ICC 500-2014 Standard and Commentary

ICC/NSSA Standard for the Design and Construction of Storm Shelters

ICC 500—2014 Standard and Commentary: ICC/NSSA Design and Construction of Storm Shelters
(ICC 500 Commentary—2014)

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PREFACE

Purpose and Application

The principal purpose of this commentary is to provide a basic volume of knowledge as it pertains to the regulations set forth in ICC 500—14.

In the chapters that follow, discussions focus on the full meaning and implications of the text of the standard. Illustrations and photos are provided to aid understanding. Where illustrations are provided to demonstrate a method of compliance, they do not necessarily illustrate the only methods of compliance. The commentary text is not part of American National Standard ICC 500—2014 and has not been processed in accordance with ANSI's requirements for an American National Standard (ANS). As such, the commentary text will contain material that has not been subjected to public review or a consensus process.

The format of this document includes the full text of each section, table, and figure in ICC 500—2014, followed immediately by the commentary applicable to the section. Each section's introduction includes a discussion about the objective of the section and usually some discussion about why the requirements are contained in the standard. Standard text and commentary text are easily distinguished from each other. All standard text is shown as it appears in ICC 500—2014, and all commentary is indented below the standard text with the symbol ❖.

Readers should note that the commentary is to be used in conjunction with ICC 500—2014 and not as a substitute for the standard itself. The commentary is advisory only; the code official alone possesses the authority and responsibility for interpreting the codes and standards.

Additional background information on the history and development of ICC 500—2014 provisions is available in the Federal Emergency Management Agency (FEMA) publication FEMA P-361, *Safe Rooms for Tornadoes and Hurricanes: Guidance for Community and Residential Safe Rooms* (Third Edition, 2015). Note, "safe room" is FEMA terminology for storm shelter, although there are some modest differences. FEMA defines a safe room as follows: "A storm shelter specifically designed to meet FEMA safe room Recommended Criteria and provide near-absolute protection in extreme-wind events, including tornadoes and hurricanes." Near-absolute protection is defined as "Level of protection afforded to the occupants of a safe room built according to the guidance in the most current edition of FEMA P-361. Our current knowledge of tornadoes and hurricanes indicates that safe room occupants will have a very high probability of being protected from injury or death" (FEMA 2015). The design guidelines for FEMA safe rooms begin with the provisions of ICC 500—2014 but include several modifications and additional requirements, all of which are more conservative than ICC 500—2014. The FEMA publication includes supplemental commentary for most provisions of ICC 500—2014, as well as identification of best practices. FEMA P-361 also provides guidance on a range of topics beyond the scope of ICC 500—2014, including planning, costs, operation, and maintenance of safe rooms—information that is also generally applicable to storm shelters.

The discussion provided in this commentary has been provided by members of the ICC 500—2014 Committee, as well as others who have experience with the design and construction of storm shelters and other hazard mitigation issues related to high-wind events. ICC would like to acknowledge contributions from the following individuals with thanks for their efforts in the writing of this document:

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The information contained in this preface is not part of the ANS and has not been processed in accordance with ANSI's requirements for an ANS. As such, this preface may contain material that has not been subjected to public review or a consensus process. In addition, it does not contain requirements necessary for conformance to the standard.

Introduction

In May of 2002 the International Code Council (ICC) and the National Storm Shelter Association (NSSA) initiated a joint project to write a standard for the design and construction of storm shelters. A standard development committee was created, and the first meeting of that committee was in May of 2003. The scope of the standard is to provide minimum design and construction requirements for storm shelters that provide a safe refuge from storms that produce high winds, hurricanes and tornadoes. Hurricanes and tornadoes generate high winds that produce wind pressures on buildings and structures and that create flying debris at levels and intensities than are higher than those for which most commercial building and residences are designed. The magnitude of the wind speeds associated with these storms are such that building occupants and residents are required to evacuate the area or seek protection in a shelter designed for resistance to extraordinary loads and flying debris. ICC 500—2014 provides design requirements for the main wind-resisting structural system and components and cladding of these shelters, and provides basic occupant life safety and health requirements for these shelters, including means of egress, lighting, sanitation, ventilation, fire safety and minimum required floor space for occupants.

Development

As of December 2014 the second edition of the International Code Council (ICC) and National Storm Shelter Association's (NSSA) *Standard for the Design and Construction of Storm Shelters* has been published. The standard was developed by the ICC/NSSA Consensus Committee on Storm Shelters (IS-STM), which operates under ANSI Approved ICC Consensus Procedures for the Development of ICC Standards. The consensus process of ICC for promulgating standards is accredited by ANSI. The Storm Shelter Committee is a balanced committee formed and operated in accordance with ICC rules and procedures.

