CODE AND COMMENTARY

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- ANSI/ASHRAE/USGBC/IES Standard 189.1-2011 Design of High-Performance Green Buildings



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2012 International Green Construction CodeTM Commentary

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PREFACE

The principal purpose of the Commentary is to provide a basic volume of knowledge and facts relating to building construction as they pertain to the regulations set forth in the 2012 *International Green Construction Code*. The person who is serious about effectively designing, constructing and regulating buildings and structures will find the Commentary to be a reliable data source and reference for almost all components of the built environment.

As a follow-up to the *International Green Construction Code*, we offer a companion document, the *International Green Construction Code Commentary*. The basic appeal of the Commentary is that it provides in a small package and at reasonable cost thorough coverage of many issues likely to be dealt with when using the *International Green Construction Code*—and then supplements that coverage with historical and technical background. Reference lists, information sources and bibliographies are also included.

Throughout all of this, strenuous effort has been made to keep the vast quantity of material accessible and its method of presentation useful. With a comprehensive yet concise summary of each section, the Commentary provides a convenient reference for regulations applicable to the construction of buildings and structures. In the chapters that follow, discussions focus on the full meaning and implications of the code text. Recommendations suggest the most effective method of application, and the consequences of not adhering to the code text. Illustrations are provided to aid understanding; they do not necessarily illustrate the only methods of achieving code compliance.

The format of the Commentary includes the full text of each section, table and figure in the code, followed immediately by the commentary applicable to that text. At the time of printing, the Commentary reflects the most up-to-date text of the 2012 *International Green Construction Code*. Each section's narrative includes a statement of its objective and intent, and usually includes a discussion about why the requirement commands the conditions set forth. Code text and commentary text are easily distinguished from each other. All code text is shown as it appears in the *International Green Construction Code*, and all commentary is indented below the code text and begins with the symbol *****. All code figures and tables are reproduced as they appear in the *International Green Construction Code*. Commentary figures and tables are identified in the text by the word "Commentary," and each has a full border.

Readers should note that the Commentary is to be used in conjunction with the *International Green Construction Code* and not as a substitute for the code. The Commentary is advisory only; the code official alone possesses the authority and responsibility for interpreting the code. Please note that, by inclusion of its logo on the cover of this commentary, the American Society of Heating, Refrigerating, and Air-Conditioning Engineers, Inc. (ASHRAE) does not take any responsibility related to the contents of the commentary.

Comments and recommendations are encouraged, for through your input, we can improve future editions. Please direct your comments to the Codes and Standards Development Department at the Chicago District Office.

The International Code Council would like to extend its thanks to the following individuals for their contributions to the technical content of this Commentary:

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Chapter 1: Scope and Administration

General Comments

When adopted by a jurisdiction, the code is a legal document that regulates the construction of high-performance commercial buildings, structures and systems,

PART 1—SCOPE AND APPLICATION

SECTION 101 GENERAL

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

The purpose of this section is to identify the adopted regulations by inserting the name of the adopting jurisdiction into the code.

101.2 General. This code is an overlay document to be used in conjunction with the other codes and standards adopted by the jurisdiction. This code is not intended to be used as a standalone construction regulation document and permits are not to be issued under this code. This code is not intended to abridge or supersede safety, health or environmental requirements under other applicable codes or ordinances.

Administratively, the code is conceived to work as an overlay to other International Codes. It is not intended to be used as a standalone construction regulation document. It depends on other International Codes to provide administrative requirements for permits, construction documents and inspections, as well as to outline the duties of the code official. It is not intended to supersede, replace or abridge the safety, health or environmental provisions of other International Codes or other ordinances that may be in effect in a jurisdiction.

101.3 Scope. The provisions of this code shall apply to the design, construction, addition, alteration, change of occupancy, relocation, replacement, repair, equipment, building site, maintenance, removal and demolition of every building or structure or any appurtenances connected or attached to such buildings or structures and to the site on which the building is located. Occupancy classifications shall be determined in accordance with the *International Building Code*[®] (IBC[®]).

Exceptions:

1. The code shall not apply to items 1.1, 1.2 and 1.3 except where the jurisdiction adopts the jurisdic-

including existing buildings subject to alterations and additions, utilizing both traditional and innovative construction practices. Provisions for application, enforcement and administration are addressed in Chapter 1.

tional requirements of Section 302.1, Item 1, for residential buildings.

