The ICC Consensus Committee on Storm Shelters has held 1 public meetings to develop the second public comments draft of the ICC 500-2013 Standard for the Design and Construction of Storm Shelters. Public comments are requested on this second public comments draft. The public comment deadline is February 3, 2014. Go to http://www.iccsafe.org/cs/standards/IS-STM/Pages/default.aspx for more information.
Proposal No.  
IS-STM1-11/12

Section 101.2

Revise as follows:

101.2 Scope. This standard applies to the design, construction, installation, and inspection of storm shelters constructed as separate detached buildings or constructed as safe rooms within buildings for the purpose of providing safe refuge from storms that produce extreme high winds, such as tornadoes and hurricanes. Shelters designed and constructed to this standard shall be designated as either to be hurricane shelters, tornado shelters, or combined hurricane and tornado shelters.

Proposal No.  
IS-STM3-11/12

Section 106.2

Revise as follows:

106.2 Special inspections. Special inspections shall be provided for construction and installation of materials as required by authority having jurisdiction in accordance with the applicable building code, and Section 106.3 of this standard.

Proposal No.  
IS-STM4-11/12

Section 106.1.1

Revise as follows:

106.1.1 Peer Review. Construction documents for community shelters designed for greater than 300 occupants shall undergo a peer review by an independent registered design professional for conformance with the requirements of Chapter 3.
Propose as follows:

106.1.1 Peer review. Construction documents for community shelters designed for greater than 300 occupants shall undergo a peer review by an independent registered design professional for compliance with the requirements of Chapters 3, 5, 6, and 7.

Proposal No.
IS-STM6-11/12

Section 106.1.1

Revise as follows:

106.1.1 Peer review. Construction documents for community shelters designed for greater than 300 occupants shall undergo a peer review by an independent registered design professional for compliance with the requirements of Chapter 3. The peer review shall be submitted to the authority having jurisdiction with the construction documents identified in Section 107.

Proposal No.
IS-STM8-11/12

Section 106.1.1

Add new text as follows:

106.1.1.1 Peer review for essential facilities. Construction documents for storm shelters in Risk Category IV (essential facilities) as defined in Table 1604.5 in the International Building Code as well as elementary schools, secondary schools, and day care facilities with an occupant load greater than 16, shall undergo a peer review by an independent registered design professional for compliance with the requirements of Chapter 3, 5, 6, and 7.

Proposal No.
IS-STM10-11/12

Section 106.3

Revise as follows:

106.3 Special cases. Special inspections shall be provided for proposed work comprised of:

1. Construction materials and systems that are alternatives to traditional materials and systems prescribed by the applicable code.
2. Unusual design and construction applications.
3. Anchors post-installed in hardened concrete for shelter anchorage in accordance with Section 106.3.1.

106.3.1 Special Inspections to Verify Anchor Installation. Special Inspection to verify the anchor installation, capacity and foundation adequacy according to the anchor manufacturer and shelter anchorage and foundation requirements provided in the shelter design information required in Section 107.2.1, quality assurance plans required in Section 107.3.2, and foundation and anchorage criteria required in Section 309.

**EXCEPTION:** Where the authority having jurisdiction verifies that the foundation and anchoring complies with the installation requirements of the shelter manufacturer, special inspection is permitted to be waived by the authority having jurisdiction.

Section 202

Add new definitions as follows:

SPECIAL INSPECTION. Inspection of construction requiring the expertise of an approved special inspector in order to ensure compliance with this standard and the approved construction documents.

SPECIAL INSPECTOR. A qualified person employed or retained by an approved agency and approved by the building official as having the competence necessary to inspect a particular type of construction requiring special inspection.

Proposal No.

**IS-STM11-11/12**

Section 107.2.1

Revise as follows:

107.2.1 Design Information. For the areas of a building designed for occupancy as a storm shelter, the following information shall be provided within the construction documents:

1. Type of shelter: Residential or community; tornado, hurricane or a combination of both.

2. A statement that the wind design conforms to the provisions of the ICC/NSSA Standard for the Design and Construction of Storm Shelters, with the edition year specified.

