

A Member of the International Code Family®



INTERNATIONAL CODE COUNCIL PERFORMANCE CODE®

FOR BUILDINGS AND FACILITIES

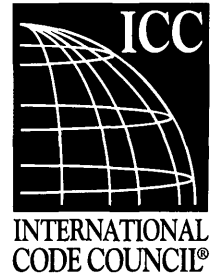
2006



Documents

Document Sharing Hub

A Member of the International Code Family®



INTERNATIONAL CODE COUNCIL PERFORMANCE CODE®

FOR BUILDINGS AND FACILITIES

2006

AVA Documents
Document Sharing Hub

2006 ICC Performance Code® for Buildings and Facilities

First Printing: January 2006

Second Printing: May 2006

ISBN-13: 978-1-58001-262-1 (soft)

ISBN-10: 1-58001-262-0 (soft)

ISBN-13: 978-1-58001-310-9 (e-document)

ISBN-10: 1-58001-310-4 (e-document)

COPYRIGHT© 2006

by

INTERNATIONAL CODE COUNCIL, INC.

ALL RIGHTS RESERVED. This 2006 ICC *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 permission to copy material exceeding fair use, please contact: Publications, 4051 West Flossmoor Road, Country Club Hills, IL 60478-5795. Phone 1-888-ICC-SAFE (422-7233).

Trademarks: “International Code Council,” the “International Code Council” logo and the “ICC Performance Code for Buildings and Facilities” are trademarks of the International Code Council, Inc.

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 *ICC Performance Code® for Buildings and Facilities*, in this 2006 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 *ICC 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 2006 edition of the *International Codes®* (I-Codes®) published by the International Code Council (ICC)®. However, this code is distinctly different than 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 performance code allows the user to achieve various solutions, systematically. It should be noted that the family of *International Codes*, including the *International Building Code®*, *ICC Electrical Code®—Administrative Provisions*, *International Energy Conservation Code®*, *International Existing Building Code®*, *International Fire Code®*, *International Fuel Gas Code®*, *International Mechanical Code®*, *International Plumbing Code®*, *International Private Sewage Disposal Code®*, *International Property Maintenance Code®*, *International Residential Code®*, *International Wildland-Urban Interface Code™*, and *International Zoning Code®*, is considered to provide an acceptable solution that will comply with the Performance Code. 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 *ICC 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.

Development

The first edition of the *ICC Performance Code for Buildings and Facilities* (2001) was the culmination of an effort initiated in 1996 by the ICC. This effort included two drafting committees, Fire and Building, appointed by the ICC and consisting of representatives of the three statutory members of the International Code Council at that time, including: Building Officials and Code Administrators International, Inc. (BOCA), International Conference of Building Officials (ICBO), and Southern Building Code Congress International (SBCCI). The intent was to draft a comprehensive set of performance regulations, consistent in scope with the existing model codes, but with a performance emphasis. This 2006 edition presents the code as originally issued, with changes reflected through the previous 2003 edition, and further changes developed through the ICC Code Development Process through 2005. A new edition of the code is promulgated every three years.

This code is founded on principles intended to establish provisions consistent with the scope of a performance code that adequately protect 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.

Adoption

The *ICC Performance Code for Buildings and Facilities* is available for adoption and use by jurisdictions internationally. Its use within a governmental jurisdiction is intended to be accomplished through adoption by reference in accordance with proceedings establishing the jurisdiction's laws. At the time of adoption, jurisdictions should insert the appropriate information in provisions requiring specific local information, such as the name of the adopting jurisdiction. These locations are shown in bracketed words in small capital letters in the code and in the sample ordinance. The sample adoption ordinance on page vii addresses several key elements of a code adoption ordinance, including the information required for insertion into the code text. In addition, because of the reliance of most performance-based design on proper maintenance of building and fire protection systems, it is recommended that a jurisdiction adopt this code in its entirety.

Maintenance

The *ICC Performance Code for Buildings and Facilities* is kept up to date through the review of proposed changes submitted by code enforcing 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 contents of this work are subject to change both through the code development cycles and the governmental body 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 development procedure of the *ICC Performance Code for Buildings and Facilities* assures the highest degree of care, ICC, its members, and those participating in the development of this code do not accept any liability resulting from compliance or noncompliance with the provisions, because the ICC does not have the power or authority to police or enforce compliance with the contents of this code. Only the governmental body that enacts the code into law has such authority.

Marginal Markings

The *International Codes* are formatted with solid vertical lines in the margins within the body of the code indicating a technical change from the requirements of the previous 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 table has been deleted. The 2006 edition does not include any margin markings as the text has remained unchanged from the 2003 edition.

ORDINANCE

The *International Codes* are designed and promulgated to be adopted by reference by ordinance. Jurisdictions wishing to adopt the 2006 ICC *Performance Code for Buildings and Facilities* as an enforceable performance-based regulation governing structures and premises should ensure that certain factual information is included in the adopting ordinance at the time adoption is being considered by the appropriate governmental body. The following sample adoption ordinance addresses several key elements of a code adoption ordinance, including the information required for insertion into the code text.

SAMPLE ORDINANCE FOR ADOPTION OF THE ICC PERFORMANCE CODE FOR BUILDINGS AND FACILITIES ORDINANCE NO. _____

An ordinance of the [JURISDICTION] adopting the 2006 edition of the ICC *Performance Code for Buildings and Facilities*, regulating and governing the performance-based design, construction, quality of materials, erection, installation, alteration, repair, location, relocation, replacement, addition to, use or maintenance of building and/or fire protection systems in the [JURISDICTION]; providing for the issuance of permits and collection of fees therefor; repealing Ordinance No. _____ of the [JURISDICTION] and all other ordinances and parts of the ordinances in conflict therewith.

The [GOVERNING BODY] of the [JURISDICTION] does ordain as follows:

Section 1. That a certain document, three (3) copies of which are on file in the office of the [TITLE OF JURISDICTION'S KEEPER OF RECORDS] of [NAME OF JURISDICTION], being marked and designated as the ICC *Performance Code for Buildings and Facilities*, 2006 edition, as published by the International Code Council, be and is hereby adopted as the Performance Code of the [JURISDICTION], in the State of [STATE NAME] for regulating and governing the performance-based design, construction, quality of materials, erection, installation, alteration, repair, location, relocation, replacement, addition to, use or maintenance of building and/or fire protection systems as herein provided; providing for the issuance of permits and collection of fees therefor; and each and all of the regulations, provisions, penalties, conditions and terms of said Performance Code on file in the office of the [JURISDICTION] are hereby referred to, adopted, and made a part hereof, as if fully set out in this ordinance, with the additions, insertions, deletions and changes, if any, prescribed in Section 2 of this ordinance.

Section 2. The issuance of permits and collection of fees therefore, and each and all of the regulations, provisions, conditions and terms of the *International Codes*, _____ edition published by the International Code Council, adopted by [JURISDICTION] Ordinance No(s). _____ also on file in the office of the [JURISDICTION] shall provide enforcement, permits, plan review, inspection, fees and Certificate of Occupancy requirements where not specified in the ICC *Performance Code for Buildings and Facilities*. The [JURISDICTION] also establishes the following performance groups for new and/or existing Use Groups or specific buildings or facilities for the application of this code¹.

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	

Section 3. That Ordinance No. _____ of [JURISDICTION] entitled [FILL IN HERE THE COMPLETE TITLE OF THE ORDINANCE OR ORDINANCES IN EFFECT AT THE PRESENT TIME SO THAT THEY WILL BE REPEALED BY DEFINITE MENTION] and all other ordinances or parts of ordinances in conflict herewith are hereby repealed.

Section 4. That if any section, subsection, sentence, clause or phrase of this ordinance is, for any reason, held to be unconstitutional, such decision shall not affect the validity of the remaining portions of this ordinance. The [GOVERNING BODY] hereby declares that it would have passed this ordinance, and each section, subsection, clause or phrase thereof, irrespective of the fact that any one or more sections, subsections, sentences, clauses and phrases be declared unconstitutional.

¹ The concept of assigning buildings or facilities to performance groups relates to the use of Chapter 3 for the determination of Design Performance Level. Communities may find that they have unique objectives that would require adjusting the performance groups assigned in Chapter 3 for particular buildings or facilities.

Section 5. That nothing in this ordinance or in the Performance Code hereby adopted shall be construed to affect any suit or proceeding impending in any court, or any rights acquired, or liability incurred, or any cause or causes of action acquired or existing, under any act or ordinance hereby repealed as cited in Section 3 of this ordinance; nor shall any just or legal right or remedy of any character be lost, impaired or affected by this ordinance.

Section 6. That the **[JURISDICTION'S KEEPER OF RECORDS]** is hereby ordered and directed to cause this ordinance to be published. (An additional provision may be required to direct the number of times the ordinance is to be published and to specify that it is to be in a newspaper in general circulation. Posting may also be required.)

Section 7. That this ordinance and the rules, regulations, provisions, requirements, orders and matters established and adopted hereby shall take effect and be in full force and effect **[TIME PERIOD]** from and after the date of its final passage and adoption.

GUIDE TO THE USE OF THE ICC 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 per 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 ICC *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 performance code and eventually determining the acceptable methods used to design, construct, test, inspect and maintain the building or facility.

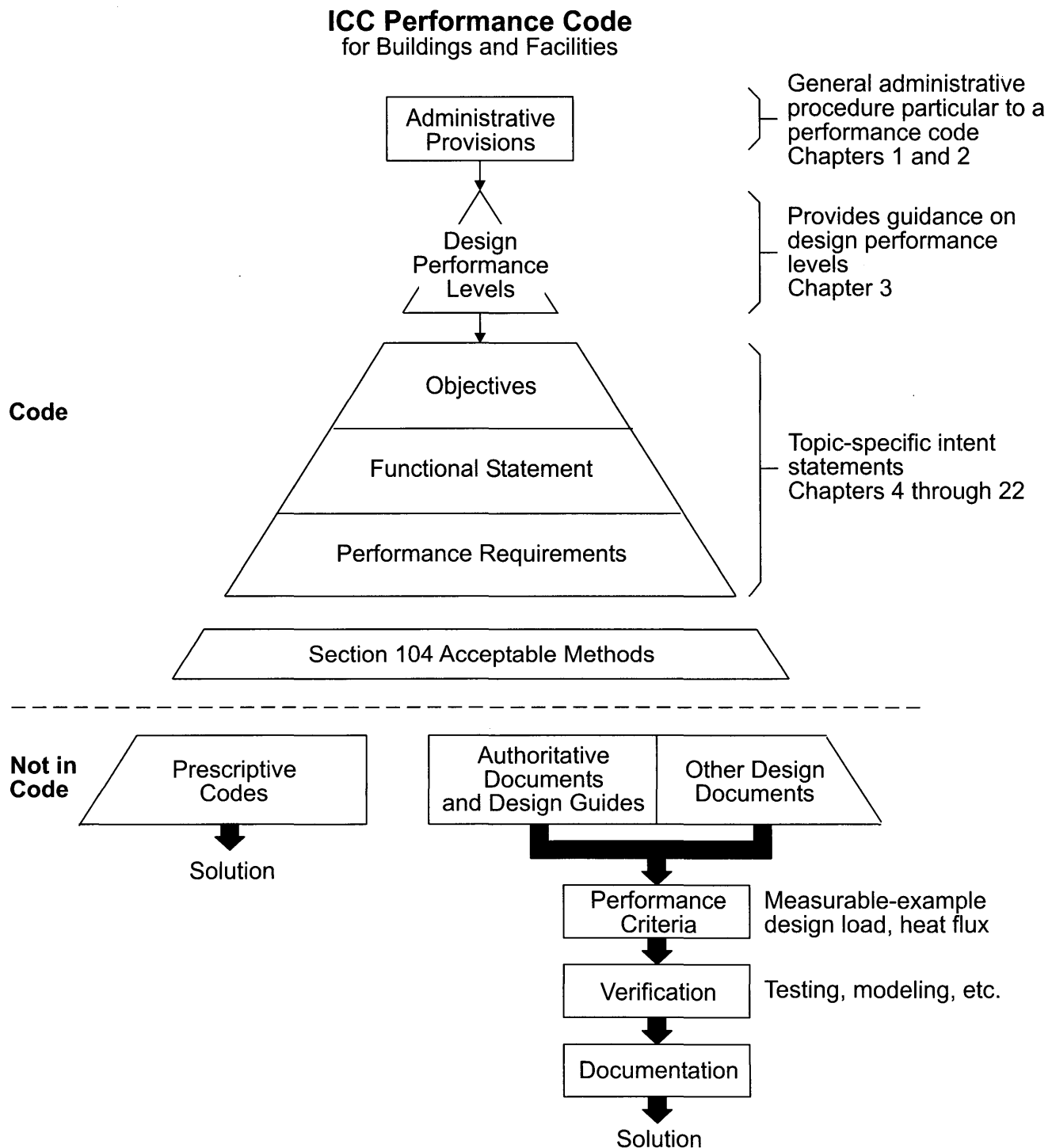


TABLE OF CONTENTS

Part I—Administrative

CHAPTER 1 GENERAL ADMINISTRATIVE PROVISIONS 1

Section

- 101 Intent and Purpose 1
- 102 Scope 1
- 103 Administrative Provisions 1
- 104 Acceptable Methods 6

