

APPENDIX D

Comparison Matrix of Differences Between ICC 500 Requirements and FEMA Recommended Criteria

ICC 500 REFERENCE	ICC 500 REQUIREMENTS FOR STORM SHELTERS	FEMA RECOMMENDED CRITERIA FOR SAFE ROOMS ^(a)
Section 107.1 General	Where required by the authority having jurisdiction, construction documents shall be prepared. Such documents shall contain information as required by the applicable building code and this section.	For all safe rooms construction documents shall be prepared and maintained . Such documents shall contain information as required by the applicable building code and this section.
Section 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: 2. A statement that the wind design conforms to the provisions of the <i>ICC/NSSA Standard for the Design and Construction of Storm Shelters</i> , with the edition year specified.	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 and to the provisions of FEMA P-361, with the edition year specified.
Section 304.2 Design Wind Speed	For tornado shelters, the design wind speed shall be in accordance with Figure 304.2(1). For hurricane shelters, the design wind speed shall be in accordance with Figure 304.2(2). ^(b)	For all residential safe rooms, the design wind speed shall be 250 mph, regardless of location.

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Section 401.1.1 Minimum floor elevation of community shelters	<p>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:</p> <ol style="list-style-type: none"> 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. 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 any modeled hurricane category including coastal wave effects; or 4. The minimum elevation of the lowest floor required by the authority having jurisdiction for the location where the shelter is installed; or 5. Two feet above the flood elevation having a 1 percent annual chance of being equaled or exceeded in any given year. <p><u>Exception:</u> Items no. 1 and 3 shall not apply to shelters designed, constructed, designated, and used only as tornado shelters.</p>	<p>The lowest floor used for the occupied safe room and occupant support areas of a community safe room shall be elevated to or above the higher of the elevations determined by:</p> <ol style="list-style-type: none"> 1. The flood elevation, including coastal wave effects, having a 0.2 percent annual chance of being equaled or exceeded in any given year^(c); or 2. 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 any modeled hurricane category including coastal wave effects; or 4. The minimum elevation of the lowest floor required by the authority having jurisdiction for the location where the safe room is installed; or 5. Two feet above the flood elevation having a 1 percent annual chance of being equaled or exceeded in any given year.^(c) <p><u>Exception:</u> Item 3 (only) shall not apply to safe rooms designed, constructed, designated and used only as tornado safe rooms.</p>
Section 401.1.2 Minimum floor elevation of residential shelters	<p>The lowest floor used for the occupied shelter area of a residential shelter shall be elevated to the higher of the elevations determined by:</p> <ol style="list-style-type: none"> 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. 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 any modeled hurricane category, including coastal wave effects; or 4. The minimum elevation of the lowest floor required by the authority having jurisdiction for the location where the shelter is installed. <p><u>Exception:</u> Items 1 and 3 shall not apply to shelters designed, constructed, designated, and used only as tornado shelters.</p>	<p>The lowest floor used for the occupied residential safe room shall be elevated to the higher of the elevations determined by:</p> <ol style="list-style-type: none"> 1. The flood elevation, including coastal wave effects, having a 0.2 percent annual chance of being equaled or exceeded in any given year^(c); or 2. The flood elevation corresponding to the highest recorded flood elevation if a flood hazard study has not been conducted for the area; or <p>3. Not Applicable^(d)</p> <ol style="list-style-type: none"> 4. The minimum elevation of the lowest floor required by the authority having jurisdiction for the location where the shelter is installed. 5. The flood elevation having a 1 percent annual chance of being equaled or exceeded in any given year.^(c) <p><u>Exception:</u> Item 1 (only) shall not apply to safe rooms designed, constructed, designated, and used only as tornado safe rooms.</p>

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ICC 500 REFERENCE	ICC 500 REQUIREMENTS FOR STORM SHELTERS	FEMA RECOMMENDED CRITERIA FOR SAFE ROOMS ^(a)
Section 404.1 Community Shelter Siting	<p>Community shelters shall be located outside of the following high-risk flood hazard areas:</p> <ol style="list-style-type: none"> 1. Flood hazard areas subject to high-velocity wave action (V zones) 2. Floodways <p><u>Exception:</u> Community shelters shall be permitted in flood hazard areas subject to high-velocity wave action (V zones) where permitted by the Board of Appeals in accordance with the provisions of the International Building Code.</p>	<p>Community safe rooms shall be located outside of the following high-risk flood hazard areas:</p> <ol style="list-style-type: none"> 1. Flood hazard areas subject to high-velocity wave action (V zones) and Coastal A zones^(d) 2. Floodways <p><u>Exception:</u> Community safe rooms shall be permitted in flood hazard areas subject to high-velocity wave action (V zones) and Coastal A zones^(d) where permitted by the Board of Appeals in accordance with the provisions of the International Building Code and after completing the 8-step Decision Process for Executive Order (EO) 11988, as amended, and as provided by Title 44 of the Code of Federal Regulations Part 9.6, Decision-Making Process.</p>
Residential Shelter Siting	<i>[ICC 500 does not provide restrictions for siting residential shelters in flood hazard areas]</i>	<p>Residential safe rooms shall be located outside of the following high-risk flood hazard areas:</p> <ol style="list-style-type: none"> 1. Flood hazard areas subject to high-velocity wave action (V zones) and Coastal A zones^(e); 2. Floodways; 3. Any areas subject to storm surge inundation associated with any modeled hurricane category, including coastal wave effects.
Section 702.4 First aid kit	A first aid kit shall be supplied in all tornado shelters with a shelter occupant load of greater than 50.	A first aid kit rated for the number of safe room occupants, as listed in the construction documents , shall be supplied in all tornado safe rooms.
Section 703.7 First aid kit	A first aid kit shall be supplied in all community hurricane shelters.	A first aid kit rated for the number of safe room occupants, as listed in the construction documents , shall be supplied in all hurricane safe rooms.

***Bolded text** denotes differences between the ICC 500 Requirement and the FEMA Recommended Criteria.

Table notes:

- (a) Table only lists differences between FEMA P-361 and referenced ICC 500 Chapter. All ICC 500 requirements not listed in the table should also be met in their entirety.
- (b) ICC 500 tornado wind speeds for all storm shelters range from 130 mph to 250 mph. ICC 500 hurricane wind speeds for all storm shelters range from 160 mph to 235 mph.
- (c) Where an approximate or detailed flood hazard study has been completed but the 1-percent- and/or 0.2-percent-annual-chance flood elevations have not been determined, those elevations should be obtained from the authority having jurisdiction or determined in accordance with accepted hydrologic and hydraulic engineering practices used to define Special Flood Hazard Areas.
- (d) Not applicable because residential safe rooms should not be located in areas subject to storm surge inundation associated with any modeled hurricane category; refer to Residential Shelter Siting with respect to flood hazards in this table.
- (e) Coastal A Zones are defined as the area landward of Zone V or landward of an open coast without mapped Zone V. The inland limit of the Coastal A Zone is the Limit of Moderate Wave Action if delineated on a Flood Insurance Rate Map or designated by the authority having jurisdiction.