3. The shelter design wind speed, mph.
4. The importance factor, I.

5. The wind exposure category (indicate all if more than one is used.)

6. The internal pressure coefficient, GCpi

7. The topographic factor Kzt

8. The directionality factor Kd

9. A statement that the shelter has/has not been constructed within an area susceptible to flooding in accordance with Chapter 4 of this standard.

10. The Design Flood Elevation and Base Flood Elevation for the site (if applicable)

11. Documentation showing that components of the shelter envelope will meet the pressure and missile impact test requirements identified in Chapters 3 and 8 of this standard.

12. A floor plan drawing or image indicating location of the storm shelter on a site or within a building or facility; including drawing or image indicating the entire facility.

13. A storm shelter section or elevation indicating the height of the storm shelter relative to the finished grade, finished floor, and the host building, where applicable.

14. The lowest shelter floor elevation and corresponding datum, except for residential shelters outside of special flood hazard areas.

15. The occupant load of the storm shelter.

16. The usable storm shelter floor area.

17. Venting area (sq.in.) provided and locations in the shelter.

18. Calculations for the number of sanitation facilities for community shelters. Identify fixtures as permanent water connected or temporary non-water connected type.

**IS-STM12-11/12**

**Section 107.2**

**Add new text as follows:**

**107.2.7 Safe Room Design Information Sheet.** The design information described Section 107.2 shall be supplied on a single sheet.

**Exception:** The documentation for 107.2.1 item 11 may be included in the project manual or an attachment to the single sheet.
Section 107.2.1

Revise as follows:

107.2.1 Design Information. For the areas of a building designed for occupancy as a storm shelter, the following information shall be provided within the construction documents:

1. Type of shelter: tornado, hurricane or a combination of both.
2. A statement that the wind design conforms to the provisions of the ICC/NSSA Standard for the Design and Construction of Storm Shelters, with the edition year specified.
3. The shelter design wind speed, mph.
4. The importance factor, I.
5. The wind exposure category (indicate all if more than one is used.)
6. The internal pressure coefficient, GCpi
7. The topographic factor Kzt
8. The directionality factor Kd
9. A statement that the shelter has/has not been constructed within an area susceptible to flooding in accordance with Chapter 4 of this standard.
10. The Design Flood Elevation and Base Flood Elevation for the site (if applicable)
11. Documentation showing that components of the shelter envelope will meet the pressure and missile impact test requirements identified in Chapters 3 and 8 of this standard.
12. A floor plan drawing or image indicating location of the storm shelter on a site or within a building or facility; including drawing or image indicating the entire facility.
13. The lowest shelter floor elevation and corresponding datum, except for residential shelters outside of special flood hazard areas.
14. The occupant load of the storm shelter.
15. The usable storm shelter floor area.
16. Venting area (sq.in.) provided and locations in the shelter.
17. Pre-fabricated shelter Minimum foundation capacity requirements.
18. Pre-fabricated Shelter installation requirements including anchor location and minimum required capacity for each anchor.

19. For pre-fabricated shelters, at least one prescriptive foundation design Proposal No. IS-STM14-11/12

Revise as follows:

107.2 Information required. The following information applicable to construction and operation of the storm shelter shall be supplied as part of the construction documents.

107.2.4 Inspections. Where any special details are utilized in the design of the structure, or where any special investigations are required in addition to those required by the applicable building code, the construction documents shall contain a schedule of the inspections required and the criteria for the special installation.

107.2.5 Special details. The construction documents shall provide or include any special manufacturer’s details or installation instructions for systems or equipment designed for the storm shelter.

107.2.6 Special instructions. The construction documents shall provide or include any special contain details or of special instructions required for the functional operation of the storm shelter, such as:

107.3 Quality assurance plan. The construction documents for community shelters shall contain a quality assurance plan in accordance with Sections 107.3.1 through 107.3.3.

