

2 0 1 8

INTERNATIONAL CODES®

2018 I-CODE BONUS OFFER

Get a **free 45-day online subscription** to ICC's *premiumACCESS*™ 2018 I-Codes Complete Collection. Test drive many powerful, time-saving tools available to you from *premiumACCESS*. To activate your bonus, visit www.iccsafe.org/codebonus.

ICCPC®

A Member of the International Code Family®

INTERNATIONAL CODE COUNCIL
PERFORMANCE CODE® for Buildings and Facilities



2018 International Code Council Performance Code® for Buildings and Facilities

First Printing: August 2017

ISBN: 978-1-60983-753-2 (soft-cover edition)

COPYRIGHT © 2017
by
INTERNATIONAL CODE COUNCIL, INC.

Date of First Publication: August 31, 2017

ALL RIGHTS RESERVED. This 2018 *International Code Council Performance Code® for Buildings and Facilities* is a copyrighted work owned by the International Code Council, Inc. Without advance written permission from the copyright owner, no part of this book 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 retrieval system). For information on use rights and permissions, please contact: Publications, 4051 Flossmoor Road, Country Club Hills, IL 60478. Phone 1-888-ICC-SAFE (422-7233).

Trademarks: “International Code Council,” the “International Code Council” logo, “ICC,” the “ICC” logo, “International Code Council Performance Code,” “ICCPC” and other names and trademarks appearing in this book are trademarks of the International Code Council, Inc., and/or its licensors (as applicable), and may not be used without permission.

PRINTED IN THE U.S.A.

PREFACE

Introduction

Internationally, the design and regulatory community has embraced the need for a code that emphasizes performance requirements rather than prescriptive requirements. This need is not unique to the international community. As such, the *International Code Council Performance Code® for Buildings and Facilities* (ICCPC®), in this 2018 edition, is designed to meet this need through model code regulations that safeguard the public health and safety in all communities, large and small.

The *International Code Council Performance Code® for Buildings and Facilities* clearly defines the objectives for achieving the intended levels of occupant safety, property protection and community welfare. The code provides a framework to achieve the defined objectives in terms of tolerable levels of damage and magnitudes of design events, such as fire and natural hazards.

The concepts covered by this code are not intended to be any different in scope than those covered by the 2018 edition of the *International Codes®* (I-Codes®) published by the International Code Council® (ICC®). However, this code is distinctly different from the other *International Codes*, which, in many cases, direct the user to a single solution to address a safety concern for a building or facility. The ICCPC allows the user to achieve various solutions, systematically. It should be noted that the family of *International Codes*, including the *International Building Code®*, *International Energy Conservation Code®*, *International Existing Building Code®*, *International Fire Code®*, *International Fuel Gas Code®*, *International Green Construction Code®*, *International Mechanical Code®*, *International Plumbing Code®*, *International Private Sewage Disposal Code®*, *International Property Maintenance Code®*, *International Residential Code®*, *International Swimming Pool and Spa Code®*, *International Wildland-Urban Interface Code®* and *International Zoning Code®*, is considered to provide an acceptable solution that will comply with the ICCPC. Conversely, this code provides a procedure to address design and review issues associated with the alternative materials and methods sections of the codes cited above.

It is strongly recommended that users of this code consult the User's Guide located in the second portion of this publication to gain additional insight into the provisions of this code.

The *International Code Council Performance Code for Buildings and Facilities* provisions provide many benefits, including the model code development process, which offers an international forum for design professionals, code officials and other interested parties to discuss performance code requirements. This forum provides an excellent arena to debate proposed revisions. This model code also encourages international consistency in the application of provisions.

The I-Codes, including this *International Code Council Performance Code*, are used in a variety of ways in both the public and private sectors. Most industry professionals are familiar with the I-Codes as the basis of laws and regulations in communities across the U.S. and in other countries. However, the impact of the codes extends well beyond the regulatory arena, as they are 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.
- U.S. 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.

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

Development

This 2018 edition presents the code as originally issued, with changes reflected in the 2003 through 2015 editions and further changes approved by the ICC Code Development Process through 2017. A new edition such as this is promulgated every 3 years.

This code is intended to establish provisions consistent 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.