CHAPTER 2 DEFINITIONS 9

Section

- 201 General 9
- 202 Defined Terms 9

CHAPTER 3 DESIGN PERFORMANCE LEVELS 11

Section

- 301 Minimum Performance 11
- 302 Use and Occupancy Classification 11
- 303 Performance Groups 11
- 304 Maximum Level of Damage to Be Tolerated 13
- 305 Magnitudes of Event 14

CHAPTER 4 RELIABILITY AND DURABILITY 17

Section

- 401 Reliability 17
- 402 Durability 17

Part II—Building

CHAPTER 5 STABILITY 19

Section

- 501 Structural Forces 19

CHAPTER 6 FIRE SAFETY 21

Section

- 601 Sources of Fire Ignition 21
- 602 Limiting Fire Impact 21

CHAPTER 7 PEDESTRIAN CIRCULATION 23

Section

- 701 Means of Egress 23

- 702 Accessibility 23

- 703 Transportation Equipment 23

CHAPTER 8 SAFETY OF USERS 25

Section

- 801 Hazardous Materials 25
- 802 Hazards from Building Materials 25
- 803 Prevention of Falls 25
- 804 Construction and Demolition Hazards 25
- 805 Signs 26
- 806 Emergency Notification 26

CHAPTER 9 MOISTURE 27

Section

- 901 Surface Water 27
- 902 External Moisture 27
- 903 Internal Moisture 27

CHAPTER 10 INTERIOR ENVIRONMENT 29

Section

- 1001 Climate and Building Functionality 29
- 1002 Indoor Air Quality 29
- 1003 Air-borne and Impact Sound 29
- 1004 Artificial and Natural Light 29

CHAPTER 11 MECHANICAL 31

Section

- 1101 Heating, Ventilation and Air Conditioning Equipment (HVAC) 31
- 1102 Refrigeration 31
- 1103 Piped Services 31

CHAPTER 12 PLUMBING 33

Section

- 1201 Personal Hygiene 33
- 1202 Laundering 33
- 1203 Domestic Water Supplies 33
- 1204 Wastewater 33

CHAPTER 13 FUEL GAS 35

Section

- 1301 Fuel Gas Piping and Vent 35

CHAPTER 14 ELECTRICITY..... 37

Section

1401 Electricity 37

CHAPTER 15 ENERGY EFFICIENCY 39

Section

1501 Energy Efficiency 39

Part III—Fire

CHAPTER 16 FIRE PREVENTION..... 41

Section

1601 Fire Prevention..... 41

CHAPTER 17 FIRE IMPACT MANAGEMENT.... 43

Section

1701 Fire Impact Management 43

CHAPTER 18 MANAGEMENT OF PEOPLE..... 45

Section

1801 Management of People 45

CHAPTER 19 MEANS OF EGRESS 47

Section

1901 Means of Egress..... 47

**CHAPTER 20 EMERGENCY NOTIFICATION,
ACCESS AND FACILITIES..... 49**

Section

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

Part IV—Appendices

**APPENDIX A RISK FACTORS OF
USE AND OCCUPANCY
CLASSIFICATIONS 55**

**APPENDIX B WORKSHEET FOR ASSIGNING
SPECIFIC STRUCTURES TO
PERFORMANCE GROUPS..... 63**

**APPENDIX C INDIVIDUALLY SUBSTANTIATED
DESIGN METHOD 65**

**APPENDIX D QUALIFICATION
CHARACTERISTICS FOR DESIGN
AND REVIEW OF PERFORMANCE-
BASED DESIGNS..... 67**

APPENDIX E USE OF COMPUTER MODELS.... 69

INDEX TO CODE..... 71

USER'S GUIDE..... 75

USER'S GUIDE TABLE OF CONTENTS 77

Part I—Administrative

CHAPTER 1

GENERAL ADMINISTRATIVE PROVISIONS

SECTION 101 INTENT AND PURPOSE

101.1 Purpose. To provide appropriate health, safety, welfare, and social and economic value, while promoting innovative, flexible and responsive solutions that optimize the expenditure and consumption of resources.

101.2 Intent.

101.2.1 Building. To provide an acceptable level of health, safety, and welfare and to limit damage to property from events that are expected to impact buildings and structures. Accordingly, Part II of this code intends buildings and structures to provide for:

1. An environment free of unreasonable risk of death and injury from fires.
2. A structure that will withstand loads associated with normal use and of the severity associated with the location in which the structure is constructed.
3. Means of egress and access for normal and emergency circumstances.
4. Limited spread of fire both within the building and to adjacent properties.
5. Ventilation and sanitation facilities to maintain the health of the occupants.
6. Natural light, heating, cooking and other amenities necessary for the well being of the occupants.
7. Efficient use of energy.
8. Safety to firefighters and emergency responders during emergency operations.

101.2.2 Fire. Part III of this code establishes requirements necessary to provide an acceptable level of life safety and property protection from the hazards of fire, explosion or dangerous conditions in all facilities, equipment and processes.

SECTION 102 SCOPE

102.1 Building. Part II of this code provides requirements for buildings and structures and includes provisions for structural strength, stability, sanitation, means of access and egress, light and ventilation, safety to life and protection of property from fire and, in general, to secure life and property from other hazards affecting the built environment. This code includes provisions for the use and occupancy of buildings, structures, facilities and premises, their alteration, repair, maintenance, removal, demolition, and the installation and maintenance of all amenities including but not limited to such services as the

electrical, gas, mechanical, plumbing, energy conservation and building transportation systems.

102.2 Fire. Part III of this code establishes requirements applicable to the use and occupancy of buildings, structures, and facilities; and to the prevention, control, and mitigation of fire, life-safety, and property hazards arising from this use and from the storage, handling, and use of explosive, flammable and combustible materials, hazardous materials, and dangerous operations and processes.

SECTION 103 ADMINISTRATIVE PROVISIONS

103.1 Objective. To achieve and maintain the level of safety intended by the code.

103.2 Functional statements.

103.2.1 Qualifications. Design professionals shall possess the knowledge, skills and abilities necessary to demonstrate compliance with this code.

103.2.2 Design document preparation. Design documents required by this code shall be prepared in adequate detail and submitted for review and approval.

103.2.3 Review. Design documents submitted in accordance with this code shall be reviewed for code compliance with the appropriate code provisions.

103.2.4 Construction. Construction shall comply with approved design documents submitted in accordance with this code and shall be verified and approved to demonstrate compliance with this code.

103.2.5 Facilities and premises. Facilities and premises shall comply with approved design documents submitted in accordance with this code, and shall be verified and approved to demonstrate compliance with this code.

103.2.6 Equipment and processes. Equipment and processes and their installation and operation shall comply with approved design documents submitted in accordance with this code, and shall be verified and approved to demonstrate compliance with this code.

103.2.7 Materials and contents. Materials and contents shall comply with approved design documents submitted in accordance with this code and shall be verified and approved to demonstrate compliance with this code.

103.2.8 Facility operating policies and procedures. Policies, operations, training, and procedures shall comply with approved documents submitted in accordance with this code and shall be verified and approved to demonstrate compliance with this code.

103.2.9 Supplemental enforcement. Administrative provisions of the International Code Council's family of codes regarding plan review, permit issue, inspection and enforcement shall supplement these provisions.

103.2.10 Maintenance. Maintenance of the performance-based design shall be ensured through the issuance and renewal of certificates over the life of the building.

103.2.11 Management of change. Written procedures managing change to original design documents, system processes, technology, equipment and facilities shall be established and implemented.

103.2.12 Expected emergency response. Design documents shall clearly describe the level of response expected by emergency responders.

103.3 Performance requirements.

103.3.1 Building owner's responsibility.

103.3.1.1 Design professional. The owner shall have the responsibility of retaining and furnishing the services of a design professional, who shall be in responsible charge of preparing and coordinating a complete and comprehensive set of design documents and other services required to prepare reports and other documents in accordance with this code. If the services required by this section are not provided, the use of this code is prohibited.

103.3.1.2 Principal design professional. When the project requires the services of multiple design professionals, a principal design professional shall be retained and furnished, who shall have the contractual responsibility and authority over all required design professional disciplines to prepare and coordinate a complete and comprehensive set of design documents for the project.

103.3.1.3 Peer review. The owner shall be responsible for retaining and furnishing the services of a design professional or recognized expert, who will perform as a peer reviewer, when required and approved by the code official. See Section 103.3.6.3 of this code.

103.3.1.4 Costs. The costs of all special services, including contract review, when required by the code official, shall be borne by the owner.

103.3.1.5 Document retention. The owner shall retain on the premises all documents and reports required by this code and make them available to the code official upon request.

103.3.1.6 Maintenance. The owner is responsible to operate and maintain a building, structure or facility designed and built under this code in accordance with the bounding conditions and the operations and maintenance manual.

103.3.1.7 Changes. The owner shall be responsible to ensure that any change to the facility, process or system does not increase the hazard level beyond that originally designed without approval and that all changes shall be documented in accordance with this code.

103.3.1.8 Special expert. Where the scope of work is limited or focused in an area that does not require the services of a design professional or the special knowledge and skills associated with the practice of architecture or engineering, a special expert may be employed by the owner as the person in responsible charge of the limited or focused activity. It is the intent of this code that the individual shall possess the qualification characteristics required in Appendix D.

103.3.1.9 Occupant requirements. The owner is responsible and accountable to ensure that all occupants and employees who are required to take certain actions or perform certain functions in accordance with a performance-based design possess the required knowledge and skills and are empowered to perform those actions.

103.3.2 Design professional qualifications. The principal design professional, architects, engineers and other design professionals in responsible charge of their discipline as a member of a design team shall be responsible and accountable to possess the required knowledge and skills to perform design, analysis and verification in accordance with the provisions of this code and applicable professional standards of practice. It is the intent of this code that these individuals possess the qualification characteristics as stated in Appendix D. Qualification statements shall be submitted to the code official for the principal design professional, design professionals and special experts to demonstrate compliance with Appendix D.

103.3.3 Design professionals' and special experts' responsibilities.

103.3.3.1 Principal design professional. When multiple design disciplines are involved, the principal design professional is responsible to ensure that all design elements are comprehensive and complete before submittals are made to the code official. During the code review process all designated reports, drawings and design documents necessary to demonstrate compliance with the code shall be submitted by the principal design professional. The principal design professional's responsibilities include those of a design professional.