107.3.1 Detailed requirements. A quality assurance plan shall be provided for the following:

(No changes to Items 1 through 6.)

7. Components and cladding including soffits.

8. Corrosion resistance or protection of metal connectors providing load path continuity and exposed.

9. Critical support systems and connections and debris impact protection of the components and connections.

107.3.2 Quality assurance plan preparation. A quality assurance plan prepared by a registered design professional shall be provided for each main wind force resisting system and each wind-resisting component.
107.3.3 Contractor responsibility. Each contractor responsible for the construction, fabrication, or installation of a main wind force resisting system or any component listed in the quality assurance plan shall submit a written statement of responsibility to the authority having jurisdiction, the responsible design professional, and owner prior to the commencement of work on the system or component. The contractor’s statement of responsibility shall contain:

1. (No changes.)
2. (No changes.)
3. (No changes.)
4. (No changes.)

**Exception:** Prefabricated or panelized fabrication of storm shelter components which have been inspected and labeled by an approved agency as meeting the requirements of the applicable building code and this standard.

Proposal No.
**IS-STM18-11/12**

**Section 301.1.1**

Add new text as follows:

**301.1.1 Anchor Calculations – Doors, Windows & Shutters.** When anchoring of door, window or shutter framing to the shelter structure by means other than those listed, the use of standard accepted engineering practices for calculating pull out, shear load and anchor placement shall be accomplished by registered design professional for each type of alternate anchoring. Such calculations shall be documented and supplied as part of the Construction Documents.

**306.6 Anchorage of doors, windows and shutters.** Where anchorage of door, window or shutter framing to the shelter structure is required by means other than those provided in the manufacturer’s details or installation instructions in accordance with Section 107, the alternate anchorage shall be designed for pull-out and shear and the anchor placement detailed in accordance with accepted engineering practice. The alternate anchorage details and calculations shall be provided as part of the Construction Documents.

**IS-STM19-11/12**

**Section 108.2**
Revise text as follows:

108.2 Labeling. Impact protective systems shall be labeled denoting compliance with this standard.

Other than opening protective impact protective systems, products, materials or systems shall be labeled by an approved agency when required by the applicable code or jurisdiction. Opening protectives shall bear a label denoting compliance with this standard.

Section 202

Add new definitions as follows:

Label. An independent certification and permanent label applied on a product that contains the name of the manufacturer and performance characteristics (including, but not limited to, test missile size and speed, and test pressure.) of the product or material and the name and identification of the Approved agency, and that indicates that the representative sample of the product or material has been tested and evaluated by an approved agency.

LABELED. Equipment, materials or products to which has been affixed a label, seal, symbol or other identifying mark of a nationally recognized testing laboratory, inspection agency or other organization concerned with product evaluation that maintains periodic inspection of the production of the above-labeled items and whose labeling indicates either that the equipment, material or product meets identified standards or has been tested and found suitable for a specified purpose.

Proposal No.
IS-STM20-11/12

Section 302.1, 302.2, 304.1, 306.3, 306.4, 702.1.4, 703.1.5, 703.6.5, 804.9.6, 804.9.7, 804.10.1, 806.1, 806.5 and 806.5.2

Add new definition to Section 202 as follows:

Impact-Protective System. System or device such as a shutter, door, or other device mounted on the inside or outside of the exterior wall of a shelter and which has been demonstrated by testing to be capable of withstanding the impact of test missiles as detailed in this standard.

Revise as follows:

302.1 Strength design. For Strength Design or Load and Resistance Factor Design (LRFD), use the load combinations stated in ASCE 7, Section 2.3 with W determined in accordance with Section 304 of this standard. Exception 1 to ASCE 7 Section 2.3.2 shall not apply.
302.2 Allowable stress design. For Allowable Stress Design (ASD), use the load combinations stated in ASCE 7, Section 2 with W determined in accordance with Section 304 of this standard.