- 1.1. Detached one- and two-family dwellings and multiple single-family dwellings (townhouses) not more than three stories in height above grade plane with a separate means of egress, their accessory structures, and the site or lot upon which these buildings are located.
- 1.2. Group R-3 residential buildings, their accessory structures, and the site or lot upon which these buildings are located.
- 1.3. Group R-2 and R-4 residential buildings four stories or less in height above grade plane, their accessory structures, and the site or lot upon which these buildings are located.
- 2. The code shall not apply to equipment or systems that are used primarily for industrial or manufacturing.
- 3. The code shall not apply to temporary structures *approved* under Section 3103 of the *International Building Code*.
- 4. Where ASHRAE 189.1 is selected in accordance with Section 301.1.1, ASHRAE 189.1 shall not apply to buildings identified in Exceptions 1 through 3.
- The scope establishes when the regulations contained in the code must be followed, whether all or in part. For the code to be applicable, something must happen: a new building must be constructed, an existing building must be modified or an existing structure becomes unsafe and must be brought into compliance.

The code is applicable to the following, with exceptions:

- New building and building site design and construction;
- Alterations and additions to, and maintenance and demolition of, existing buildings; and
- Changes of occupancy (see Chapter 10).

Exception 1 exempts the following types of residential buildings and occupancies, except where the jurisdiction indicates in Table 302.1 that it will regulate these buildings and occupancies in accordance with ICC 700, *National Green Building Standard*TM:

- Low-rise residential buildings that fall under the scope of the International Residential Code[®] (IRC[®]).
- All Group R-3 occupancies.
- Group R-2 and R-4 residential occupancies that are three stories or less in height.

Occupancy classifications and what qualifies as a temporary structure must be determined in accordance with the requirements of the *International Building Code*[®] (IBC[®]).

See the commentary to Section 302.1 for additional requirements related to the application of ICC 700 to Exception 1.

In accordance with Exceptions 2 and 3, respectively, the code is not applicable to equipment or systems that are used for manufacturing or industrial purposes, nor is it applicable to temporary structures that comply with Section 3103 of the IBC.

Exception 4 to Section 101.3 of the code, as well as Section 301.1.1, allows owners or owners' agents to comply with the requirements of ASHRAE 189.1, *Standard for the Design of High-performance, Green Buildings Except Low-rise Residential Buildings*, in lieu of the requirements of the code, except that the administrative provisions of Chapter 1 of the code remain in force. The limitations of Exception 1 for residential buildings and occupancies apply to buildings designed in accordance with ASHRAE 189.1 as well. See the commentary to Section 101.3.1 for a similar option for owners and owners' agents to comply with ICC 700 in lieu of the code requirements for certain Group R-2 or R-4 (residential) occupancies that are unaffected by Exception 1.

Note that Section 101.3 does not exclude Group R-1 occupancies from the scope of the code in any way; therefore, R-1 occupancies of all heights, including those three stories or less in height, are regulated by the code. ASHRAE 189.1 cannot be applied to Group R-1 occupancies that are three stories or less in height, or any residential building that is three stories or less in height, as they are not within the scope of ASHRAE 189.1. Also note that ICC 700 is not available as a compliance option in the code for Group R-1 occupancies.

101.3.1 Residential construction. In lieu of the requirements of this code the following shall be deemed-to-comply with this code:

1. Group R-2 and R-4 residential buildings five stories or more in height above grade plane, their accessory structures, and the site or lot upon which these buildings are located that comply with ICC 700, with a minimum energy efficiency category requirements of the Silver performance level or equivalent.

- 2. Group R-2 and R-4 portions of mixed use buildings that comply with ICC 700, with a minimum energy efficiency category requirements of the Silver performance level or equivalent. The remainder of the building and the site upon which the building is located shall comply with the provisions of this code.
- This section provides compliance alternatives for building owners and their agents regarding Group R-2 and R-4 buildings.

The following are deemed to comply with the code where they comply with the energy requirements of ICC 700 at the Silver level, and at the minimum, or Bronze, level for all other criteria:

- Group R-2 and R-4 (residential) occupancies that are five stories or more in height, including their accessory structures.
- Group R-2 and R-4 portions of mixed occupancy buildings. Other portions of mixed occupancy buildings must comply with the code.

101.4 Appendices. Provisions in the appendices shall not apply unless specifically adopted.

As with other International Codes, code appendices are not enforceable unless they are specifically adopted. Unlike other International Codes, however, Table 302.1 of the code, which is referenced in the code Sample Ordinance, is a vehicle that lists not only all code appendices, but also many other jurisdictional choices that, like appendices, do not become enforceable unless they are specifically included in the ordinance or other adopting law or regulation of the jurisdiction. See Section 1 of the sample legislation on pages xiii and xiv of the code for where the appendices to be adopted are to be specified in the adoption ordinance. Note that Appendix C contains an optional adoption ordinance with bonding requirements.

101.5 Intent. This code is intended to safeguard the environment, public health, safety and general welfare through the establishment of requirements to reduce the negative impacts and increase the positive impacts of the built environment on the natural environment and building occupants. This code is not intended to abridge or supersede safety, health or environmental requirements under other applicable codes or ordinances.