103.3.3.2 Responsibilities. Design professionals are responsible to apply the performance requirements and acceptable methods approach in Section 104.3 for performance-based designs when using this code. This code requires design analysis and support documentation to demonstrate the design approach and to verify design objectives and compliance with this code.

103.3.3.3 Supporting documentation. Design professionals have the responsibility to provide the appropriate design analysis, research, computations and documentation to demonstrate compliance with applicable performance requirements of this code and applicable prescriptive code provisions.

103.3.3.4 Acceptable methods. Design professionals shall use authoritative documents or design guides to determine testing and verification methods for selecting

building materials that are compatible with the building systems approach selected.

103.3.3.5 References. Design professionals are responsible to document applicable design guides or authoritative documents for a performance-based design and demonstrate how these documents are utilized to substantiate design solutions to show compliance with the provisions of this code. The use of documents that are not accepted as authoritative documents or design guides requires substantiation with the code official to obtain acceptance.

103.3.3.6 Documentation of bounding conditions. The design professional shall document all bounding conditions and establish thresholds that determine when changes must be approved by the code official.

103.3.3.7 Compliance with bounding conditions. The design professional(s) shall review the completed construction elements, equipment, furnishings, processes, and contents to verify compliance with the bounding conditions and the critical design features identified in the approved design documents. The code official may require that the principal design professional file a report to verify compliance with the bounding conditions and the critical design features at the completion of the project as a condition of obtaining required certificates.

103.3.3.8 Special expert. The scope of work of a special expert shall be limited to the area of expertise as demonstrated in the documentation submitted to the code official for review and approval. Where a special expert performs functions of a design, the special experts shall assume the responsibilities of that phase of the design.

103.3.4 Design documentation.

103.3.4.1 General. The design professional shall prepare appropriate documentation for the project that clearly provides the design approach and rationale for design submittal, construction, and future use of the building, facility or process.

103.3.4.1.1 Required documentation. The documentation for the project shall identify the goals and objectives; the steps undertaken in the analytical analysis; the facility maintenance and testing requirements; and limitations and restrictions on the use of the facility in order to stay within bounding conditions. When requirements for documentation are specified in applicable engineering or design guides, documentation shall be included in the design documents. Computer modeling documentation shall comply with Appendix E.

103.3.4.1.2 Extent of documentation. The level of documentation provided shall be adequate to convey the required information clearly to the involved parties and shall be commensurate with the scope and complexity of the project.

103.3.4.1.3 Verification of compliance. Documentation shall be prepared that clearly verifies that all applicable performance and all applicable prescriptive code provisions have been met.

103.3.4.1.4 Deed restriction. Design features with bounding conditions that require continued maintenance or supervision by the owner throughout the life of the building, facility or process as conditions of compliance with the objectives of this code, shall be recorded as a deed restriction until released by the code official. When required by the code official, the deed restriction shall be modified to reflect specific changes.

103.3.4.1.5 Phased and partial occupancy. The design documents shall include an evaluation of hazards and proposed resolution of associated risks during construction in advance of a request for phased or partial occupancy.

103.3.4.1.6 Emergency response capabilities. Design documentation shall clearly describe the level of response expected by emergency responders under the direct control of the owner. Emergency response capabilities, staffing levels, training requirements and equipment availability shall be documented as a bounding condition.

103.3.4.2 Reports and manuals. When required by the code official, design documentation shall include a concept report, design report and operations and maintenance manual.

103.3.4.2.1 Concept report. The concept report shall document the preliminary details of the project, identify the parties involved in the project, and define the goals and objectives to be utilized in the performance-based design analysis. The concept report shall be submitted to the code official as a means of communicating the programming and early schematic phase of a proposed project and to obtain concurrence between the code official and the project design team on the goals and objectives to be utilized in the analysis. The concept report shall address but not be limited to the following:

1. General project information, including schematic layout and site plan.
2. Definition of project scope.
3. Description of building and occupant characteristics.
4. Project goals and objectives.
5. Selected event scenarios.
6. Methods of evaluation.
7. Qualification statements for principal design professional, design professionals and special experts.
8. Proposed performance and prescriptive code usage.
9. Conceptual site and building plan.

103.3.4.2.2 Design report. The design report shall document the steps taken in the design analysis, clearly identifying the criteria, decisions, assumptions, sensitivities and limitations involved in

the analysis. The design report shall clearly identify bounding conditions, assumptions and sensitivities that clarify the expected uses and limitations of the performance analysis. This report shall verify that the design approach is in compliance with the applicable codes and acceptable methods and shall be submitted for concurrence by the code official prior to the design documents being completed. The report shall also document the design features to be incorporated based upon the analysis. The design report shall address but not be limited to the following:

1. Project scope.
2. Goals and objectives.
3. Performance criteria.
4. Hazard scenarios.
5. Design fire loads and hazards.
6. Final design.
7. Evaluation.
8. Bounding conditions and critical design assumptions.
9. Critical design features.
10. System design and operational requirements.
11. Operational and maintenance requirements.
12. Commissioning testing requirements and acceptance criteria.
13. Frequency of certificate renewal.
14. Supporting documents and references.
15. Preliminary site and floor plans.

103.3.4.2.3 Operations and maintenance manual.

The operations and maintenance manual shall identify system and component commissioning requirements and the required interactions between these systems. The manual shall identify for the facility owner and the facility operator those actions that need to be performed on a regular basis to ensure that the components of the performance-based design are in place and operating properly. Furthermore, the operations and maintenance manual shall identify the restrictions or limitations placed upon the use and operation of the facility in order to stay within the bounding conditions of the performance-based design. The operations and maintenance manual shall be submitted at the time of the design documents submittal, unless the code official approves another time based upon the type of project and data needed for a composite review. The operations and maintenance manual shall address but not be limited to the following:

1. Description of critical systems.
2. Description of required system interactions.
3. Occupant responsibilities.
4. Occupant and staff training requirements.
5. Periodic operational requirements.

6. Periodic maintenance requirements.
7. Periodic testing requirements.
8. Limitations on facility operations (Due to bounding conditions).
9. Report format for recording maintenance and operation data.
10. System and component commissioning requirements.

103.3.5 Design submittal.

103.3.5.1 General. Applicable design documents required in Sections 103.3.2, 103.3.3 and 103.3.4 for submittal in this code and other applicable codes under the jurisdiction of the code official shall be submitted to the code official for review. The documents shall be submitted in accordance with the jurisdiction's procedures and in sufficient detail to obtain appropriate permits.

103.3.5.2 Coordination of design documents. Design documents shall be coordinated by the principal design professional for consistency, compatibility and completeness prior to submittal. Documentation shall be provided to the code official to demonstrate compliance with the performance provisions, including acceptable methods.

103.3.5.3 Performance-based design features. The design documents shall clearly indicate those areas of the design that are performance-based and shall be provided to the code official.

103.3.5.4 Extent of documentation and references. The code official shall be provided with sufficient documentation to support the validity, accuracy, relevance and precision of the proposed methods. Copies of referenced documentation shall be made available to the code official.

103.3.5.5 Inspections, testing, operation and maintenance. The design documents shall specify when and where special inspection and testing are required, the standards of acceptance for demonstrating compliance with the design documents, and operations and maintenance requirements for future use of the building.

103.3.5.6 Management of change. The submittal shall include appropriate management of change protocol to address how changes in the design documents will be managed for construction, operation, and maintenance activities.

103.3.6 Review and approval.

103.3.6.1 Procedures. Document review and approval shall be accomplished in accordance with the code official's procedures.

103.3.6.2 Review. The code official shall be responsible to perform a knowledgeable review of the proposed design project to verify compliance with this code, or the code official shall retain competent assistance to perform the review in accordance with acceptable engineering practice.

103.3.6.3 Contract and peer review. Review may be accomplished by a contract reviewer when the reviewer is assigned by the code official. In addition, the code official may require a peer review process to review design criteria and supporting documents and/or design documents.

103.3.6.4 Approval. After documents and other supporting data are reviewed and approved by the code official to verify compliance with the applicable codes, permits may be issued.

103.3.7 Permits and inspections.

103.3.7.1 Permits. Prior to the start of construction, appropriate permits shall be obtained in accordance with the jurisdiction's procedures and applicable codes.

103.3.7.2 Inspection. Approved inspections shall be obtained in accordance with the design documents, jurisdiction's procedures and applicable codes.

103.3.7.3 Verification reports. Inspection, testing and related verification reports shall be filed with the code official to verify compliance with approved design documents and applicable prescriptive code provisions.

103.3.7.4 Product installation. Compliance shall be verified for materials, fabrication, manufacturer's and engineer's installation procedures by product labeling, certification, quality assurance processes and testing, as applicable, to verify compliance.

103.3.7.5 Compliance verification. At the completion of construction, the code official shall verify that inspection and testing reports demonstrate compliance with the applicable codes and approved design documents.

103.3.7.6 Operational permits. Prior to initiating facility uses and processes regulated under Part III of this code, appropriate permits shall be obtained.

103.3.8 Project documentation.

103.3.8.1 Verification of compliance. Upon completion of the project, documentation shall be prepared that verifies all performance and prescriptive code provisions have been met. When required by the code official in accordance with Section 103.3.3.6, the principal design professional shall file a report that verifies bounding conditions are met.

103.3.8.2 Extent of documentation. All approved design documents, the operations and maintenance manual, inspection and testing records, and certificates of occupancy with conditions shall be included in the project documentation of the code official's records.

103.3.8.3 Deed restrictions. Design features with bounding conditions determined by the design professional to require continued operation and maintenance by the owner throughout the life of the building as conditions of compliance with the objectives of this code shall be recorded as a deed restriction as required by the code official until released by the code official.

103.3.8.4 Technical opinion. The code official has the authority to require a technical opinion and report from

an individual or organization with special expertise to identify and develop methods of protection from special hazards and to determine the acceptability of technologies, processes, products, equipment, materials and uses applicable to the design, operation or use of a building or facility. The intent of this code is that the technical opinion and report shall be prepared by a qualified individual. See Appendix D.

103.3.9 Certificates.

103.3.9.1 Certificate of occupancy. Prior to occupancy of a building, a certificate of occupancy shall be obtained from the code official.

103.3.9.1.1 Continued occupancy. A Certificate of Occupancy is required for the continued occupancy of a building.

103.3.9.1.2 Temporary certificate of occupancy. The code official has the authority to issue a temporary certificate of occupancy for a limited time with specified conditions, providing all life-safety items are accepted.

103.3.9.1.3 Conditional certificate of occupancy. The code official has the authority to issue a certificate of occupancy with conditions valid for a specified time period that requires continued compliance with bounding conditions and the operations and maintenance manual. Failure to maintain compliance with the conditions of the certificate of occupancy is a violation of this code.

103.3.9.1.4 Revocation and renewal. Failure of the building owner to demonstrate to the code official that the building is being operated and maintained in compliance with Sections 103.3.1.6 and 103.3.9.1 is cause to revoke or not renew a certificate of occupancy.

103.3.9.2 Certificate of compliance. Prior to use of a building, facility, process or premises subject to Part III of this code, a certificate of compliance shall be obtained from the code official.

103.3.9.2.1 Continued use. A certificate of compliance is required for the continued use or occupancy of a facility, process or equipment subject to Part III of this code throughout the life of the facility.

103.3.9.2.2 Renewal frequency. The certificate of compliance issued subject to Part III of this code shall be renewed at a frequency as determined in the design and approved by the code official.

103.3.9.2.3 Revocation and renewal. Failure of the owner to demonstrate compliance with this section is cause to revoke or not renew the certificate of compliance.