306.3 Wall and roof openings. All openings in the shelter envelope shall be protected by doors complying with Section 306.3.1, windows complying with Section 306.3.2, other impact-protective systems complying with Section 306.4, or baffled to prevent windborne debris from entering the shelter protected occupant area in accordance with Section 306.5.


Exception: Non-operable, permanently affixed shields or cowlings are excluded from pressure testing requirements of Section 806.5.

306.4.1 Impact-protective systems in tornado shelters. Impact-protective systems in tornado shelters shall be permanently affixed, and manually operable from inside the shelter. All operable impact-protective systems shall be manually operable from inside the shelter.

702.1.4 Exhaust or intake opening protection. Air exhaust or intake openings that terminate outside of occupied shelter areas and occupant support areas shall comply with the provisions of Section 306.3 for exterior wall and roof impact-protective systems.

703.1.5 Exhaust or intake opening protection. Air exhaust or intake openings that terminate outside of occupied shelter areas and occupant support areas shall comply with the provisions of Section 306.3 for exterior wall and roof impact-protective systems.

703.6.5 Location. Emergency electrical power supply shall be accessible by a protected access route. The access route shall be located within the hurricane shelter or shall meet the provisions for exterior wall and roof impact-protective systems in accordance with this standard.

804.9.6 Impact-protective systems. All shutter assemblies and other Impact Protective Protection Systems shall be impacted in the center of the closed opening, and at one interface corner as detailed in Figure 804.9.6-1. Panels and interface joints shall be impacted as shown in Figure 804.9.6-2. Interface hinge joints and primary latches, where present, shall be impacted as shown in Figure 804.9.5-2 on an additional specimen.

804.9.7 Alcove or Baffled Entry Systems. Debris impact testing described in this section is required for alcove/baffled access/egress systems meeting the requirements of Sections 304 and 305. Figure 804.9.7 illustrates an alcove/baffle system. Debris impact test requirements are presented for systems for which:

1. Storm debris impacts at least two impact-protective systems meeting the requirements of Section 306.2 prior to entering the protected occupant area. Straight missile paths and elastic impacts are assumed in determining missile trajectories. Test requirements for this type of system are presented in Section 804.9.7.1. Examples of this type of system are shown in Figure 804.9.7.1. The boundary between the protected
occupant area and the unprotected occupant area shall be clearly marked on the floor and walls of the shelter.

2. Storm debris impacts initially an impact-protective system meeting the requirements of Section 306.2 and possibly rebounds to impact an entry door. Straight missile paths and elastic impacts are assumed in determining missile trajectories. The debris test requirements for this type of system are presented in Section 804.8.7.2. Examples of this type of system are shown in Figure 804.9.7.2-1 and Figure 804.9.7-2-2.

3. Storm debris impact on an entry door is limited to an angle less than 90 degrees by an impact-protective system. The debris test requirements for this type of system are presented in Section 804.8.7.3. Examples of this type of system are shown in Figure 804.9.7.3.

804.10.1 Perforation. Any perforation of the interior surface of the tested component of the shelter envelop by the design missile shall constitute a failure. For impact-protective systems, perforation or deflection that would result in impact of the protected component or penetration of the interior surface plane of the impact protective systems constitutes a failure.

806.1 Pressure Testing Procedures. Procedures for pressure testing wall assemblies, roof assemblies, door assemblies, window assemblies, and impact-protective systems requiring pressure testing are presented in this section.

806.5 Impact-protective systems. External impact-protective systems such as shutters and protective screens shall be tested for ability to withstand prescribed pressures if withstanding pressure is critical to their function when installed. Devices such as non-operable, permanently affixed shields or cowlings whose only function is to protect against debris intrusion need not be pressure tested when the shields or cowlings have been designed and anchored to resist the design loads as determined by the standard.