Maintenance

The *International Code Council Performance Code for Buildings and Facilities* is kept up to date through the review of proposed changes submitted by 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 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 ICC process is open to anyone; there is no cost to participate, and people can participate without travel cost through the ICC's cloud-based app, cdp-Access[®]. A broad cross section of interests are represented in the 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 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 Institute of Architects (AIA)
- International Association of Fire Chiefs (IAFC)
- National Association of Home Builders (NAHB)
- National Association of State Fire Marshals (NASFM)

The 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 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 Codes and Standards Development Department of the International Code Council.

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

Code Development Committee Responsibilities (Letter Designations in Front of Section Numbers)

In each code development cycle, proposed changes to this code are considered at the Committee Action Hearings by nine different code development committees. The committee responsible for each section of this code is noted by the bracketed letter in front of that section. For example, proposed changes to code sections that have [BS] in front of them (e.g., [BS] 501.1) are considered by the IBC—Structural Code Development Committee during the Committee Action Hearings in the 2019 (Group B) code development cycle.

The letter classifications corresponding to the code development committee responsible for hearing code change proposals for that section are as follows:

- [A] = Administrative Code Development Committee;
- [BE] = IBC—Means of Egress Code Development Committee;
- [BF] = IBC—Fire Safety Code Development Committee;
- [BG] = IBC—General Code Development Committee;
- [BS] = IBC—Structural Code Development Committee;
- [CE] = Commercial Energy Conservation Code Development Committee;
- [F] = International Fire Code Development Committee;
- [M] = International Mechanical Code Development Committee; and
- [P] = International Plumbing Code Development Committee.

For the development of the 2021 edition of the I-Codes, there will be two groups of code development committees and they will meet in separate years.

Group A Codes (Heard in 2018, Code Change Proposals Deadline: January 8, 2018)	Group B Codes (Heard in 2019, Code Change Proposals Deadline: January 7, 2019)
International Building Code – Egress (Chapters 10, 11, Appendix E) – Fire Safety (Chapters 7, 8, 9, 14, 26) – General (Chapters 2–6, 12, 27–33, Appendices A, B, C, D, K, N)	Administrative Provisions (Chapter 1 of all codes except IECC, IRC and IgCC, administrative updates to currently referenced standards, and designated definitions)
International Fire Code	International Building Code – Structural (Chapters 15–25, Appendices F, G, H, I, J, L, M)
International Fuel Gas Code	International Existing Building Code
International Mechanical Code	International Energy Conservation Code— Commercial
International Plumbing Code	International Energy Conservation Code— Residential – IECC—Residential – IRC—Energy (Chapter 11)
International Property Maintenance Code	International Green Construction Code (Chapter 1)
International Private Sewage Disposal Code	International Residential Code – IRC—Building (Chapters 1–10, Appendices E, F, H, J, K, L, M, O, Q, R, S, T)
International Residential Code – IRC—Mechanical (Chapters 12–23) – IRC—Plumbing (Chapters 25–33, Appendices G, I, N, P)	
International Swimming Pool and Spa Code	
International Wildland-Urban Interface Code	
International Zoning Code	
Note: Proposed changes to the ICC <i>Performance Code</i> ™ will be heard by the code development committee noted in brackets [] in the text of the ICC <i>Performance Code</i> ™.	

Code change proposals submitted for this code will be heard by the code development committees noted in brackets [] in the text of the code. Because different committees hold Committee Action Hearings in different years, proposals for this code will be heard by committees in both the 2018 (Group A) and 2019 (Group B) code change cycles.

For example, Section [A] 102.1 is the responsibility of the Administrative Code Development Committee. As noted in the preceding table, that committee will hold its Committee Action Hearings in 2019 to consider code change proposals for the chapters for which it is responsible. Therefore, any proposals received for Section [A] 102.1 will be assigned to the Administrative Code Development Committee and will be considered in 2019, during the Group B code change cycle.

As another example, Section [BG] 802.1 is designated as the responsibility of the IBC—General Development Committee, which is part of the Group A portion of the hearings. This committee will hold its Committee Action Hearings in 2018 to consider code change proposals for the chapters for which it is responsible. Therefore, any proposals received for Section [BG] 802.1 will be assigned to the IBC—General Development Committee for consideration in 2018.

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. For further information on code development committee responsibilities, please visit the ICC website at www.iccsafe.org/scoping.

Marginal Markings

Solid vertical lines in the margins within the body of the code indicate a technical change from the requirements of the 2015 edition. Deletion indicators in the form of an arrow (➡) are provided in the margin where an entire section, paragraph, exception or table has been deleted or an item in a list of items or a table has been deleted.