103.3.10 Maintenance.

103.3.10.1 Owner's responsibility. The owner is responsible for maintaining the building or facility in accordance with the approved documents.

103.3.10.2 Continued compliance. Compliance with the operations and maintenance manual and bounding

conditions shall be verified throughout the life of the building or facility at a frequency in accordance with the approved documents.

103.3.10.3 Compliance verification. Documents verifying that the building, facilities, premises, processes and contents are in compliance with the approved design documents and are maintained in a safe manner shall be filed with the code official at a frequency approved by the code official.

103.3.11 Remodeling, addition or change/approval of use.

103.3.11.1 Analysis of change. The design professional shall evaluate the existing building, facilities, premises, processes, contents and the applicable documentation of the proposed change as it affects portions of the building, facility, premises, processes and contents that were previously designed for compliance under a performance-based code. Prior to any change that was not documented in a previously approved design, the principal design professional shall examine the applicable design documents, bounding conditions, operation and maintenance manuals, and deed restrictions.

103.3.11.2 Coordination of design. When multiple design disciplines are involved, one design professional shall be responsible to ensure that all design elements are comprehensive and complete before submittals are made to the code official. During the code review process all designated reports, drawings and design documents necessary to demonstrate compliance with the code shall be submitted by the design professional.

103.3.11.3 Change in activity or contents. Any change in activity or contents that results in an increase in hazard or risk that exceeds the bounding conditions requires an evaluation and approval. The code official shall have the authority to require a full evaluation of the design.

103.3.11.4 Additions, renovations and related construction changes. Construction activities in existing buildings, facilities, premises or processes shall be evaluated by a design professional and documented in a written report, which shall be submitted for review and approval in conjunction with the permit request. The report shall identify whether or not the proposed construction exceeds the bounding conditions, which will result in an increase in hazard or risk beyond that expected in the approved original design documents. When bounding conditions are not exceeded, the original design documents need not be revised. When bounding conditions are exceeded, the original design documents shall be revised so that compliance with this code is perpetuated.

103.3.11.5 Designs exceeding bounding conditions. Where a proposed change exceeds the bounding conditions and does not result in an increase to hazard or risk, as approved by the code official, any person authorized by the laws of the jurisdiction is allowed to prepare design documents and reports for submittal.

103.3.11.6 Change in design objectives and bounding conditions. When changes are proposed to the design objectives and bounding conditions of an existing building, facility, process or contents, a written report by the design professional shall be prepared to specify the new design objectives and demonstrate compliance with the current code.

103.3.12 Administration and enforcement.

103.3.12.1 Supplemental administrative provisions. Administrative provisions of the International Code Council's family of codes shall supplement the performance provisions for plan review, permit issuance, inspection, certificate of occupancy or compliance and enforcement.

103.3.13 Violations.

103.3.13.1 General. It shall be unlawful for any person, firm or corporation to erect, construct, alter, extend, repair, move, remove, demolish or occupy any building, structure or facility regulated by this code, or cause same to be done, in conflict with or in violation of any of the provisions of this code.

103.3.13.2 Notice of violation. The code official shall serve a notice of violation or order on the person responsible for the erection, construction, alteration, extension, repair, moving, removal, demolition or occupancy of a building or facility in violation of the provisions of this code or in violation of a detail statement or construction documents approved thereunder, or in violation of a permit or certificate issued under the provisions of this code. Such order shall direct the discontinuance of the illegal action or condition and the abatement of the violation.

103.3.13.3 Violation. If the notice of violation is not complied with promptly, the code official has the authority to request the legal counsel of the jurisdiction to institute the appropriate proceeding at law or in equity to restrain, correct or abate such violation, or to require the removal or termination of the unlawful occupancy of the building or structure in violation of the provisions of this code or of the order or direction made pursuant thereto.

103.3.13.4 Penalties. Any person who violates a provision of this code or fails to comply with any of the requirements thereof or who erects, constructs, alters or repairs a building, structure or facility in violation of the approved design documents or directive of the code official or of a permit or certificate issued under the provisions of this code shall be subject to penalties as prescribed by law.

**SECTION 104
ACCEPTABLE METHODS**

104.1 Objective. To require the use of recognized authoritative documents and/or design guides for analysis, measurement of performance and determination of criteria used to evaluate compliance with the performance requirements of this code. See Chapter 2 for definitions.

104.2 Functional statements.

104.2.1 Approved methodologies. Design approaches shall utilize authoritative documents and design guides to demonstrate that designs are based on applicable and valid technical and scientific methodologies.

104.2.2 Design documents. Design documents shall indicate the method by which the design and construction are to be verified and applicable systems are to be measured.

104.2.3 Testing and inspection. Testing and inspection of materials and systems shall be based upon applicable authoritative documents and design guides.

104.3 Performance requirements and acceptance method approach.

104.3.1 Construction documents. Design professionals shall utilize acceptable methods. Construction documents shall contain the design approach, analysis, research, computation and criteria for acceptance that specify the applicable design guides, and authoritative documents utilized to demonstrate that design objectives are met.

104.3.2 Design documents. Design documents shall include design verification methods that are required to demonstrate compliance with design objectives and applicable authoritative documents and design guides.

104.3.3 Individually substantiated design methods. Documents that do not meet the criteria for authoritative documents or design guides shall comply with the individually substantiated design method criteria in Appendix C.

104.3.4 Peer review. Designs that propose to use documents that do not meet the criteria for authoritative documents or design guides shall not be permitted unless approval is given by the code official. The resulting performance-based design shall undergo an independent peer review process.

CHAPTER 2

DEFINITIONS

SECTION 201 GENERAL

201.1 Scope. Unless otherwise expressly stated, the following words and terms shall, for the purposes of this code, have the meanings indicated in this chapter.

201.2 Interchangeability. Words used in the present tense include the future; words in the masculine gender include the feminine and neuter; the singular number includes the plural and the plural, the singular.

201.3 Terms not defined in other codes. Where terms are not defined through the methods authorized by this section, such terms shall have ordinarily accepted meanings such as the context implies.

SECTION 202 DEFINED TERMS

ACCEPTABLE METHODS. Design, analysis and testing methods that have been approved for use in developing design solutions for compliance with the requirements of this code. See Section 104.

AMENITY. An attribute of, or system in, the building that provides services or functions related to the use of the building by the occupants or that contributes to the comfort of the occupants, and that is not necessary for the minimum protection of the occupants. For example, an automatic sprinkler system is not a building amenity.

ARCHITECT/ENGINEER. The individual architect or engineer who is registered or licensed to practice his or her respective design profession as defined by the statutory requirements of the professional registration laws of the state or jurisdiction in which the project is to be constructed. See Qualification Characteristics in Appendix D.

AUTHORITATIVE DOCUMENT. A document containing a body of knowledge commonly used by practicing architects or engineers. It represents the state of the art, including accepted engineering practices, test methods, criteria, loads, safety factors, reliability factors and similar technical matters. The document portrays the standard of care normally observed with a particular discipline. The content is promulgated through an open consensus process or a review by professional peers conducted by recognized authoritative professional societies, codes or standards organizations, or governmental bodies.

BOUNDING CONDITIONS. Conditions that, if exceeded, invalidate the performance-based design. These could be maximum allowable conditions such as fuel load or type and arrangement of fuel load that must be maintained throughout the life of a building to ensure that design parameters are not exceeded.

CODE. The term used in this document to refer to the ICC *Performance Code for Buildings and Facilities*. Other codes in the

International Code Council's family of codes and the *National Electrical Code* are identified where used.

COMMISSIONING. The process of verifying that a system meets design, technical standards and code expectations via inspection, testing and operational functionality.

CONSULTANT. An individual who provides specialized services to an owner, designer, code official or contractor.

CONTRACT REVIEW. Plan review, as defined below, performed by a consultant who is retained by the code official for that purpose.

DESIGN DOCUMENTS. Design drawings, computations, geotechnical and other reports, specifications and related documentation that are submitted to governmental agencies for approval and for the purpose of constructing buildings and structures.

DESIGN GUIDE. A document containing a body of knowledge or information used by practicing architects and engineers that is not required to meet an open consensus requirement. It represents accepted architectural/engineering principles and practices, tests and test data, criteria, loads, safety factors, reliability factors and similar technical data.

DESIGN PROFESSIONAL. An individual who is registered or licensed to practice his or her respective design profession as defined by the statutory requirements of the professional registration laws of the state or jurisdiction in which the project is to be constructed.

ESSENTIAL FACILITIES. Buildings and other structures that are intended to remain operational in the event of extreme environmental loading from flood, wind, snow or earthquake.

FACILITY. (General Application) Includes all buildings or structures (permanent or temporary), including all fire- and life-safety systems installed therein. A facility includes interior and exterior storage areas, equipment and processes dealing with flammable and combustible substances and hazardous materials, on site. The term includes tents, membrane structures, mobile and manufactured structures, storage tanks, piers, wharves and all required access roads and areas.

FACILITY. (Only applicable to Section 702) The entire building or any portion of a building, structure or area, including the site on which such building, structure or area is located, wherein specific services are provided or activities are performed.

PEER REVIEW. An independent and objective technical review of the design of a building or structure to examine the proposed conceptual and analytical concepts, objectives and criteria of the design and construction. It shall be conducted by an architect or engineer who has a level of experience in the design of projects similar to the one being reviewed at least comparable to that of the architect or engineer responsible for the project.

DEFINITIONS

PERFORMANCE-BASED DESIGN. An engineering approach to design elements of a building based on agreed upon performance goals and objectives, engineering analysis and quantitative assessment of alternatives against the design goals and objectives using accepted engineering tools, methodologies and performance criteria.

PLAN REVIEW. A review of the construction documents by the code official to verify conformance to applicable performance and prescriptive code requirements.

PRESCRIPTIVE CODES. The International Code Council's family of codes, which provide specific (design, construction and maintenance) requirements for building, energy conservation, fire prevention, mechanical, plumbing and so forth.

PRINCIPAL DESIGN PROFESSIONAL. An architect or engineer who is responsible to the owner and has contractual responsibility and authority over all design professional disciplines to prepare and coordinate a complete and comprehensive set of design documents for a project.

QUALITY ASSURANCE. Inspection by code officials, and special inspection and testing by qualified persons and observation by architects/engineers, where applicable, of the construction of a building or structure to verify general conformance with the construction documents, and applicable performance and prescriptive code requirements.

SAFE PLACE. An interior or exterior area wherein protection from hazards is provided by construction or appropriate separation distance.

SAFETY SYSTEMS. Designed systems in the building provided to serve as the protection for the occupants and the building and contents from hazards.

SERIOUS INJURY. An injury requiring hospitalization or multiple visits to a healthcare provider to effect treatment.

SPECIAL EXPERT. An individual who has demonstrated qualifications in a specific area, outside the practice of architecture or engineering, by education, training and experience.

THIRD-PARTY REVIEW. A term associated with quality assurance and independence from another party whose work product is being reviewed. Third-party review does not apply to the peer review process.

CHAPTER 3

DESIGN PERFORMANCE LEVELS

SECTION 301 MINIMUM PERFORMANCE

301.1 Purpose. This chapter provides the basis for developing the acceptable level of design based upon building use, risk factors and magnitudes of event. Magnitudes are defined in subsequent chapters of this code but interrelate with this chapter in the development of design methods for the mitigation of hazards.

301.2 Objective. To establish performance groups for buildings and facilities and to establish minimum acceptable losses based upon those performance groups.

301.3 Functional statements.

301.3.1 Performance level. The performance of a building or facility is based on the ability of the building or facility to tolerate specified magnitudes of event within tolerable limits of damage.

