josephs— Jamaica Institution of Engineers
7. Mr. Alex Bernard—Jamaica Institution of Engineers
8. Mr. Kevin Sinclair— Jamaica Institution of Engineers
9. Mr. Noel Whyte—Jamaica Institution of Engineers
10. Mr. Gary Walters—Jamaica Institution of Engineers
11. Mr. Dwight Ricketts—Jamaica Institution of Engineers
12. Mr. Howard Chin—Jamaica Institution of Engineers
13. Mr. Karl Kaiser—Private Fire Consultant, Kaiser Fire Prevention
14. Mrs. Nilsia Johnson—Ministry of Health & Wellness, Environmental Health Unit
15. Mrs. Winsome Grant—Jamaica Fire Brigade
16. Mr. Sirnal Sangster—Jamaica Fire Brigade
17. Mr. Derval McKenzie—Jamaica Fire Brigade
18. Mr. Alfred Fennel—Jamaica Fire Brigade
19. Mr. Dwight Wilson—Ministry of Local Government & Community Development
20. Mr. Carl Drummond—Ministry of Local Government & Community Development
21. Mr. Shane Slater—Bureau of Standards Jamaica
22. Mr. Eldon Livingston—Bureau of Standards Jamaica
23. Mr. Wilfred Francis—Bureau of Standards Jamaica
24. Mr. Romaine McLean—Bureau of Standards Jamaica
25. Mr. Richard Lawrence—Bureau of Standards Jamaica
26. Mr. Sheldon Grant—Office of Disaster Preparedness and Emergency Management
27. Mr. David Allen—Code Consultant, Endacosta Limited
28. Mr. Noel DaCosta—Code Consultant, Endacosta Limited
29. Mrs. Erica Whondell Monroe—Legal Consultant, Endacosta Limited
30. Mr. David Chung—Code Consultant, Endacosta Limited
31. Dr. Yolanda Silvera—Academia, University of Technology, Jamaica
32. Mr. Chris Lue—Jamaica Institute of Architects
33. Mr. Lascelles Dixon—Consulting Architect, Lascelles Dixon Associates Limited
34. Dr. Paul Aiken—Academia, University of the West Indies
35. Mr. Africo Adams—Structural Engineering Consultant, SMADA Consultants Limited
36. Mr. Mark Taylor—Consulting Architect, Taylor Architects Limited
37. Mr. Burchell Solomon—Government Electrical Inspectorate
38. Mr. Gary Walters—Construction Industry Council

Now that the National Building Act is in place, and implementation of the code is mandatory, future code development cycles may begin with a public hearing in which the experience of code users (designers, developers, contractors and code enforcement officials) will be aired, problems experienced and solutions offered. This will enrich the local input into the code and make it even more relevant and applicable to the Jamaica Building Industry.

## Marginal Markings

Double vertical lines in the margin denote amendments and additions promulgated by the Bureau of Standards Jamaica modifying the 2018 *International Mechanical Code*.

## Coordination of the Jamaica Codes

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

## Italicized Terms

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

## Adoption

The International Code Council and Bureau of Standards Jamaica maintains a copyright in all of the Jamaica codes and standards. Maintaining copyright allows the ICC and BSJ to fund their missions through sales of books, in both print and electronic formats. The ICC and BSJ welcome adoption of their codes by jurisdictions that recognise and acknowledge the ICC's and BSJ's copyright in the code, and further acknowledge the substantial shared value of the public/private partnership for code development between jurisdictions and the ICC/BSJ.

The ICC and BSJ also recognise the need for jurisdictions to make laws available to the public. All I-Codes and I-Standards, along with the laws of many jurisdictions, are available for free in a non-downloadable form on ICC's website. All J-Codes and J-Standards are available at a cost in a downloadable or hard copy form from the website and BSJ office respectively. Jamaican Laws and Regulations are available free of cost from the Government of Jamaica website at https//Japarliament.gov.jm. Jurisdictions should contact the ICC or the BSJ at adoptions@iccsafe.org to learn how to adopt and distribute laws based on the *Jamaica Mechanical Code* in a manner that provides necessary access, while maintaining the ICC's copyright.

# EFFECTIVE USE OF THE JAMAICA MECHANICAL CODE

The *Jamaica Mechanical Code* (JMC) is a model code that regulates the design and installation of mechanical systems, appliances, appliance venting, duct and ventilation systems, combustion air provisions, hydronic systems and solar systems. The purpose of the code is to establish the minimum acceptable level of safety and to protect life and property from the potential dangers associated with the installation and operation of mechanical systems. The code also protects the personnel that install, maintain, service and replace the systems and appliances addressed by this code.