Adoption

The International Code Council maintains a copyright in all of its codes and standards. Maintaining copyright allows the ICC to fund its mission through sales of books, in both print and electronic formats. The ICC welcomes adoption of its codes by jurisdictions that recognize and acknowledge the ICC'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.

The ICC also recognizes 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 nondownloadable form on the ICC's website. Jurisdictions should contact the ICC at adoptions@iccsafe.org to learn how to adopt and distribute laws based on the *International Code Council Performance Code* in a manner that provides necessary access, while maintaining the ICC's copyright.

To facilitate adoption, the jurisdiction must establish the following performance groups for new and/or existing use groups or specific buildings or facilities for the application of this code (see Chapter 3).

ALLOCATION OF USE AND OCCUPANCY CLASSIFICATIONS AND SPECIFIC BUILDINGS OR FACILITIES TO PERFORMANCE GROUPS

PERFORMANCE GROUP	USE AND OCCUPANCY CLASSIFICATION OR SPECIFIC BUILDINGS OR FACILITIES
I	
II	
III	
IV	

EFFECTIVE USE OF THE INTERNATIONAL CODE COUNCIL PERFORMANCE CODE FOR BUILDINGS AND FACILITIES

The purpose of the *International Code Council Performance Code® for Buildings and Facilities* (ICCPC) is to promote innovative, flexible and responsive solutions that optimize the expenditure and consumption of resources while preserving social and economic value. This approach is unique to the structure of a performance-based code.

The methodology employed in performance-based codes focuses on outcomes. In other words, a performance code approach would identify and quantify the level of damage that is acceptable during and after a fire, earthquake or other event. Generally, but not in all cases, the current prescriptive code focuses on solutions that achieve a certain outcome. The difficulty is that the outcome is unclear. Therefore, when a design is proposed that is different from the prescriptive code, it is often difficult to determine whether the approach will be equivalent. There may be other more appropriate and innovative solutions available. A performance-based code creates a framework that both clearly defines the intent of the code and provides a process to understand quantitatively what the code is trying to achieve. Without this framework, the new techniques would be fairly difficult to accomplish and new methods of construction take longer to implement.

The code is organized into four major parts:

Part I—Administrative (Chapters 1–4)

Part II—Building Provisions (Chapters 5–15)

Part III—Fire Provisions (Chapters 16–22)

Part IV—Appendices (A–E)

Part I—Administrative. Part I of the document contains four chapters in which common approaches were found for both building and fire. Chapter 1 contains administrative provisions such as intent, scope and requirements related to qualifications, documentation, review, maintenance and change of use or occupancy. Also, provisions for approving acceptable methods are provided. Chapter 2 provides definitions specific to this document.

Chapter 3, Design Performance Levels, sets the framework for determining the appropriate performance desired from a building or facility based on a particular event, such as an earthquake or a fire. Specifically, the user of the code can more easily determine the expected performance level of a building during an earthquake. In the prescriptive codes, the required performance is simply prescribed with no method provided to determine or quantify the level of the building's or facility's performance.

Chapter 4 deals with the topics of reliability and durability and how these issues interact with the overall performance of a building or facility over its life. This issue has always been relevant to codes and standards but becomes more obvious when a performance code requires a designer to regard buildings as a system. Reliability includes redundancy, maintenance, durability, quality of installation, integrity of the design and, generally, the qualifications of those involved within this process.

Parts II and III—Building and Fire. Parts II and III provide topic-specific qualitative statements of intent that relate to current prescriptive code requirements. As noted, Parts II and III are building and fire components, respectively. The building and fire components were not fully integrated because of concerns relating to how such a document might be used. For instance, a fire department might want to utilize the document for existing buildings or facilities but would not be able to adopt chapters dealing with issues such as structural stability or moisture. Therefore, the code is designed so that a fire department could adopt Parts I and III only. When Part II is adopted,

the entire document should be adopted. Part III should always be included in the adoption of this code.

Generally, such topic-specific qualitative statements are the basic elements missing from prescriptive codes. The statements follow a particular hierarchy, described below.

Objective. The objectives define what is expected in terms of societal goals or what society “demands” from buildings and facilities. Objectives are topic-specific and deal with particular aspects of performance required in a building, such as safeguarding people during escape and rescue.

Functional Statement. The functional statement explains, in general terms, the function that a building must provide to meet the objective or what “supply” must be provided to meet the “demand.” For example, a building must be constructed to allow people adequate time to reach a place of safety without exposure to untenable conditions.