301.3.2 Demonstration of performance. Performance is acceptable when the design performance levels are demonstrated to be met or exceeded, to the satisfaction of the code official, in accordance with the assigned or designated use groups, performance groups, magnitudes of event and maximum tolerable damage limits; and the objectives, functional statements and performance requirements of this code.

SECTION 302 USE AND OCCUPANCY CLASSIFICATION

302.1 General. The objective of the assignment of use and occupancy classification is to identify the primary uses of buildings and facilities, and portions of buildings and facilities, and to identify risk factors associated with these uses, in order to facilitate design and construction in accordance with other provisions of this code.

302.2 Determination of use. In determining the primary use of a building or facility, or portion of a building or facility, the following shall be considered:

302.2.1 Principal purpose or function. The principal purpose or function of the building or facility; and

302.2.2 Hazards. The hazard-related risk(s) to the users of the building or facility.

302.3 Guidance. The use and occupancy classifications found in the *International Building Code* shall be permitted to be used for guidance in determining the principal purposes or functions for buildings or facilities.

302.4 Risk factors. In determining the hazard-related risk(s) to users of buildings and facilities, the following risk factors shall be considered:

302.4.1 Nature of the hazard. The nature of the hazard, whether it is likely to originate internal or external to the

building or facility, and how it may impact the occupants, the building or facility, and the contents.

302.4.2 Number of occupants. The number of persons normally occupying, visiting, employed in, or otherwise using the building, facility, or portion of the building or facility.

302.4.3 Length of occupancy. The length of time the building or facility is normally occupied by people.

302.4.4 Sleeping characteristics. Whether people normally sleep in the building.

302.4.5 Familiarity. Whether the building or facility occupants and other users are expected to be familiar with the building or facility layout and means of egress.

302.4.6 Vulnerability. Whether a significant percentage of the building or facility occupants are, or are expected to be, members of vulnerable population groups such as infants, young children, elderly persons, persons with physical disabilities, persons with mental disabilities, or persons with other conditions or impairments that could affect their ability to make decisions, egress without the physical assistance of others or tolerate adverse conditions.

302.4.7 Relationships. Whether a significant percentage of building or facility occupants and other users have family or dependent relationships.

SECTION 303 PERFORMANCE GROUPS

303.1 Performance group allocation. Use groups and hazard-related occupancies have been allocated to performance groups using the risk factors identified in Section 302.4. Specific buildings and facilities have been allocated to performance groups using the risk factors identified in Section 302.4 combined with the relative importance of protecting the building or facility to the community. These performance group allocations are shown in Table 303.1.

303.2 Unique performance group allocation. Where necessary or desired, allocation of specific buildings or facilities to performance groups differing from Table 303.1 is permitted based on the needs specific to a community or owner or if there are unusual circumstances associated with the building or facility. See also Model Adopting Ordinance, Section 2.

303.3 Magnitudes of event and level of damage. Performance groups identify the minimum required performance of buildings or facilities through a relationship of the magnitude of an event to the maximum level of damage to be tolerated shown in Table 303.3. The use of Table 303.3 shall be an iterative process. It shall be used to determine the acceptable impact of certain events based upon their magnitude, and then used iteratively to evaluate various designed mitigation features. Assignment of performance groups is accomplished through consideration of building or facility uses, building or facility

DESIGN PERFORMANCE LEVELS

risk factors, and the importance of a building or facility to a community.

303.4 Performance groups. There are four performance groups (PG), identified as I, II, III and IV.

303.4.1 Performance Group I. The minimum design performance level with which all buildings or facilities posing a

low risk to human life, should the buildings or facilities fail, shall comply.

303.4.2 Performance Group II. The minimum design performance level with which all buildings or facilities subject to this code, except those classified as PG I, PG III or PG IV, shall comply.

TABLE 303.1
PERFORMANCE GROUP CLASSIFICATIONS FOR BUILDINGS AND FACILITIES

PERFORMANCE GROUP	USE AND OCCUPANCY CLASSIFICATIONS FOR SPECIFIC BUILDINGS OR FACILITIES
I	Buildings and facilities that represent a low hazard to human life in the event of failure, including, but not limited to: 1. Agricultural facilities. 2. Certain temporary facilities. 3. Minor storage facilities.
II	All buildings and facilities except those listed in Performance Groups I, III and IV.
III	Buildings and facilities that represent a substantial hazard to human life in the event of failure, including, but not limited to: 1. Buildings and facilities where more than 300 people congregate in one area. 2. Buildings and facilities with elementary school, secondary school or day-care facilities with a capacity greater than 250. 3. Buildings and facilities with a capacity greater than 500 for colleges or adult education facilities. 4. Health-care facilities with a capacity of 50 or more residents but not having surgery or emergency treatment facilities. 5. Jails and detention facilities. 6. Any other occupancy with an occupant load greater than 5,000. 7. Power-generating facilities, water treatment for potable water, wastewater treatment facilities and other public utilities facilities not included in Performance Group IV. 8. Buildings and facilities not included in Performance Group IV containing sufficient quantities of highly toxic gas or explosive materials capable of causing acutely hazardous conditions that do not extend beyond property boundaries.
IV	Buildings and facilities designated as essential facilities, including, but not limited to: 1. Hospitals and other health care facilities having surgery or emergency treatment facilities. 2. Fire, rescue, and police stations and emergency vehicle garages. 3. Designated earthquake, hurricane or other emergency shelters. 4. Designated emergency preparedness, communication, and operation centers and other facilities required for emergency response. 5. Power-generating stations and other utilities required as emergency backup facilities for Performance Group IV buildings or facilities. 6. Buildings and facilities containing highly toxic gas or explosive materials capable of causing acutely hazardous conditions beyond the property boundaries. 7. Aviation control towers, air traffic control centers and emergency aircraft hangars. 8. Buildings and facilities having critical national defense functions. 9. Water treatment facilities required to maintain water pressure for fire suppression. 10. Ancillary structures (including, but not limited to, communication towers, fuel storage tanks or other structures housing or supporting water or other fire suppression material or equipment) required for operation of Performance Group IV structures during an emergency.

MAXIMUM LEVEL OF DAMAGE TO BE TOLERATED BASED ON PERFORMANCE GROUPS AND DESIGN EVENT MAGNITUDES

[illegible]

303.4.3 Performance Group III. The minimum design performance level with which buildings or facilities of an increased level of societal benefit or importance shall comply.

303.4.4 Performance Group IV. The minimum design performance level with which buildings or facilities that present an unusually high risk or that are deemed essential facilities shall comply.

303.5 Alternative performance group designations. The performance group for specific buildings or facilities or classes of buildings or facilities are permitted to be redesignated with the approval of the code official. If a higher design performance level is desired, the design team, with the approval of the code official, may choose a higher performance group. For existing buildings or facilities, the code official is authorized to adjust tolerable limits of impact to a building or facility and its contents.

SECTION 304

MAXIMUM LEVEL OF DAMAGE TO BE TOLERATED

304.1 General. Design performance levels establish how a building or facility is expected to perform, in terms of tolerable limits, under varying load conditions. For each magnitude of event (small to very large), considered as a design load, based on realistic event scenarios, the design shall provide high confidence that the corresponding maximum level of damage to be tolerated for the appropriate performance group will be met. This relationship is illustrated in Table 303.3.

304.2 Level of impact. There are four design performance levels defined in terms of tolerable limits of impact to the building or facility, its contents, and its occupants: mild, moderate, high and severe.

304.2.1 Mild impact. The tolerable impacts of the design loads are assumed as follows:

304.2.1.1 Structural damage. There is no structural damage and the building or facility is safe to occupy.

304.2.1.2 Nonstructural systems. Nonstructural systems needed for normal building or facility use and emergency operations are fully operational.

304.2.1.3 Occupant hazards. Injuries to building or facility occupants from hazard-related applied loads are minimal in numbers and minor in nature. There is a very low likelihood of single or multiple life loss. The nature of the applied load (i.e., fire hazard) may result in higher levels of expected injuries and damage in localized areas, whereas the balance of the areas may sustain fewer injuries and less damage.

304.2.1.4 Overall extent of damage. Damage to building or facility contents from hazard-related applied loads is minimal in extent and minor in cost.

304.2.1.5 Hazardous materials. Minimal hazardous materials are released to the environment.

304.2.2 Moderate impact. The tolerable impacts of the design loads are assumed as follows:

304.2.2.1 Structural damage. There is moderate structural damage, which is repairable; some delay in re-occupancy can be expected.

304.2.2.2 Nonstructural systems. Nonstructural systems needed for normal building or facility use are fully operational, although some cleanup and repair may be needed. Emergency systems remain fully operational.

304.2.2.3 Occupant hazards. Injuries to building or facility occupants from hazard-related applied loads may be locally significant, but generally moderate in numbers and in nature. There is a low likelihood of single life loss with a very low likelihood of multiple life loss. The nature of the applied load (i.e., fire hazard) may result in higher levels of expected injuries and damage in localized areas, whereas the balance of the areas may sustain fewer injuries and less damage.

304.2.2.4 Overall extent of damage. Damage to building or facility contents from hazard-related applied loads may be locally significant, but is generally moderate in extent and cost. The nature of the applied load (i.e., fire hazard) may result in higher levels of expected injuries and damage in localized areas, whereas the balance of the areas may sustain fewer injuries and less damage.

304.2.2.5 Hazardous materials. Some hazardous materials are released to the environment, but the risk to the community is minimal. No emergency relocation is necessary.

304.2.3 High impact. The tolerable impacts of the design loads are assumed as follows:

304.2.3.1 Structural damage. There is significant damage to structural elements but no large falling debris; repair is possible. Significant delays in re-occupancy can be expected.

304.2.3.2 Nonstructural systems. Nonstructural systems needed for normal building or facility use are significantly damaged and inoperable; egress routes may be impaired by light debris; emergency systems may be significantly damaged, but remain operational.

304.2.3.3 Occupant hazards. Injuries to building or facility occupants from hazard-related applied loads may be locally significant with a high risk to life, but are generally moderate in numbers and in nature. There is a moderate likelihood of single life loss, with a low probability of multiple life loss. The nature of the applied load (i.e., fire hazard) may result in higher levels of expected injuries and damage in localized areas, whereas the balance of the areas may sustain fewer injuries and less damage.

304.2.3.4 Overall extent of damage. Damage to building or facility contents from hazard-related applied loads may be locally total and generally significant. The nature of the applied load (i.e., fire hazard) may result in higher levels of expected injuries and damage in localized areas, whereas the balance of the areas may sustain fewer injuries and less damage.

304.2.3.5 Hazardous materials. Hazardous materials are released to the environment with localized relocation needed for buildings and facilities in the immediate vicinity.

304.2.4 Severe impact. The tolerable impacts of the design loads are assumed as follows:

304.2.4.1 Structural damage. There is substantial structural damage, but all significant components con-

tinue to carry gravity load demands. Repair may not be technically possible. The building or facility is not safe for re-occupancy, as re-occupancy could cause collapse.

304.2.4.2 Nonstructural systems. Nonstructural systems for normal building or facility use may be completely nonfunctional. Egress routes may be impaired; emergency systems may be substantially damaged and nonfunctional.

304.2.4.3 Occupant hazards. Injuries to building or facility occupants from hazard-related applied loads may be high in numbers and significant in nature. Significant risk to life may exist. There is a high likelihood of single life loss and a moderate likelihood of multiple life loss. The nature of the applied load (i.e., fire hazard) may result in higher levels of expected injuries and damage in localized areas, whereas the balance of the areas may sustain fewer injuries and less damage.

304.2.4.4 Overall extent of damage. Damage to building or facility contents from hazard-related applied loads may be total. The nature of the applied load (i.e., fire hazard) may result in higher levels of expected injuries and damage in localized areas, whereas the balance of the areas may sustain fewer injuries and less damage.