The JMC is primarily a prescriptive code with some performance requirements. The code relies heavily on product specifications and listings to provide much of the appliance and equipment installation requirements. The general Section 105.2 and the exception to Section 403.2 allow designs and installations to be performed by approved engineering methods as alternatives to the prescriptive methods in the code.

The format of the JMC allows each chapter to be devoted to a particular subject with the exception of Chapter 3, which contains general subject matters that are not extensive enough to warrant their own independent chapter.

**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. A mechanical code, like any other code, is intended to be adopted as a legally enforceable document and it cannot be effective without adequate provisions for its administration and enforcement. The provisions of Chapter 1 establish the authority and duties of the code official appointed by the jurisdiction having authority and also establish the rights and privileges of the design professional, contractor and property owner.

**Chapter 2 Definitions.** Chapter 2 is the repository of the definitions of terms used in the body of the code. Codes are technical documents and every word and term can impact the meaning of the code text and the intended results. The code often uses terms that have a unique meaning in the code and the code meaning can differ substantially from the ordinarily understood meaning of the term as used outside of the code.

The terms defined in Chapter 2 are deemed to be of prime importance in establishing the meaning and intent of the code text that uses the terms. The user of the code should be familiar with and consult this chapter because the definitions are essential to the correct interpretation of the code and because the user may not be aware that a term is defined.

**Chapter 3 General Regulations.** Chapter 3 contains broadly applicable requirements related to appliance location and installation, appliance and systems access, protection of structural elements, condensate disposal and clearances to combustibles, among others.

**Chapter 4 Ventilation.** Chapter 4 includes means for protecting building occupant health by controlling the quality of indoor air and protecting property from the effects of inadequate ventilation. The air changes per hour requirement for both natural and mechanical (forced) ventilation has been upgraded to a minimum of 5 to avoid rampant in-building transfer of COVID-19 and other viruses. In some cases, ventilation is required to prevent or reduce a health hazard by removing contaminants at their source.

Ventilation is both necessary and desirable for the control of air contaminants, moisture and temperature. Habitable and occupiable spaces are ventilated to promote a healthy and comfortable environment for the occupants. Uninhabited and unoccupied spaces are ventilated to protect the building structure from the harmful effects of excessive humidity and heat. Ventilation of specific occupancies is necessary to minimize the potential for toxic or otherwise harmful substances to reach dangerously high concentrations in air.

**Chapter 5 Exhaust Systems.** Chapter 5 provides guidelines for reasonable protection of life, property and health from the hazards associated with exhaust systems, air contaminants and smoke development in the event of a fire. In most cases, these hazards involve materials and gases that are flammable, explosive, toxic or otherwise hazardous. Where contaminants are known to be present in quantities that are irritating or harmful to the occupants' health or are hazardous in a fire, both

naturally and mechanically ventilated spaces must be equipped with mechanical exhaust systems capable of collecting and removing the contaminants.

This chapter contains requirements for the installation of exhaust systems, with an emphasis on the structural integrity of the systems and equipment involved and the overall impact of the systems on the fire safety performance of the building. It includes requirements for the exhaust of commercial kitchen grease- and smoke-laden air, hazardous fumes and toxic gases, clothes dryer moisture and heat and dust, stock and refuse materials.

**Chapter 6 Duct Systems.** Chapter 6 of the code regulates the materials and methods used for constructing and installing ducts, plenums, system controls, exhaust systems, fire protection systems and related components that affect the overall performance of a building's air distribution system and the reasonable protection of life and property from the hazards associated with air-moving equipment and systems. This chapter contains requirements for the installation of supply, return and exhaust air systems. Specific exhaust systems are also addressed in Chapter 5. Information on the design of duct systems is limited to that in Section 603.2. The code is very much concerned with the structural integrity of the systems and the overall impact of the systems on the fire safety and life safety performance of the building. Design considerations such as duct sizing, maximum efficiency, cost effectiveness, occupant comfort and convenience are the responsibility of the design professional. The provisions for the protection of duct penetrations of wall, floor, ceiling and roof assemblies are extracted from the *Jamaica Building Code*.

**Chapter 7 Combustion Air.** Complete combustion of solid and liquid fuel is essential for the proper operation of appliances, for control of harmful emissions and for achieving maximum fuel efficiency.