Performance Requirement. Performance requirements are detailed statements that break down the functional statements into measurable terms. This is where the link is made to the acceptable methods.

Part IV—Appendices. Part IV contains the appendices to the code document. Each of the appendices relates to specific provisions of this code and is discussed within the User’s Guide as applicable.

GUIDE TO THE USE OF THE INTERNATIONAL CODE COUNCIL PERFORMANCE CODE FOR BUILDINGS AND FACILITIES

Procedural Steps for New Buildings

The following process is an outline for a performance-based design for an entire project or in combination with a prescriptive approach. This procedure for performance-based design extends from design preparation through issuance of a Certificate of Occupancy. The steps are as follows:

1. Preparation of a concept report in accordance with Section 103.3.4.2.1 by a qualified design professional.
2. Design preparation by a design team headed by a qualified principal design professional.
3. Coordination and verification via the principal design professional as a design team leader, with other design professionals, owners and contractors, when applicable.
4. Submit plans and supporting documents to the code official that shall identify which portions of the design are performance based and which portions are based on the prescriptive code. The submittal must include deed restrictions proposed to cover future maintenance requirements and special conditions for the life of the building.
5. Plan review is to be conducted by the code official staff when qualified for performance-based design.
 - 5.1. When staff is deemed not qualified for a proposed project, acquire qualified contract review services.
 - 5.2. Peer review is an optional approach for obtaining an additional review that is supplemental to the plan review.
6. The code official verifies that applicable prescriptive code provisions and performance-based objectives are met. When special inspections are required, ensure that documentation is complete.
7. The code official approves plans and issues a permit.
8. The holder of the permit is responsible to construct in accordance with approved plans and documents.
9. The code official ensures that qualified inspection services are provided and documented where required in accordance with the performance-based code and other applicable codes, and testing requirements are met as follows:
 - 9.1. Phase inspections [reference *International Building Code (IBC®)* and other *International Codes*].
 - 9.2. Special inspection (reference IBC).
 - 9.3. Testing where required by design documents.
 - 9.4. Documentation that all requirements are met.
10. Issue Certificate of Occupancy with applicable conditions, where required by the approved design documents.

Procedural Steps for Existing Buildings

For significant remodeling, alterations and additions, the design professional shall:

1. Examine applicable design documents, deed restrictions and maintenance requirements to determine building requirements where the original design is performance based in nature; prepare a concept report in accordance with Section 103.3.4.2.1.
2. Any features based on a performance approach need to be clearly differentiated from features of a building or facility designed using a prescriptive approach.
3. Verify compliance with the operations and maintenance manual.
4. Prepare a report specifying impact and requirements for the proposed design.
5. Prepare design documents based upon applicable performance, prescriptive or combination of code provisions and specify which codes are applicable for each portion of the design, including any steps to correct identified deficiencies.
6. Submit reports to the code official for review and acceptance, similar to procedural steps for a new building.

For change of use with no proposed physical alteration, the design professional shall:

1. Document existing building features and systems that impact fire or emergency performance.
2. Verify compliance with the operations and maintenance manual.
3. Prepare appropriate design fire scenarios pertinent to the building or facility and actual use, considering existing mitigation strategies and protection features.
4. Evaluate performance against Section 304, Maximum Level of Damage to Be Tolerated.
5. Prepare a report detailing impact; design and test systems to the objectives in Part III of this code.
6. Submit for review and approval in accordance with Chapter 1.

Flow Chart

The following chart is provided to give guidance as to how the *International Code Council Performance Code for Buildings and Facilities* is intended to work. Essentially, this chart walks the user through the steps of applying the code. These steps begin with understanding the administrative process and the objectives of the ICCPC and eventually determining the acceptable methods used to design, construct, test, inspect and maintain the building or facility.