304.2.4.5 Hazardous materials. Significant hazardous materials are released to the environment, with relocation needed beyond the immediate vicinity.

SECTION 305 MAGNITUDES OF EVENT

305.1 General. Magnitude of event encompasses all loads that can be reasonably expected to impact on a building or facility, its users, and its contents, during construction and throughout its intended life. This includes building and facility-related and occupancy-related loads, as well as loads resulting from natural and technological hazards.

Determination of magnitude of event shall take into account the design performance levels established by this code, the risk factors identified in Section 302.4 and specific performance criteria established by relevant authoritative documents.

305.1.1 Natural hazards. The types of loads affecting main force-resisting systems, components and contents that may be reasonably expected to impact on the building or facility, its users, and its contents during its intended life are provided in Chapter 5 of this code.

305.1.2 Technological hazards. The types of loads due to technological hazards that may be reasonably expected to impact on the building or facility, its users and its contents during construction and throughout its intended life include, but are not limited to:

305.1.2.1 Fires (Chapters 6, 16 and 17).

305.1.2.2 Explosions (Chapters 5, 22, and Section 801).

305.1.2.3 Toxic materials (Chapter 22 and Section 801).

305.1.2.4 Corrosive materials (Chapter 22 and Section 801).

305.1.2.5 Infectious materials or agents (Chapter 22 and Section 801).

305.2 Definition of magnitude of event. Magnitude of event may be defined, quantified and expressed deterministically or probabilistically according to the best current practice of the relevant profession as published in recognized authoritative documents. In some authoritative documents, magnitude of event may be expressed only for a single performance group (e.g., nominal live and dead loads are defined only for Performance Group II). In other cases, magnitude of event may be provided for all performance levels (e.g., seismic provisions). In all cases, it is the responsibility of the design engineer to demonstrate that the design performance levels are met for the loads anticipated.

305.2.1 Classification of event magnitude. For the purpose of this code, the magnitude of event shall be classified as: small, medium, large and very large. Where authoritative documents do not present magnitude of event in this format, it will be the responsibility of the designer to relate the loads to this format and to demonstrate that the minimum design performance levels will be met by the proposed design.

CHAPTER 4

RELIABILITY AND DURABILITY

SECTION 401 RELIABILITY

401.1 Objective. To ensure reliability of the system necessary to meeting the performance objectives of building, facility or processes in accordance with the design.

401.2 Functional statements.

401.2.1 Design, installation and maintenance. Design, install, and maintain systems, system components, and equipment that provide a safety function in strict accordance with the manufacturers' instructions and with any applicable codes and standards.

401.2.2 Testing and inspection. Test and inspect systems, system components and equipment that provide a safety function in strict accordance with the manufacturers' instructions and with any applicable codes and standards for both the methods employed and the frequency.

401.2.3 Active fire protection systems. Active fire protection systems such as fire alarm, suppression, and smoke management systems shall undergo commissioning testing when first placed into service or following any substantial alteration.

401.2.4 Training. Provide appropriate training to any people who operate, test, maintain or interpret information from any safety systems. Where such work is done by contractors, assure that they have the necessary training and skills.

401.3 Performance requirements.

401.3.1 Qualifications. Design, installation and maintenance shall be performed only by qualified people as approved. Certification or records of training shall be provided.

401.3.2 Documentation. Documentation shall be maintained at the building that details the systems installed and their required maintenance and testing methods and frequency. Records of such maintenance and testing shall also be maintained that demonstrate compliance, the persons conducting the work, and their qualifications.

SECTION 402 DURABILITY

402.1 Objective. To assist in the selection of appropriate materials and construction systems.

402.2 Functional statement. To ensure that a building will continue to satisfy the objectives of this code throughout its life.

402.3 Performance requirements.

402.3.1 Normal maintenance. From the time a certificate of occupancy is issued, primary building elements shall, with only normal maintenance, continue to satisfy the per-

formance requirements of this code for the intended life of the building.

402.3.2 Intended life of a building. Where the useful life of building or facility elements or systems is less than the intended life of the building, provisions shall be made for timely replacement of those elements, so that the objective of this code and the design are maintained.

402.3.3 Damage and deterioration. Where damage or deterioration to building or facility elements or systems will impact the objectives of this code or the design, those elements or systems shall be repaired or replaced in order to maintain the level of performance intended by this code.

402.3.4 Determination of durability and service life. In determining the useful service life of building elements, products, or systems, an acceptable method for determining durability and service life shall be used.

Part II—Building

CHAPTER 5 STABILITY

SECTION 501 STRUCTURAL FORCES

501.1 Objective. To provide a desired level of structural performance when structures are subjected to the loads that are expected during construction or alteration and throughout their intended lives.

501.2 Functional statements.

501.2.1 Life safety and injury prevention. Structures shall be designed and constructed to prevent injury to occupants due to loading of a structural element or system consistent with the design performance level determined in Chapter 3.

501.2.2 Property and amenity protection. Structures shall be designed and constructed to prevent loss of property and amenity consistent with the design performance level determined in Chapter 3.

501.3 Performance requirements.

501.3.1 Stability. Structures, or portions thereof, shall remain stable and not collapse during construction or alteration and throughout their lives.

501.3.2 Disproportionate failure. Structures shall be designed to sustain local damage, and the structural system as a whole shall remain stable and not be damaged to an extent disproportionate to the original local damage.

501.3.3 Loss of amenity. Structures, or portions thereof, shall have a low probability of causing damage or loss of amenity through excessive deformation, vibration or degradation during construction or alteration and throughout their lives.

501.3.4 Expected loads. Structures, or portions thereof, shall be designed and constructed taking into account all expected loads, and combination of loads, associated with the event(s) magnitude(s) that would affect their performance, including, but not limited to:

1. Dead loads
2. Live loads
3. Impact loads
4. Explosion loads
5. Soil and hydrostatic pressure loads
6. Flood loads (mean return period)
 - Small: 100 years
 - Medium: 500 years
 - Large: Determined on a site-specific basis
 - Very Large: Determined on a site-specific basis

7. Wind loads (mean return period)

- Small: 50 years
- Medium: 75 years
- Large: 100 years
- Very Large: 125 years

8. Wind-borne debris loads

9. Snow loads (mean return period)

- Small: 25 years
- Medium: 30 years
- Large: 50 years
- Very Large: 100 years

10. Rain loads. See Table 501.3.4

11. Earthquake loads (mean return period)

- Small: 25 years
- Medium: 72 years
- Large: 475 years, but need not to exceed $\frac{2}{3}$ of the intensity of Very Large loads
- Very Large: 2,475 years. At sites where the 2,475 year, 5-percent damped spectral response acceleration at a 0.3-second period exceeds 1.5 g and at a 1-second period exceeds 0.6 g, Very Large ground shaking demands need not exceed a 5-percent damped response spectrum that at each period is 150 percent of the median spectral response acceleration ordinate resulting from a characteristic earthquake on any known active fault in the region.

12. Ice loads, atmospheric icing (mean return period)

- Small: 25 years
- Medium: 50 years
- Large: 100 years
- Very Large: 200 years

13. Hail loads

14. Thermal loads

501.3.5 Safety factors. The design of buildings and structures shall consider appropriate factors of safety to provide adequate performance from:

1. Effects of uncertainties resulting from construction activities.
2. Variation in the properties of materials and the characteristics of the site.

STABILITY

3. Accuracy limitations inherent in the methods used to predict the stability of the building.
4. Self-straining forces arising from differential settlements of foundations and from restrained dimensional changes due to temperature, moisture, shrinkage, creep and similar effects.

501.3.6 Demolition and alteration. The demolition or alteration of buildings and structures shall be carried out in a way that avoids the likelihood of premature collapse.

501.3.7 Site work. Site work, where necessary, shall be carried out to provide stability for construction on the site and avoid the likelihood of damage to adjacent property.

**TABLE 501.3.4
RAIN LOADS**

MAGNITUDE OF EVENT	DRAINAGE SYSTEM	MRI (YEARS)	STORM DURATION (MIN.)
Small	Primary	25	60
Small	Secondary	25	15
Medium	Primary	50	60
Medium	Secondary	50	15
Large	Primary	100	60
Large	Secondary	100	15
Very Large	Primary	100	30
Very Large	Secondary	100	10

CHAPTER 6

FIRE SAFETY

SECTION 601 SOURCES OF FIRE IGNITION

601.1 Objective. To prevent unwanted ignition caused by building equipment and systems.

601.2 Functional statements.

601.2.1 Fuel-burning appliances and services. Fuel-burning appliances and services shall be installed in a manner that reduces their potential as a source of fire ignition.

601.2.2 Electrical equipment, appliances and services. Electrical equipment, appliances and services shall be installed in a manner that reduces their potential as a source of fire ignition.

601.3 Performance requirements.

601.3.1 Uncontrolled combustion and explosion. Fuel-burning appliances and services shall be installed so that the appliance or service will not cause uncontrolled combustion or explosion.

601.3.2 Fuel-burning appliances and services as sources of ignition. Fuel-burning appliances and services shall be installed so that they will not become a source of ignition.

601.3.3 Sparks and arcing. Electrical equipment, appliances and services shall be installed so that they will not allow sparks or arcing to escape their enclosures.

601.3.4 Electrical equipment, appliances and services. Electrical equipment, appliances and services shall be installed so that they will not become a source of ignition.

601.3.5 Flammable, combustible and explosive atmospheres. Separate ignition sources from areas where a flammable, combustible or explosive atmosphere may exist.

SECTION 602 LIMITING FIRE IMPACT

602.1 Objective. To provide an acceptable level of fire safety performance when facilities are subjected to fires that could occur in the fire loads that may be present in the facility during construction or alteration and throughout the intended life.

602.2 Functional statement. Buildings shall be designed with safeguards against the spread of fire so that no person not directly adjacent to or involved in the ignition of a fire shall suffer serious injury or death from a fire and so that the magnitude of the property losses are limited as follows:

Performance Group I—High
Performance Group II—Moderate
Performance Group III—Mild
Performance Group IV—Mild

602.2.1 Building and adjacent buildings. Buildings and facilities shall be designed and constructed so that the building and adjacent buildings or facilities and their occupants, contents and amenities are appropriately protected from the impact of fire and smoke.

602.2.2 Needs of fire fighters. Buildings and facilities shall be designed and constructed so that fire fighters can appropriately perform rescue operations, protect property, and utilize fire-fighting equipment and controls.

602.3 Performance requirements. See Section 1701.3.

CHAPTER 7

PEDESTRIAN CIRCULATION

SECTION 701 MEANS OF EGRESS

701.1 Objective. To protect people during egress and rescue operations.

701.2 Functional statement. Enable occupants to exit the building, facility and premise or reach a safe place as appropriate to the design performance level determined in Chapter 3.

701.3 Performance requirements. See Section 1901.3.

SECTION 702 ACCESSIBILITY

702.1 Objective. To provide people with disabilities reasonable use of the built environment in a manner consistent with that provided to people without disabilities in nonemergency conditions.

702.2 Functional statement. Buildings and their site-adjacent facilities shall allow all people, including but not limited to people with disabilities, functional use of spaces based on a space's intended purpose.

702.3 Performance requirements. Safe and usable routes shall be provided that allow people to:

1. Approach, enter and leave buildings and sites to and from adjacent transportation stops, walkways and parking areas.
2. Move within and use building and site spaces based on a facility's intended purpose.

SECTION 703 TRANSPORTATION EQUIPMENT

703.1 Objective. To ensure the safety of all people using, maintaining and inspecting elevators, escalators and similar building transportation equipment inside or outside of buildings.

703.2 Functional statement. Building transportation equipment installations for access into, within and outside of buildings shall provide for the safe movement of all people and the safety of maintenance and inspection personnel.