The specific combustion air requirements provided in previous editions of the code have been deleted in favor of a single section that directs the user to NFPA 31 for oil-fired appliance combustion air requirements and the manufacturer's installation instructions for solid-fuel burning appliances. For gas-fired appliances, the provisions of the *Jamaica Fuel Gas Code* are applicable.

**Chapter 8 Chimneys and Vents.** Chapter 8 is intended to regulate the design, construction, installation, maintenance, repair and approval of chimneys, vents and their connections to solid and liquid fuel-burning appliances. The requirements of this chapter are intended to achieve the complete removal of the products of combustion from fuel-burning appliances and equipment. This chapter includes regulations for the proper selection, design, construction and installation of a chimney or vent, along with appropriate measures to minimize the related potential fire hazards. A chimney or vent must be designed for the type of appliance or equipment it serves. Chimneys and vents are designed for specific applications depending on the flue gas temperatures and the type of fuel being burned in the appliance. Chimneys and vents for gas-fired appliances are covered in the *Jamaica Fuel Gas Code*.

**Chapter 9 Specific Appliances, Fireplaces and Solid Fuel-burning Equipment.** Chapter 9 sets minimum construction and performance criteria for fireplaces, appliances and equipment and provides for the safe installation of these items. It reflects the code's intent to specifically address all of the types of appliances that the code intends to regulate. Other regulations affecting the installation of solid fuel-burning fireplaces, appliances and accessory appliances are found in Chapters 3, 6, 7, 8, 10, 11, 12, 13 and 14.

**Chapter 10 Boilers, Water Heaters and Pressure Vessels.** Chapter 10 presents regulations for the proper installation of boilers, water heaters and pressure vessels to protect life and property from the hazards associated with those appliances and vessels. It applies to all types of boilers and pressure vessels, regardless of size, heat input, operating pressure or operating temperature.

Because pressure vessels are closed containers designed to contain liquids, gases or both under pressure, they must be designed and installed to prevent structural failures that can result in extremely hazardous situations. Certain safety features are therefore provided in Chapter 10 to reduce the potential for explosion hazards.

**Chapter 11 Refrigeration.** Chapter 11 contains regulations pertaining to the life safety of building occupants. These regulations establish minimum requirements to achieve the proper design, construction, installation and operation of refrigeration systems. Refrigeration systems are a combination of interconnected components and piping assembled to form a closed circuit in which a refrigerant is circulated. The system's function is to extract heat from a location or medium, and to reject that heat to a different location or medium. This chapter establishes reasonable safeguards for the occupants by defining and mandating practices that are consistent with the practices and experience of the industry.

**Chapter 12 Hydronic Piping.** Hydronic piping includes piping, fittings and valves used in building space conditioning systems. Applications include hot water, chilled water, steam, steam condensate, brines and water/antifreeze mixtures. Chapter 12 contains the provisions that govern the construction, installation, alteration and repair of all hydronic piping systems that affect reliability, serviceability, energy efficiency and safety.

**Chapter 13 Fuel Oil Piping and Storage.** Chapter 13 regulates the design and installation of fuel oil storage and piping systems. The regulations include reference to construction standards for above-ground and underground storage tanks, material standards for piping systems (both above-ground and underground) and extensive requirements for the proper assembly of system piping and components. The *Jamaica Fire Code* (JFC) covers subjects not addressed in detail here. The provisions in this chapter are intended to prevent fires, leaks and spills involving fuel oil storage and piping systems.

**Chapter 14 Solar Thermal Systems.** Chapter 14 establishes provisions for the safe installation, operation and repair of solar energy systems used for space heating or cooling, domestic hot water heating or processing. Although such systems use components similar to those of conventional mechanical equipment, many of these provisions are unique to solar energy systems.

**Chapter 15 Referenced Standards.** Chapter 15 lists all of the product and installation standards and codes that are referenced throughout Chapters 1 through 14. As stated in Section 102.8, 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. Chapter 15 provides the full title and edition year of the standards and codes in addition to the address of the promulgators and the section numbers in which the standards and codes are referenced.

**Appendix A Chimney Connector Pass-throughs.** Appendix A provides figures that illustrate various requirements in the body of the code. Figure A-1 illustrates the chimney connector clearance requirements of Table 803.10.4.

**Appendix B Recommended Permit Fee Schedule.** Appendix B provides a sample permit fee schedule for mechanical permits. The local jurisdiction may use this appendix and fill in the dollar amounts in the blank spaces to establish their official permit fee schedule. The ICC and BSJ do not establish permit fees because this is the prerogative of the Local Government Ministry and/or Local Authorities or municipalities.

# TABLE OF CONTENTS