806.5.1 Impact-protective systems for Tornado Shelters. External impact-protective systems for tornado shelters whose ability to withstand wind-induced pressure when installed is critical to their function shall be static pressure tested following procedures specified in ASTM E330 to a pressure of at least 1.2 times the pressures specified in Section 304. Debris impact tests and pressure tests are permitted to be conducted separately.

Exception: Impact-protective systems with a jamb or stop need be tested only with pressure only away from the stop.

806.5.2 Impact-protective systems for Hurricane Shelters. External impact-protective systems for hurricane shelters whose ability to withstand wind-induced pressure when installed is critical to their function shall be static pressure tested to a pressure of at least 1.2 times the shelter design wind pressures specified in Section 304 following the procedures specified in
ASTM E330. Cyclic pressure tests conducted according to Section 805.5 shall be conducted after debris impact tests.

Proposal No.

IS-STM26-11/12

Section 309.1, 309.1.1, 309.1.2

Revise as follows:

309.1 Connections of storm shelters to foundations or slabs. Shelters shall be designed to resist all loads specified in Chapter 3 and the combined uplift and lateral forces resulting from the design wind speed and transfer those forces to the ground.

309.1.1 Structural stability of storm shelter foundations. Foundations Other than host buildings designed in accordance with Section 308.1.1, foundations and slabs that provide structural stability for storm shelters shall be designed to resist the combined uplift and lateral forces on the shelter that are calculated for the storm shelter design wind speed assuming the host building is totally destroyed by the windstorm.

Exception: Where the host building is designed in accordance with Section 308.1.1, the design of foundations and slabs shall not be required to assume the host building is totally destroyed by the windstorm.

309.1.2 Calculation of resistance. Structural stability of storm shelters shall be determined by engineering calculations for design wind pressures determined in accordance with Section 304. Where storm shelters are anchored to foundations or slabs-on-grade whose top surfaces extending outward from the shelter walls are at grade, the top surfaces of the foundations or slabs shall not be considered to have wind uplift forces acting on them.

309.1.2.1. Slabs on grade. Slabs on grade shall be designed for the applicable loads in accordance with Section 301. Where a slab on grade is being used to resist loads, the minimum thickness shall be 3½ inches (88.9 mm) and the minimum steel reinforcement for slabs on grade resisting forces on the storm shelter shall be 6 x 6 – W1.4 x W1.4 or No. 4 bars, at a maximum of 18 inches on center in either direction.

Exception: Concrete and concrete masonry storm shelters shall be permitted to be constructed within existing one & two family dwellings on existing slabs on grade without a foundation, under the following conditions:
1. Calculated soil pressure under the slabs on grade supporting the storm shelter walls shall not exceed 2000 psf (95.8 kN/m²) for design loading conditions other than design storm shelter events and 3000 psf (143.7 kN/m²) for design storm shelter events.

2. The storm shelter is anchored at a minimum to the slab on grade at each corner of the structure and on each side of the doorway opening minimum.

3. Reinforcing The reinforcement requirements in the slab on grade shall not be required where the are waived if dead load of the slab is not required to resist overturning.

309.1.2.2 Joints in concrete slabs on grade. Design calculations for concrete slabs on grade supporting storm shelters shall include the effect of expansion joints, contraction joints or construction joints where such slabs on grade that are utilized to resist tensile and shear loads from the supported in concrete slabs on grade supporting storm shelters.

Proposal No.
IS-STM32-11/12

Section 404.1.1, 401.1.2

Revise as follows:

401.1.1 Minimum floor elevation of community shelters. The lowest floor used for the occupied shelter and occupant support areas of a community shelter shall be elevated to the higher of the elevations determined by:

1. The flood elevation, including coastal wave effects, having a 0.2% annual chance of being equaled or exceeded in any given year; or

3.2. Two feet above The flood elevation corresponding to the highest recorded flood elevation if a flood hazard study has not been conducted for the area; or

4.3. The maximum flood elevation associated with a Category 5 hurricane event, including coastal wave effects. In areas where Category 5 flood elevations have not been established, the elevation associated with the highest established hurricane category shall apply; or

5.4. The minimum elevation of the lowest floor required by the authority having jurisdiction for the location where the shelter is installed; or
2.5. Two feet above the flood elevation having a 1% annual chance of being equaled or exceeded in any given year.