The code is intended to protect the environment, as well as public health, safety and general welfare, through requirements that reduce negative and increase positive potential impact of the built environment on the natural environment as well as building occupants. The code is intended to accomplish this by means of minimum requirements related to conservation of natural resources, materials and energy; the employment of renewable energy technologies for indoor and outdoor air quality; and building operations and maintenance.

Ideally, buildings would have zero negative impact on the environment. However, in the past we have been so focused on protecting our buildings from environmental forces (wind, gravity, fire, seismic activity, water, etc.), that we have placed a lower priority on the impact they have had on the environment. As our technological abilities have increased, and our population and the size of the built environment have increased along with it, the ability of the natural environment to cope with negative impacts has decreased.

Although compliance with the code does not produce buildings with zero negative impact on the natural environment, the code is intended to produce buildings that have far less negative impacts compared to those not constructed in accordance with its requirements. Furthermore, as environmentally friendly technologies are developed, become more affordable and are required to be implemented in subsequent editions of the code, the built environment will move further toward the goal of having zero negative impact on the natural environment.

The code is one of many codes in the I-Code family. It is intended to be, and works best when used in association with those other codes. It does not supersede or abridge the requirements of those other codes, though it may be more restrictive in some instances. See Section 102.4 and Chapter 12 for other codes specifically referenced in the code.

SECTION 102 APPLICABILITY

102.1 Code conflicts. Where there is a conflict between a general requirement and a specific requirement of this code, the specific requirement shall be applicable. Where, in any specific case, different sections of the code specify different materials, methods of construction or other requirements, the most practical requirement to meet the intent of the code shall govern.

This section provides guidance to both code officials and other code users on the application of the code when different sections of the code specify different materials, methods of construction or other requirements. The importance of this section should not be underestimated. It clarifies how to handle conflicts between the general and specific provisions found in the code or those instances where different sections specify different requirements. This section provides a necessary hierarchy for the application of code provisions and clarifies code applications that would otherwise leave persistent questions and lead to debate. The code requires that where different sections of the code apply, but contain different requirements, the most restrictive provisions govern except that, where the conflict is between the general requirements of any particular issue with any specific requirements of the same issue, the specific requirements take precedence.

For example, Sections 402.1 and 403.1.1 address general principles that must be applied in the design of stormwater management systems. Section 403.1.3, however, contains specific and more restrictive requirements for stormwater management systems on brownfield sites. Thus, the provisions of Section 403.1.3 govern and must be adhered to. In this particular case, the general requirements of Section 403.1.1 must be adhered to, but the specific provisions for brownfields require that other criteria also be addressed in order to mitigate the additional risks that brownfield sites present regarding stormwater management system design.

102.2 Other laws. The provisions of this code shall not be deemed to nullify any provisions of local, state or federal law.

In some cases, other laws enacted by the jurisdiction or the state or federal government may be applicable to a condition that is also governed by a requirement in the code. In such circumstances, the requirements of the code are in addition to the other law that is still in effect, although the code official may not be responsible for its enforcement.

102.3 Application of references. References to chapter or section numbers, or to provisions not specifically identified by number, shall be construed to refer to such chapter, section or provision of this code.

In a situation where the code may make reference to a chapter or section number or another code provision without specifically identifying its location in the code, assume that the referenced section, chapter or provision is in the code and not in a referenced code or standard.

102.4 Referenced codes and standards. The following codes shall be considered part of the requirements of this code: the *International Building Code*, the *International Code Council Performance Code*[®] (ICCPC[®]), the *International Energy Conservation Code*[®] (IECC[®]), the *International Existing Building Code*[®] (IEBC[®]), the *International Fire Code*[®] (IFC[®]), the *International Fuel Gas Code*[®] (IFGC[®]), the *International Mechanical Code*[®] (IMC[®]), the *International Plumbing Code*[®] (IPC[®]), *International Property Maintenance Code*[®] (IPMC[®]), and the *International Residential Code*[®] (IRC[®]).

The code depends on other International Codes to ensure that a structurally sound, durable and safe fundamental building is provided. For this reason, Section 102.4 references various other International Codes. Without a structurally sound, durable and safe fundamental building, a building cannot be truly sustainable. For example, if a building is not constructed to resist gravity forces, all of the green practices in the code could be rendered superfluous. Such a building might collapse under its own weight. Gravity forces are not addressed in green and sustainable codes and standards. They are, however, addressed by the IBC and the IRC and the standards referenced therein.

Thus the IBC and the IRC also contain many other requirements that are related to sustainability, as do all other *International Codes*. As another example, buildings that are not constructed to adequately resist fire, wind and moisture are likely to have shorter life