International Code Council Performance Code for Buildings and Facilities

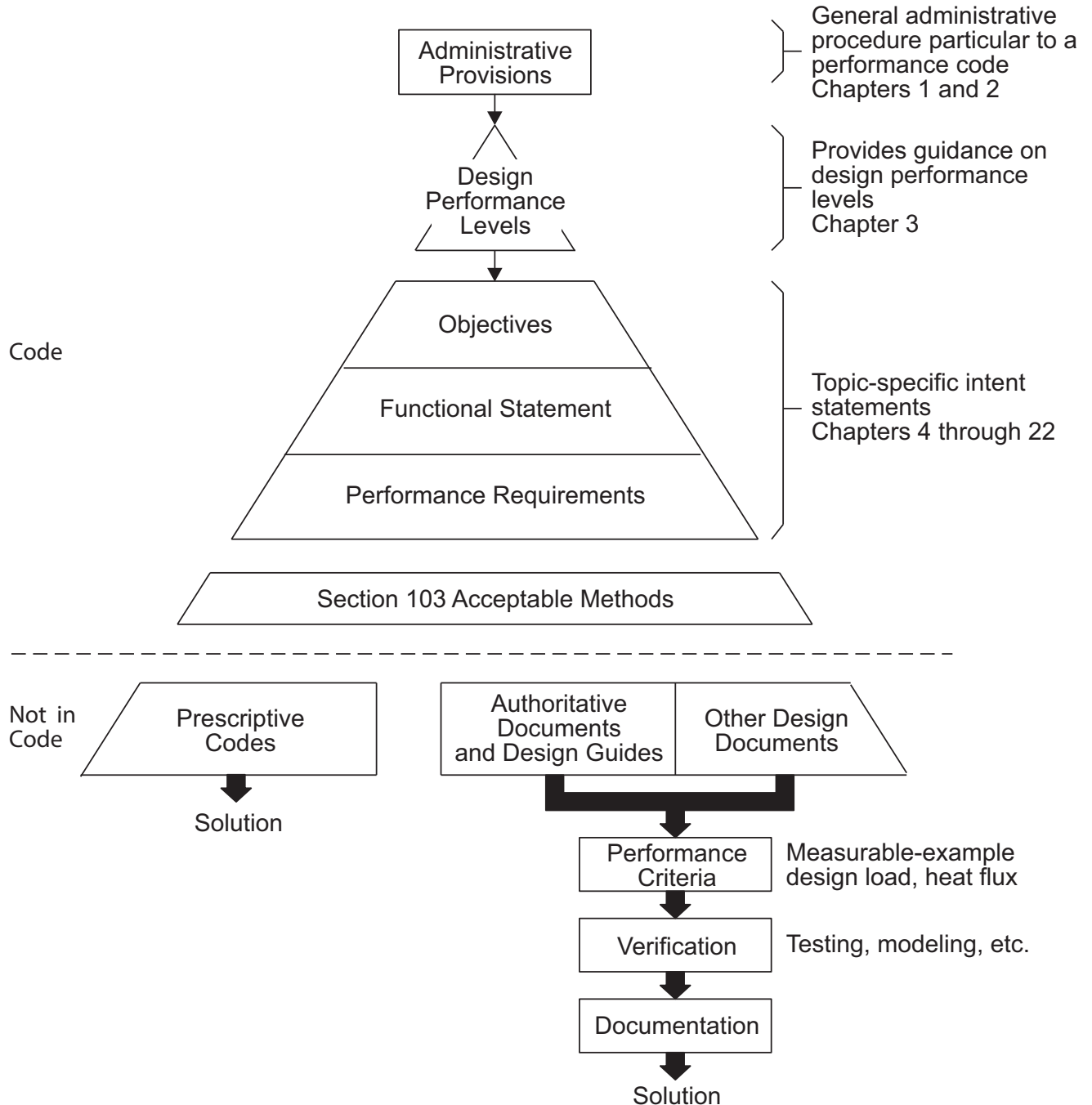


TABLE OF CONTENTS

<p><i>PART I—Administrative</i> 1</p> <p>CHAPTER 1 SCOPE AND ADMINISTRATION 1</p> <p>PART 1—SCOPE AND APPLICATION. 1</p> <p>Section</p> <p>101 General 1</p> <p>PART 2—ADMINISTRATION AND ENFORCEMENT 1</p> <p>Section</p> <p>102 Administrative Provisions 1</p> <p>103 Acceptable Methods 7</p> <p>CHAPTER 2 DEFINITIONS 9</p> <p>Section</p> <p>201 General 9</p> <p>202 Defined Terms 9</p> <p>CHAPTER 3 DESIGN PERFORMANCE LEVELS. 11</p> <p>Section</p> <p>301 Minimum Performance. 11</p> <p>302 Use and Occupancy Classification. 11</p> <p>303 Performance Groups. 11</p> <p>304 Maximum Level of Damage to Be Tolerated. 13</p> <p>305 Magnitudes of Event 14</p> <p>CHAPTER 4 RELIABILITY AND DURABILITY. 17</p> <p>Section</p> <p>401 Reliability 17</p> <p>402 Durability 17</p> <p><i>PART II—Building</i> 19</p> <p>CHAPTER 5 STABILITY. 19</p> <p>Section</p> <p>501 Structural Forces. 19</p> <p>CHAPTER 6 FIRE SAFETY 21</p> <p>Section</p> <p>601 Sources of Fire Ignition 21</p> <p>602 Limiting Fire Impact 21</p>	<p>CHAPTER 7 PEDESTRIAN CIRCULATION. 23</p> <p>Section</p> <p>701 Means of Egress. 23</p> <p>702 Accessibility. 23</p> <p>703 Transportation Equipment 23</p> <p>CHAPTER 8 SAFETY OF USERS 25</p> <p>Section</p> <p>801 Hazardous Materials 25</p> <p>802 Hazards from Building Materials. 25</p> <p>803 Prevention of Falls 25</p> <p>804 Construction and Demolition Hazards. 25</p> <p>805 Signs. 26</p> <p>806 Emergency Notification. 26</p> <p>CHAPTER 9 MOISTURE 27</p> <p>Section</p> <p>901 Surface Water. 27</p> <p>902 External Moisture. 27</p> <p>903 Internal Moisture 27</p> <p>CHAPTER 10 INTERIOR ENVIRONMENT 29</p> <p>Section</p> <p>1001 Climate and Building Functionality 29</p> <p>1002 Indoor Air Quality. 