**Exception:** Items no. 1 and 3 1, 2, 3, and 4 shall not apply to shelters designed, constructed, designated and used only as tornado shelters.

### 401.1.2 Minimum floor elevation of residential shelters

The lowest floor used for the occupied shelter area of a residential shelter shall be elevated to the higher of the elevations determined by:

1. The flood elevation, including coastal wave effects, having a 0.2-percent annual chance of being equaled or exceeded in any given year; or

2. One foot above The flood elevation corresponding to the highest recorded flood elevation if a flood hazard study has not been conducted for the area; or

3. The maximum flood elevation associated with a Category 5 hurricane event, including coastal wave effects. In areas where Category 5 flood elevations have not been established, the elevation associated with the highest established hurricane category shall apply; or.

4. The minimum elevation of the lowest floor required by the authority having jurisdiction for the location where the shelter is installed.

**Exception:** Items 3 and 4 1 and 3 shall not apply to shelters designed, constructed, designated, and used only as tornado shelters.

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**Proposal No.**

**IS-STM35-11/12**

1. Add new text as follows:

**SECTION 202**

**DEFINITIONS**

**AREAS OF CONCENTRATED FURNISHINGS.** The areas of a storm shelter or safe room with furniture or fixtures which cannot be easily moved, including areas such as bathrooms, locker rooms, and rooms with fixed seating or fixed tables.
AREA OF UNCONCENTRATED FURNISHINGS. The areas of a storm shelter or safe room with furniture or fixtures which can be easily moved, including areas such as classrooms and offices.

AREA OF OPEN PLAN FURNISHINGS. The areas of a storm shelter or safe room which are generally free of furniture or fixtures which cannot be easily moved and of interior partitions or other features which block movement through or otherwise subdivide the space.

2. Revise as follows:

501.1.2.1 Calculation of usable floor area. The usable shelter floor area shall be determined by using the following percentages:

   1. Reducing the gross floor area of shelter areas with areas of concentrated furnishings or fixed seating by a minimum of 50 percent.
   2. Reducing the gross floor area of shelter areas with areas of unconcentrated furnishings and without fixed seating by a minimum of 35 percent.
   3. Reducing the gross floor area of shelter areas with areas of open plan furnishings and without fixed seating by a minimum of 15 percent.

Proposal No.
IS-STM36-11/12
Section 501.2
Revise as follows:

501.2 Number of doors. The number of means of egress doors from a space shall be determined based upon the occupant load for the normal occupancy of the space in accordance with the applicable building code. For facilities used solely for shelters, the number of doors shall be determined in accordance with the applicable building code based upon the occupant load as calculated in Section 501.1.

Where the applicable building code requires only one means of egress door, an emergency escape opening shall be provided in accordance with Section 501.4.

   Exception: Shelters having an occupant load not exceeding 16 or are not required to have an emergency escape opening.

Proposal No.
IS-STM37-11/12
Section 503.1

Revise as follows:

503.1 Locks and latching mechanisms. Locking and other latching mechanisms shall be permanently mounted on the assembly. Such mechanisms shall require no tools to be engaged in the locked latched position. Devices such as pins shall be permanently secured to the assembly through the use of chains or wires which must be of corrosion resistant material.

Proposal No.
IS-STM38-11/12
Section 503.1, 503.2 and 503.3 (new)

Revise as follows:

503.1 Locks and Latching mechanism. Locking and other Latching mechanisms shall be permanently mounted on the assembly. Such mechanisms shall require no tools to be engaged in the locked latched position. Devices such as pins shall be permanently secured to the specimen through the use of chains or wires which must be corrosion-resistant material.