703.3 Performance requirements.

703.3.1 General. Building transportation equipment shall:

1. Move people safely when starting, stopping, accelerating, decelerating or changing direction of travel, and hold the rated loads.
2. Be constructed to avoid the likelihood of people falling, tripping, becoming caught and coming in contact with sharp edges or projections under normal and reasonably foreseeable conditions of use.

3. Be guided and have sufficient running clearances.
4. Have controls to stop and prevent restarting in the event of activation of a safety device.
5. Be capable of being isolated for inspection, testing and maintenance.
6. Have adequate lighting and ventilation during normal conditions or upon loss of normal power.

703.3.2 Elevators. Elevators shall be designed and constructed to provide:

1. A means of communication for trapped passengers in stalled elevators.
2. Emergency recall operation that discharges passengers at the required designated or alternate landing in the event of a fire emergency.
3. Emergency in-car operation for fire-fighting and rescue operations.
4. An environment that ensures the safe operation of the equipment for the anticipated use or application.

CHAPTER 8

SAFETY OF USERS

SECTION 801 HAZARDOUS MATERIALS

801.1 Objective. To protect people and property from the consequences of unauthorized discharge, fires or explosions involving hazardous materials.

801.2 Functional statements.

801.2.1 Prevention. Provide adequate safeguards to minimize the risk of unwanted releases, fires or explosions involving hazardous materials as appropriate to the design performance level determined in Chapter 3.

801.2.2 Mitigation. Provide adequate safeguards to minimize the consequences of an unsafe condition involving hazardous materials during normal operations and in the event of an abnormal condition in accordance with the design performance level determined in Chapter 3.

801.3 Performance requirements. See Section 2201.3.

SECTION 802 HAZARDS FROM BUILDING MATERIALS

802.1 Objective. To safeguard people from injury caused by exposure to hazards from building materials.

802.2 Functional statement. Building materials that are potentially hazardous shall be used in ways to avoid undue risk to people.

802.3 Performance requirements.

802.3.1 Construction materials. The quantities of gas, liquid, radiation or solid particles emitted by materials used in the construction of buildings shall not give rise to harmful concentrations at the surface of the material where the material is exposed or in the atmosphere of any space.

802.3.2 Glazing. Glass or other brittle materials with which people are likely to come into contact shall comply with one or more of the following:

1. If broken upon impact, break in a way that is unlikely to cause injury.
2. Resist a reasonably foreseeable impact without breaking.
3. Be reasonably protected from impact.

SECTION 803 PREVENTION OF FALLS

803.1 Objective. To prevent people from unintentionally falling from one level to another.

803.2 Functional statement. Buildings and their facilities shall be constructed to reduce the likelihood of unintentional falls.

803.3 Performance requirements.

803.3.1 Required barriers. A barrier shall be provided where people could fall 30 inches (762 mm) or more from an opening in the external envelope or floor of a building or its facilities.

803.3.2 Roofs. Roofs with permanent access shall have barriers provided.

803.3.3 Barrier construction. Barriers shall be constructed and installed appropriate to the hazard.

803.3.4 Openings in barriers. When barriers have openings, the openings shall be of an appropriate size and configuration to keep people from falling through based upon the anticipated age of the occupants.

SECTION 804 CONSTRUCTION AND DEMOLITION HAZARDS

804.1 Objective. To safeguard people from injury or illness and to protect property from damage during the construction or demolition processes.

804.2 Functional statement. Provisions are required during construction and demolition work to:

1. Protect authorized personnel from injury resulting from falling objects, fire, blasts, tripping or falling, or any other risk posed by the construction or demolition operation.
2. Prevent the entry of unauthorized personnel on the construction or demolition site.
3. Protect property off site from damage resulting from falling objects, fire, blasts or any other risk posed by the construction or demolition operations.

804.3 Performance requirements.

804.3.1 Operations and procedures. Sequencing of tasks, procedural methods and equipment shall be such that:

1. Personnel are protected from injury and illness attributable to hazards present because of the given operation.
2. Adjacent property, property on site and equipment are protected from damage from execution of the given tasks.
3. Safety procedures limit the accumulation of combustible materials on the site and provide safeguards for equipment and operations that represent ignition sources.

804.3.2 Protection from natural hazards. The structure under construction shall be protected from damage due to wind, rain or other natural hazards likely to occur during construction.

804.3.3 Protection of personnel. Provisions for personnel movement, transport and support shall be such that:

1. Personnel are protected from injury due to falling.
2. Personnel are protected from injury due to falling objects.
3. Personnel are protected from injury that could be caused by the particular operations being conducted.
4. Exposure to materials that are known to be health hazards is eliminated.

804.3.4 Unauthorized entry. The job site shall be protected from the intrusion of unauthorized personnel.

SECTION 805 SIGNS

805.1 Objective. To identify essential features of the building to its users.

805.2 Functional statement. Signs shall identify escape and rescue routes, hazards, accessible elements where not all elements are accessible, and other essential features of a building.

805.3 Performance requirements.

805.3.1 Visibility. Signs shall be clearly visible and readily recognizable under the conditions expected for their purpose.

805.3.2 Identification of exits and safe places. Signs shall identify exits and safe places and be located sufficiently to mark escape/rescue routes and guide people to exits and safe places.

805.3.3 Power failure. Signs that identify exits, safe places and escape/rescue routes shall remain visible in the event of a power failure.

805.3.4 Hazard identification. Signs indicating hazards shall be provided in sufficient locations to notify people before they encounter the hazard.

805.3.5 Accessible building feature signage. Signs shall identify accessible facilities and be located sufficiently to mark accessible routes.

SECTION 806 EMERGENCY NOTIFICATION

806.1 Objective. To provide notification of the need to take some manual action to preserve the safety of occupants or to limit property damage.

806.2 Functional statements.

806.2.1 Occupant notification. Where required, adequate means of occupant notification shall be provided to warn of the presence of a fire or other emergency in sufficient time to enable occupants to take the contemplated action without being exposed to unreasonable risk of injury or death.

806.2.2 Emergency responder notification. Where systems are designed to notify emergency responders, such systems shall indicate the type of emergency and the location of the building. Where buildings are large enough to

expect difficulty in prompt location of the fire or other public emergency, identification of the fire zone of origin shall be provided at the building.

806.3 Performance requirements.

806.3.1 Type of notification. Notification of occupants shall be by means appropriate to the needs of the occupants, the use of the building and the emergency egress strategy employed.

806.3.2 Sleeping occupants. When required by the anticipated use of the building, notification systems shall be capable of alerting sleeping occupants in reasonable time to enable them to reach a safe place before the occurrence of untenable conditions at any point along the primary egress path.

CHAPTER 9

MOISTURE

SECTION 901 SURFACE WATER

901.1 Objective. To safeguard people from injury and protect the building or other property from damage caused by surface water and to protect outfalls of drainage systems that may become contaminated from on-site hazardous material storage.

901.2 Functional statements.

901.2.1 Surface water hazards. Buildings and sites shall be constructed in a way that protects people and other property from the adverse effects of surface water.

901.2.2 Hazardous materials contamination. Building or building sites used for the storage or use of hazardous materials shall include provisions to ensure that hazardous materials are not accidentally transported across property lines into drainage outfalls.

901.3 Performance requirements.

901.3.1 Removal of surface water. Surface water shall be removed in a manner that avoids damage or nuisance to the building or other property.

901.3.2 Contaminated water. Surface water or water used for fire fighting and other uses shall be routed so as not to transport hazardous material across property lines or into drainage outfalls.

901.3.3 Surface water runoff. Surface water drainage systems shall convey surface water runoff to an appropriate outfall.

901.3.4 Blockage. Drainage systems shall be constructed so as to avoid the likelihood of blockage.

901.3.5 Access for cleaning. Drainage systems shall be constructed so as to have reasonable access for cleaning.

SECTION 902 EXTERNAL MOISTURE

902.1 Objective. To safeguard people from injury and property from damage that could result from external moisture entering the building.

902.2 Functional statement. Buildings shall be constructed to provide adequate resistance to penetration by, and the accumulation of, moisture from the outside.

902.3 Performance requirements.

902.3.1 Water penetration. Roofs and exterior walls shall prevent the penetration of water that could cause damage to building elements.

902.3.2 Building elements in contact with the ground. Walls, floors and structural elements in contact with the ground shall not absorb or transmit moisture in quantities that could cause damage to building elements.

902.3.3 Concealed spaces and cavities. Concealed spaces and cavities in buildings shall be constructed in a way that prevents external moisture from causing degradation of building elements.

902.3.4 Moisture during construction. Excess moisture present at the completion of construction shall be capable of being dissipated without permanent damage to building elements.

SECTION 903 INTERNAL MOISTURE

903.1 Objective. To safeguard people against illness or injury that could result from accumulation of internal moisture, and to protect an occupancy from damage caused by free water from another occupancy in the same building.

903.2 Functional statement. Buildings shall be constructed to avoid the likelihood of:

1. Fungal growths or the accumulation of contaminants on linings and other building elements.
2. Free water overflow penetrating to an adjoining occupancy.
3. Damage to building elements being caused by the use of water.

903.3 Performance requirements.

903.3.1 Excess moisture removal and protection. An adequate means shall be provided to remove excess moisture or protect the structure from the effects of excess moisture and condensation to all habitable spaces, bathrooms, laundries and other locations where moisture may be generated.

903.3.2 Overflow. Accidental overflow from sanitary fixtures or laundering facilities shall be constrained from penetrating another occupancy in the same building.

903.3.3 Floor surfaces. Floor surfaces of any space containing sanitary fixtures or laundering facilities shall be impervious to water and easily cleaned.

903.3.4 Wall surfaces. Wall surfaces adjacent to sanitary fixtures or laundering facilities shall be impervious to water and easily cleaned.

903.3.5 Surfaces and building elements. Surfaces of building elements likely to be splashed or to become contaminated in the course of the intended use of the building shall be impervious to water and easily cleaned.

903.3.6 Water splash. Water splash shall be prevented from penetrating behind linings or into concealed spaces.

CHAPTER 10

INTERIOR ENVIRONMENT

SECTION 1001 CLIMATE AND BUILDING FUNCTIONALITY

1001.1 Objective. To safeguard people from illness caused by air temperature and to safeguard people from injury or loss of amenity caused by inadequate activity space.

1001.2 Functional statements. Buildings shall be constructed to provide:

1. Adequately controlled interior temperatures.
2. Adequate activity space for the intended use.

1001.3 Performance requirements.

1001.3.1 Temperature. Habitable spaces, bathrooms and recreation rooms shall be designed to maintain the internal temperature at a level sufficient for the occupants while the space is adequately ventilated.

1001.3.2 Space. Habitable spaces shall have sufficient space for activity, furniture and sanitary needs of the occupants.

SECTION 1002 INDOOR AIR QUALITY

1002.1 Objective. To maintain the habitable spaces of buildings and facilities with an environment that is conducive to the comfort, health and safety of the occupants.

1002.2 Functional statement. Habitable spaces within buildings shall be provided with air that contains sufficient oxygen and limits the levels of moisture and contaminants to levels that are consistent with good health, safety and comfort.

1002.3 Performance requirements.

1002.3.1 Ventilation. Habitable spaces within buildings shall have means of ventilation that maintains air quality at all times that the spaces are occupied and with the maximum number of occupants anticipated.

1002.3.2 Collection and removal. Buildings shall have a means of collecting or otherwise removing the following products from the spaces in which they are generated:

1. Cooking fumes and odors.
2. Excessive water vapor from laundering, utensil washing, bathing and showering.
3. Odors from sanitary and waste storage spaces.
4. Gaseous byproducts and excessive moisture from commercial or industrial processes.
5. Poisonous fumes and gases.
6. Air-borne particles.
7. Products of combustion.
8. Off-gases from building materials, fixtures and contents.