29</p> <p>1003 Airborne and Impact Sound 29</p> <p>1004 Artificial and Natural Light 30</p> <p>CHAPTER 11 MECHANICAL 31</p> <p>Section</p> <p>1101 Heating, Ventilation and Air Conditioning Equipment (HVAC) 31</p> <p>1102 Refrigeration 31</p> <p>1103 Piped Services. 31</p> <p>CHAPTER 12 PLUMBING 33</p> <p>Section</p> <p>1201 Personal Hygiene 33</p> <p>1202 Laundering 33</p> <p>1203 Domestic Water Supplies 33</p> <p>1204 Wastewater 33</p>
---	---

TABLE OF CONTENTS

CHAPTER 13 FUEL GAS.....	35	PART IV—Appendices	55
Section		APPENDIX A RISK FACTORS OF	
1301 Fuel Gas Piping and Vents	35	USE AND OCCUPANCY	
		CLASSIFICATIONS	55
CHAPTER 14 ELECTRICITY.....	37	Section	
Section		A101 Objective.....	55
1401 Electricity	37	A102 Functional Statements.....	55
		A103 Use and Occupancy Classification	55
CHAPTER 15 ENERGY EFFICIENCY	39	APPENDIX B WORKSHEET FOR ASSIGNING	
Section		SPECIFIC STRUCTURES TO	
1501 Energy Efficiency	39	PERFORMANCE GROUPS.....	63
PART III—Fire.....	41	B101 Risk Factor	63
CHAPTER 16 FIRE PREVENTION	41	APPENDIX C INDIVIDUALLY SUBSTANTIATED	
Section		DESIGN METHOD	65
1601 Fire Prevention	41	Section	
		C101 General	65
CHAPTER 17 FIRE IMPACT MANAGEMENT....	43	APPENDIX D QUALIFICATION	
Section		CHARACTERISTICS FOR	
1701 Fire Impact Management.....	43	DESIGN AND REVIEW	
		OF PERFORMANCE-	
CHAPTER 18 MANAGEMENT OF PEOPLE.....	45	BASED DESIGNS	67
Section		Section	
1801 Management of People	45	D101 General	67
		APPENDIX E USE OF COMPUTER MODELS	69
CHAPTER 19 MEANS OF EGRESS.....	47	Section	
Section		E101 General	69
1901 Means of Egress	47	E102 Requirements	69
		E103 Responsibility	69
CHAPTER 20 EMERGENCY NOTIFICATION,		INDEX.....	71
ACCESS AND FACILITIES.....	49	USER’S GUIDE	77
Section		USER’S GUIDE TABLE OF CONTENTS	79
2001 Emergency Notification,			
Access and Facilities	49		
CHAPTER 21 EMERGENCY			
RESPONDER SAFETY	51		
Section			
2101 Emergency Responder Safety	51		
CHAPTER 22 HAZARDOUS MATERIALS	53		
Section			
2201 Hazardous Materials	53		