503.2 Multi-latching systems. Products Multi-latching systems that are not categorized as means of egress/escape and are provided with more than one single-action latching mechanism shall be provided with permanently posted instruction on latching.

503.3 Door latches. Door latching hardware necessary for the door assembly to perform as designed for the storm shelter shall either:

1. Automatically engage when the door is in a closed position or
2. Be capable of being engaged by an occupant. Signage shall be provided with instructions for latching the door for emergency shelter use.

Proposal No.
IS-STM43-11/12

Section 803.1

Revise as follows:

803.1 Test Assembly Specimen. All parts of the test specimen shall be full size, using the same materials, details, methods of construction and methods of attachment as proposed for actual use. Testing of components consisting of wall, roof, door, or window assemblies shall be
allowed in lieu of testing entire shelters. Except where failure of framing members may control the impact performance, wall and roof sections subjected to debris impact testing shall be a minimum of 4-feet (1219 mm) wide by 4-feet (1219 mm) high unless dimensions of the actual assembly are less than these dimensions. Wall and roof sections subjected to pressure testing and wall sections where impact resistance may be controlled by framing members shall be a minimum of 4-feet (1219 mm) wide and the full length of the span of the wall section from support to support.

Doors and windows shall be tested at the maximum size proposed for use. Impact protective devices and opening protective systems (shutters) are to be tested at the maximum and minimum size proposed for use. Operable doors or windows shall be tested for the conditions of swing and latching as specified for use of the product. The specimen shall consist of the entire assembled unit and shall, when practical, be mounted as it will be installed in a shelter, and shall contain all devices used to resist wind forces and windborne debris. When it is not practical to install for testing a door or window frame as it will be mounted in a shelter, then the unit or assembly shall be mounted in a test buck to connect the specimen to the test frame/stand/chamber. Details of the mounting shall be described in the test report.

IS-STM47-11/12

Section 202

Add new definition as follows:

PEER REVIEW. A review of the storm shelter design by a registered design professional who is not in the same firm as the registered design professional who designed the storm shelter are independent from the registered design professionals in responsible charge for the shelter design. The peer review includes checking the construction documents including the design criteria, applicable codes and standards, design references, calculations, construction drawings, shop drawings, and quality assurance plan for the storm shelter design.

106.1.1 Peer Review. Construction documents for Community shelters designed for greater than 300 occupants shall undergo a peer review by an independent registered design professional for conformance with the requirements of Chapter 3.

Proposal No.

IS-STM48-11/12

Section 106.1.1

Revise as follows:
**106.1.1 Peer Review.** Construction documents for community shelters designed for greater than 300 occupants shall undergo a peer review by an independent registered design professional for conformance with the requirements of Chapter 3. A signed and sealed report, fully describing the items reviewed, their compliance or non-compliance with applicable codes and standards, and recommendation of acceptance or rejection of the storm shelter design, or modifications to render the design acceptable, shall be submitted to the authority having jurisdiction prior to issuance of a permit for construction.

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**Proposal No.**

**IS-STM49-11/12**

**Section 306.6 and 306.7 (NEW)**

Add new text as follows:

**306.6 Door undercut.** Door or shutter assemblies for use in the shelter envelope with threshold at the level of exit discharge shall be limited to a 3/4" maximum undercut. Provide weather seal at door undercut where doors are exposed to weather.

**306.7 Joints, gaps, or voids in shelter envelope.** Joints, gaps, or voids in shelter envelope which open into the protected occupant area similar to masonry control joints, expansions joints, opening protective device shim spaces, air louver blades, grates, grilles, screens, or pre-cast panel joints shall be considered openings and shall be protected in accordance with sections 306.3 and 306.4.

**Exceptions:**

1. Joints, gaps, or voids 3/8" or less in width. Masonry control joints, masonry or concrete expansion joints, or precast concrete panel joints 3/8" or less in width sealed with joint material in accordance with TMS 602 for masonry or ASTM C920 for concrete.