The meetings of the ICC/NSSA IS-STM Consensus Committee were open to the public and interested individuals and organizations from across the country participated. The technical content of currently published documents on storm shelters, including documents of the National Storm Shelter Association, the Federal Emergency Management Agency (FEMA), the Red Cross, and the State of Florida, was reviewed and considered by the committee. The information from these documents helped form a basis for the regulations installed in ICC 500—2014, but the exact provisions adopted by the committee were determined based on the scope and intent of ICC 500—2014. The requirements of ICC 500—2014 are based on the intent to establish provisions consistent with the scope of the ICC family of codes and standards that are written to adequately protect public health, safety and welfare; provisions that do not necessarily 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

ICC 500—2014, *Standard for the Design and Construction of Storm Shelters* is available for adoption and use by any jurisdiction. 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 jurisdiction.

Interpretations

Requests for Interpretations on the provisions of ICC 500—2014 should be addressed to: ICC, Central Regional Office, 4051 Flossmoor Road, Country Club Hills, IL 60478.

Maintenance—Submittal of Proposals

All ICC standards are periodically updated as required by ANSI. Proposals for revising the second edition are welcome. Please visit the ICC website at www.iccsafe.org for the official "Call for Proposals" announcement. A proposal form and instructions can also be downloaded from www.iccsafe.org.

ICC, its members and those participating in the development of ICC 500—2014 do not accept any liability resulting from compliance or noncompliance with the provisions of ICC 500—2014. ICC does not have the power or authority to police or enforce compliance with the contents of the standard. Only the governmental body that enacts the standard into law has such authority.

International Code Council/National Storm Shelter Association Consensus Committee on Storm Shelters (IS-STM)

Consensus Committee Scope: The ICC/NSSA Consensus Committee on Storm Shelters (IS-STM) shall have primary responsibility for minimum requirements to safeguard the public health, safety and general welfare through design, construction and installation requirements for storm shelters.

ICC 500—2014 was processed and approved for submittal to ANSI by the ICC/NSSA Consensus Committee on Storm Shelters (IS-STM). Committee approval of the standard does not necessarily imply that all committee members voted for its approval.

Representatives on the Consensus Committee are classified in one of three voting interest categories. The committee has been formed in order to achieve consensus as required by ANSI Essential Requirements. At the time it approved the standard, the IS-STM Consensus Committee consisted of the following members:

General Interest (G) - User Interest (U) - Producer Interest (P)

Mr. Julian Amaya (G), Housing Department City of Los Angeles, South Gate, CA

Mr. Brian Bishop (G), Iowa Department of Public Safety—State Fire Marshal's Office, Des Moines, IA

Mr. Gary J. Ehrlich, P.E. (P), National Association of Home Builders, Washington, DC

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Mr. Danny John Kilcollins, FDEM (G), Florida Department of Community Affairs, Tallahassee, FL

Dr. Marc L. Levitan (U), National Institute of Standards and Technology, Gaithersburg, MD

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Committee Secretary: **David A. Bowman, P.E.,** Manager, Codes, International Code Council, Country Club Hills, IL

Voting Membership in Each Category

Category	Number
General (G)	5
User (U)	5
Producer (P)	5
TOTAL	15

Interest Categories

General Interest: Individuals assigned to the General Interest category are those who represent the interests of an entity, including an association of such entities, representing the general public or entities that promulgate or enforce the provisions within the committee scope. These entities include consumers and government regulatory agencies.

User Interest: Individuals assigned to the User Interest category are those who represent the interests of an entity, including an association of such entities, which is subject to the provisions or voluntarily utilizes provisions within the committee scope. These entities include academia, applied research laboratory, building owner, design professional, government nonregulatory agency, insurance company, private inspection agency and product certification/evaluation agency.

Producer Interest: Individuals assigned to the Producer Interest category are those who represent the interests of an entity, including an association of such entities, which produces, installs or maintains a product, assembly or system subject to the provisions within the committee scope. These entities include builder, contractor, distributor, labor, manufacturer, material association, standards promulgator, testing laboratory and utility.

NOTE—Multiple Interests: Individuals representing entities in more than one of the above interest categories, one of which is a Producer Interest, are assigned to the Producer Interest. Individuals representing entities in the General Interest and User Interest categories are assigned to the User Interest.

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