1002.3.3 Building materials. Building materials that release quantities of contaminants that cannot be maintained at safe levels shall not be used.

1002.3.4 Contaminated air. Contaminated air shall be disposed of in a way that avoids creating a nuisance or hazard to people and other property.

1002.3.5 Sufficient supply air. The quantity of air supplied for ventilation shall account for the demands of any fixed combustion appliances.

SECTION 1003 AIR-BORNE AND IMPACT SOUND

1003.1 Objective. To safeguard people from loss of amenity as a result of excessive noise being transmitted between adjacent tenants or occupancies.

1003.2 Functional statement. Building elements that are common between tenants or occupancies shall be constructed to prevent excessive noise transmission from other tenants or occupancies or common spaces to habitable spaces.

1003.3 Performance requirements.

1003.3.1 Tenant separations. The air-borne transmission of sound through tenant separation walls and floors shall be reduced to a level that minimizes its effect on adjacent occupants.

1003.3.2 Floors. The structure-borne transmission of sound through floors shall be reduced to a level that minimizes its effect on adjacent occupants.

SECTION 1004 ARTIFICIAL AND NATURAL LIGHT

1004.1 Objective. To safeguard people from injury or loss of amenity due to lack of adequate lighting.

1004.2 Functional statements.

1004.2.1 Lighting for safe movement. Habitable spaces and means of egress within buildings shall be provided with adequate artificial lighting to enable safe movement.

1004.2.2 General lighting. Adequate natural or artificial light shall be provided in all habitable spaces.

1004.3 Performance requirements.

1004.3.1 Illumination. Adequate illumination shall be provided appropriate to the use and occupancy of the habitable spaces and means of egress served.

1004.3.2 Natural light. Natural light shall provide a luminance appropriate to the use and occupancy of the habitable spaces served.

CHAPTER 11

MECHANICAL

SECTION 1101 HEATING, VENTILATION AND AIR CONDITIONING EQUIPMENT (HVAC)

1101.1 Objective. To provide the safe installation of the equipment to condition the air for the health and comfort of the occupants.

1101.2 Functional statement. The installation of equipment shall safeguard maintenance personnel and building occupants from injury and deliver air at the appropriate temperature for health and comfort.

1101.3 Performance requirements.

1101.3.1 Protection from equipment. People and building elements shall be protected from contact with hot and live electrical parts.

1101.3.2 Service and replacement ability. The HVAC system shall allow safe isolation and access for service and replacement of equipment.

1101.3.3 Temperature controls. The HVAC system shall include devices to monitor and control the temperature.

1101.3.4 Securing of equipment. HVAC equipment and appliances shall be secured in place.

SECTION 1102 REFRIGERATION

1102.1 Objective. To provide the safe installation and operation of refrigeration equipment.

1102.2 Functional statement. The installation of equipment shall safeguard maintenance personnel and building occupants from injury.

1102.3 Performance requirements.

1102.3.1 Protection from equipment. People and building elements shall be protected from contact with hot or live electrical parts.

1102.3.2 Service and replacement ability. Refrigeration equipment shall allow safe isolation and access for service and replacement of equipment.

1102.3.3 Temperature controls. Refrigeration equipment shall include devices to monitor and control temperature.

1102.3.4 Toxic and flammable refrigerants. Refrigeration equipment shall have appropriate safeguards when utilizing toxic or flammable refrigeration agents.

SECTION 1103 PIPED SERVICES

1103.1 Objective. To safeguard people from injury or illness caused by extreme temperatures or hazardous substances associated with building services.

1103.2 Functional statement. In buildings with potentially hazardous services containing hot, cold, flammable, corrosive or toxic liquids or gases, the installations shall be constructed to provide adequate safety for people.

1103.3 Performance requirements.

1103.3.1 Construction. Piping systems shall be constructed to avoid the likelihood of:

1. Significant leakage or damage during normal or reasonably foreseeable abnormal conditions.
2. Detrimental contamination of the contents by other substances.
3. Adverse interaction between services or between piping and electrical systems.
4. People having contact with pipes that could cause them harm.

1103.3.2 Corrosion. Pipes shall be protected against corrosion in the environment of their use.

1103.3.3 Identification. Piping systems shall be identified with markings if the contents are not readily apparent from the location or associated equipment.

1103.3.4 Enclosed spaces. Enclosed spaces shall be constructed to avoid the likelihood of accumulating vented or leaking flammable gas.

1103.3.5 Isolation. A piped system shall have isolation devices that permit the complete system or components of the system to be isolated from the supply system for maintenance, testing, fault detection and repair.

CHAPTER 12

PLUMBING

SECTION 1201 PERSONAL HYGIENE

1201.1 Objective. To provide facilities with appropriate space, fixtures and equipment for personal hygiene.

1201.2 Functional statement. To provide adequate plumbing fixtures that reasonably protect people from illness and provide reasonable access to such fixtures conducive to health, safety and comfort of the occupants.

1201.3 Performance requirements.

1201.3.1 Number of plumbing fixtures. Plumbing fixtures shall be provided in sufficient numbers appropriate for the intended use.

1201.3.2 Privacy. Plumbing fixtures shall be located to provide appropriate privacy.

1201.3.3 Cleanliness. Plumbing fixtures shall be constructed to avoid food contamination and accumulation of dirt or bacteria, and permit effective cleaning.

1201.3.4 Waste water removal. Plumbing fixtures shall be installed to discharge to drainage systems without contaminating food.

1201.3.5 Location of plumbing fixtures. Facilities for personal hygiene shall be provided in convenient locations and spaces of appropriate size to permit the use of the fixtures.

SECTION 1202 LAUNDERING

1202.1 Objective. To provide adequate facilities for laundry.

1202.2 Functional statement. Laundry facilities shall be provided for use by occupants of dwelling units.

1202.3 Performance requirement. Space shall be adequate in size for the required fixtures and equipment.

SECTION 1203 DOMESTIC WATER SUPPLIES

1203.1 Objective. To provide sanitary distribution of water for drinking, food preparation and hygiene.

1203.2 Functional statement. Sanitary water shall be delivered to fixtures, appliances and equipment at temperatures appropriate for the intended use.

1203.3 Performance requirements.

1203.3.1 Potable water. Water supplies intended for human consumption, oral hygiene, food preparation and the washing of cooking equipment shall be potable.

1203.3.2 Nonpotable water. Water supplies and outlets providing nonpotable water shall be clearly identified.

1203.3.3 Hot water. Plumbing fixtures and appliances used for personal hygiene, laundering and the washing of cooking equipment shall be provided with hot water.

1203.3.4 Scalding. Where hot water is provided for personal hygiene, it shall be delivered at a temperature to avoid scalding.

1203.3.5 Water supply contamination. Water supplies shall be installed to avoid potable water contamination.

1203.3.6 Flow rate and pressure. Water supplies shall be provided to plumbing fixtures, appliances and equipment at a flow rate and pressure adequate for their operation.

1203.3.7 Leak prevention. Water piping shall be installed in a leak-free manner.

1203.3.8 Access. Water systems shall be installed to allow adequate access for maintenance.

1203.3.9 Water piping isolation and protection from contamination. Water piping shall be installed with provisions for adequate isolation of the system and branches and to provide protection from contamination.

1203.3.10 Hot water vessels. Vessels used for producing hot water shall be provided with safety devices to relieve excessive pressure and limit temperatures.

SECTION 1204 WASTEWATER

1204.1 Objective. To provide safe drainage and disposal systems for wastewater from plumbing fixtures, appliances and equipment.

1204.2 Functional statement. The drainage system shall conduct wastewater to an appropriate disposal point, protect people from contamination and unpleasant odor, and avoid blockages.

1204.3 Performance requirements.

1204.3.1 Prevention of blockage and leakage. The drainage system shall conduct wastewater from all plumbing fixtures, appliances and equipment, avoiding the likelihood of blockage and leakage.

1204.3.2 Sewer gases. The drainage system shall be designed and installed to prevent sewer gases from entering the building.

1204.3.3 Accessibility. The drainage system shall be accessible for maintenance and clearing of blockages.

1204.3.4 Sewer connection. The drainage system shall be connected to the sewer in a manner acceptable to the operator of the sewer system.

1204.3.5 On-site sewage disposal. On-site sewage disposal systems shall be designed and installed in a manner acceptable to the operator.

CHAPTER 13

FUEL GAS

SECTION 1301

FUEL GAS PIPING AND VENTS

1301.1 Objective. To ensure that fuel gas is distributed and utilized in a safe manner.

1301.2 Functional statement. In buildings where fuel gas is used as an energy source, the gas piping vented and unvented systems shall be safe and adequate for their intended use.

1301.3 Performance requirements.

1301.3.1 General. Gas piping systems shall be free of leaks and operated at a safe pressure appropriate to the appliances served by the system.

1301.3.2 Isolation. Gas piping systems shall have isolation devices that permit isolation of appliances, or isolation of the gas piping systems from the supply, for maintenance, testing, leak detection or repair.

1301.3.3 Conveyance of products of combustion. Vented gas appliances shall convey products of combustion directly to the exterior without affecting the operation of other gas vents.

1301.3.4 Safety controls. Vented gas appliances shall be provided with safety controls that prevent their operation in the event of failure of forced ventilation systems or natural draft systems.

CHAPTER 14

ELECTRICITY

SECTION 1401

ELECTRICITY

1401.1 Objective. To provide safe installation of electrical power and lighting for the building systems and use by the building occupants.

1401.2 Functional statement. The electrical installations shall have safeguards against personal injury and the outbreak of fire.

1401.3 Performance requirements.

1401.3.1 Protection from live parts. People and building elements shall be protected against contact with live parts.

1401.3.2 Isolation. The electrical installation shall allow safe isolation of devices, equipment and appliances.

1401.3.3 Protection from excessive current. People shall be protected from the effects of current exceeding the rating of the installation.

1401.3.4 Electromechanical stress. The installation shall protect all components and equipment from electromechanical stress caused by current exceeding its rating.

1401.3.5 Thermal damage. Building elements shall be protected from thermal damage due to heat transfer or electric arc from electrical power installations.

1401.3.6 Installation environment. The installation shall operate safely in the intended environment.

1401.3.7 Flammable and explosive atmosphere. The installation shall prevent ignition of the atmosphere containing flammable or explosive elements.

1401.3.8 Essential services and equipment. Essential services and equipment shall have a power supply protected in a manner to ensure continued operation for an appropriate time after a power failure.

1401.3.9 Power supplier. The building electrical installation shall protect the safety features of the power supplier.

CHAPTER 15

ENERGY EFFICIENCY

SECTION 1501

ENERGY EFFICIENCY

1501.1 Objective. To facilitate efficient use of energy.

1501.2 Functional statement. Buildings shall have provisions ensuring efficient use of nonrenewable energy.

1501.3 Performance requirements.

1501.3.1 Energy performance indices. To provide for the efficient use of depletable energy sources, the building envelope shall be designed and constructed within stated parameters. These parameters are called the energy performance indices. These indices are the amount of energy from a depletable energy source passing through a specified building envelope area during a specified difference in internal and external temperature. These indices are based on the region of the country as well as the use of the building. Equivalent energy performance utilizing alternative energy conservation techniques is permitted. In some cases, for certain types of buildings, the local jurisdiction has the authority to choose not to specify energy performance indices.

1501.3.2 Temperature control. For buildings requiring a controlled temperature, the building design and construction shall take into account various factors. Normally, only insulation, types of windows, and related building elements are considered when addressing energy conservation. However, to provide for the efficient use of energy, there are several other items that need to be taken into consideration, such as thermal resistance, solar radiation, air tightness and heat gain or loss from building services.