2. Joints, gaps, or voids that will not allow direct debris path through shelter envelope into the protected occupant area. Debris path shall impact at least two surfaces meeting the missile impact criteria of Section 305.1 prior to arriving at the protected occupant area. Straight missile paths and elastic impacts are assumed in determining missile trajectories.
Proposal No.
IS-STM50-11/12

Section 702.1.1.1

Revise as follows:

702.1.1.1 Location of ventilation openings. Configuration of natural ventilation openings required for tornado shelters shall be such that a minimum of 25 percent of the required area is located within 46 inches (2581 mm) of the floor, or in the lower one-half of the height of the shelter, whichever is less, with the balance, but not less than 50 percent of the required area located a minimum of 72 inches (1829 mm) above the floor, or in the upper one-fourth of the height of the shelter, whichever is greater. Lower and upper openings shall be horizontally located at least 2/3 the diagonal distance on opposite wall or the roof surface and spaced to provide cross ventilation of the shelter. Apart on opposite wall or the roof surface.

702.1.3 Intake openings. Outside air intake openings located in the same wall shall be located a minimum of 10 feet (3048 mm) separated from any hazardous or noxious contaminant, such as emergency or back-up generator vents or exhaust, fuel storage tank vents and containers, maintenance or custodial storage facilities by a minimum distance of 10 ft.

703.1.3 Location of ventilation openings. Configuration of natural ventilation openings required for hurricane shelters shall be such that a minimum of 25 percent of the required area is located within 46 inches (1168 mm) of the floor, or in the lower one-half of the height of the shelter, whichever is less, with the balance, but not less than 50 percent of the required area, located a minimum of 72 inches (1829 mm) above the floor, or in the upper one-fourth of the height of the shelter, whichever is greater. Lower and upper openings shall be horizontally located at least 2/3 the diagonal distance of the shelter apart on opposite wall or the roof surface and spaced to provide cross ventilation of the shelter.
Proposal No.
IS-STM55-11/12

Section 308, 202

Revise as follows:

SECTION 308 SHELTERS
ENCLOSED OR PARTIALLY ENCLOSED IN A HOST BUILDINGS

308.1 Connection of Shelter Elements to a Host Building. Where the host building does not otherwise qualify as a storm shelter under the provisions of this standard, connection of shelter elements shall be permitted to host building framing which is designed for wind forces equal to or greater than the design wind forces for the storm shelter.

308.1.1 Stability. In addition to structural stability requirements of Section 309, structural stability of a storm shelter shall also be determined for building code design for (wind speeds which are below the shelter design wind speeds) where the host building could transmit forces in connections to the storm shelter that are equal to 1.5 times the nominal strength of the connections.

308.2 Storm shelters enclosed in host buildings. Storm shelters enclosed in host buildings shall be designed and installed to meet the wind load requirements of Section 304.

308.1 304.9 Storm shelters in host buildings. Storm shelters enclosed or partially enclosed in host buildings or adjacent to other buildings not designed for the load requirements of Chapter 3 shall be designed and installed to meet the wind load requirements of Chapter 3 considering the host building to be destroyed and the shelter to be fully exposed.

308.2 304.10 Storm shelters connected to host buildings. Where an element or component of the host building is connected to a storm shelter, the storm shelter shall also be designed to
resist loads transmitted through that connection equal to 1.5 times the nominal strength of the connection, in addition to the wind loads produced by IBC Design wind speeds (wind speeds which are below the shelter design wind speeds) on the storm shelter required by Chapter 3.

Revise the following definition:

Section 202

HOST BUILDING. A building which is not designed or constructed as a storm shelter that totally or partially encloses a storm shelter, or is connected to a storm shelter.

Proposal No.

IS-STM60-11/12

Chapter 8

Revise as follows:

*Replace the term “specimen” with the term “assembly” throughout the chapter.*