

**Plumbing Code Essentials:
Based on the 2024 International
Plumbing Code®**

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Preface

Plumbing design and installation routinely consists of conventional practices, those tried-and-true methods that have performed well over the years and have long been recognized by the plumbing code. With the introduction of new technology, materials and methods, improved understanding of safe and sanitary plumbing systems, and innovation in designs, plumbing technology and the code that regulates it have become increasingly complex. Such complexity is necessary to afford flexibility in design and construction. Reference publications intending to explain the provisions regulating plumbing design and installation may overwhelm the reader with a broad range of topics and alternatives, may provide superficial coverage of all requirements or may focus on the details of a limited number of provisions.

Plumbing Code Essentials: Based on the 2024 International Plumbing Code® was developed to address the need for an illustrated text explaining the essentials of the plumbing code—those provisions essential to understanding the application of the code to the most commonly encountered plumbing practices. The text is presented and

organized in a user-friendly manner with an emphasis on technical accuracy and clear noncode language.

Plumbing Code Essentials features full-color illustrations to assist the reader in visualizing the application of the code requirements. Practical examples, simplified tables and highlights of particularly useful information also aid in understanding the provisions and determining code compliance. References to the applicable sections of the 2024 codes are helpful in locating the corresponding code language and related topics in the code. A glossary of code and plumbing terms clarifies the meaning of the technical provisions.

Anyone involved in the design, installation or inspection of plumbing systems will benefit from this book. Beginner and experienced inspectors, plan checkers, installers, contractors, home builders, architects, designers, home inspectors and students of plumbing technology or related fields will gain understanding and practical application of the frequently used provisions of the 2024 edition of the IPC, plus provisions from *International Residential Code*® (IRC®) plumbing and *International Fuel Gas Code*® (IFGC®) piping.

The content of *Plumbing Code Essentials* is organized to correspond to the order of construction, beginning with layout and planning, plus things one needs to identify during the design. For instance, the planning phase must consider the minimum number of required fixtures, the potable water source, interceptors or separators needed before connecting to the sewer, safety provisions that may apply to the hot water temperature at its source and fixture outlets. This is followed by the design of the drain, waste and vent (DWV) system as well as roof drains and subsoil drainage. Also discussed is the design and installation of the water supply and distribution system, including requirements necessary for protecting the potable water by means of appropriate backflow preventers. In addition, with the increased need for water conservation, the book will review important details with regard to water reuse, such as rainwater harvesting and graywater reuse. References to the applicable IPC code sections are followed by reference to the corresponding section from the 2024 IRC. Finally, fuel gas piping and appliance installation are covered with references to the applicable sections of the 2024 IFGC and the 2024 IRC.

Correct and reasonable application of the code provisions is enhanced by a basic understanding of the code development process, the scope, intent and correlation of the family of International Codes, and the proper administration of those codes. Such fundamental in-

formation is provided in the opening chapters of this publication. The book also explains the interaction of a plumbing code with other local, state or federal regulations.

This book does not intend to cover all provisions of the IPC, IRC and IFGC or all of the accepted materials and methods of plumbing design and installation. Focusing in some detail on the most common plumbing provisions affords an opportunity to fully understand the essentials without exploring every variable and alternative. This is not to say that information not covered is any less important or valid. This book is best used as a companion to the IPC, IRC and IFGC, which should be referenced for more complete information.

ABOUT THE *INTERNATIONAL PLUMBING CODE*

The IPC is a comprehensive plumbing code that establishes minimum regulations for the design and installation of plumbing systems in all types of construction and occupancies. The IPC incorporates prescriptive provisions for conventional design as well as performance criteria that allow the use of new materials and new design methods. The IPC is one of the codes in the family of International Codes published by the International Code Council (ICC). All are maintained and updated through an open code development process and are available internationally for adoption by the governing authority to provide consistent enforceable regulations for the built environment.

The impact of the IPC extends well beyond the regulatory arena, as it is used in a variety of nonregulatory settings, including:

- Voluntary compliance programs 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.
- US federal 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 in jurisdictions that do not

- have a formal regulatory system or a governmental enforcement mechanism.
- College, university and professional school textbooks and curricula.
 - Reference works related to building design and construction.

ABOUT THE *INTERNATIONAL RESIDENTIAL CODE*

The IRC is a comprehensive, stand-alone residential code that establishes minimum regulations for the construction of one- and two-family dwellings and townhouses up to three stories in height, including provisions for fire and life safety, structural design, energy conservation and mechanical, fuel gas, plumbing and electrical systems. The IRC incorporates prescriptive provisions for conventional construction as well as performance criteria that allow the use of new materials and new building designs. Chapters 25 through 33 provide requirements for the design, installation, maintenance, alteration and inspection of plumbing systems that are permanently installed and used to control environmental conditions within residential buildings covered by the IRC.

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ABOUT THE AUTHOR

Jessica Sorensen, ICC Technical Staff, updated the 2021 edition to create the 2024 edition. This edition incorporates the work of 2018 edition author, Dave Cantrell, and 2021 edition author, George Williams. Prior to joining ICC, Jessica was a combination Building, Mechanical and Plumbing Inspector, as well as a Residential and Commercial Plans Examiner. She credits her success in the industry and this publication to the authors of the prior editions, ICC staff, the many mentors along the way, the Colorado Chapter of ICC, and Randy Sale (CBO Town of Parker, CO Building Department).

ABOUT THE INTERNATIONAL CODE COUNCIL®

The International Code Council is the leading global source of model codes and standards and building safety solutions that include product evaluation, accreditation, technology, codification, consulting, training and certification. The International Code Council's codes, standards and solutions are used to ensure safe, affordable and sustainable communities and buildings worldwide.

The International Code Council family of solutions includes the ICC Evaluation Service (ICC ES), S. K. Ghosh Associates, the International Accreditation Service (IAS), General Code, ICC NTA, ICC Community Development Solutions, Alliance for National & Community Resilience (ANCR) and American Legal Publishing.

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