

# Flood Hazard Siting and Elevation Criteria for Residential Safe Rooms

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It is critical to consider flood hazards when designing a safe room. The Federal Emergency Management Agency (FEMA) does not support placing safe rooms where floodwater could endanger occupants.

Safe rooms should be located in areas at low risk of flooding. This Fact Sheet provides guidance on siting residential safe rooms relative to flood hazards and on minimum safe room floor elevations when siting in allowable flood hazard areas is necessary. The information is based on criteria from FEMA P-361<sup>1</sup> and guidance included in FEMA P-320.<sup>2</sup>

If your residential safe room is in an area that floods during hurricanes, severe thunderstorms, or flash flooding, it should not be occupied during any hurricane or anticipated flooding event. Further, any safe room in the hurricane-prone region must not be used in violation of any local or state evacuation order.

## **RESIDENTIAL SAFE ROOM**

A safe room serving occupants of dwelling units and having a design occupant capacity not exceeding 16 persons.

## **COMMUNITY SAFE ROOM**

Any safe room not defined as a residential safe room. This includes safe rooms intended for use by the general public, by building occupants, or a combination of both.

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<sup>1</sup> FEMA P-361, *Safe Rooms for Tornadoes and Hurricanes: Guidance for Community and Residential Safe Rooms*. FEMA Building Science publications provide criteria based on code requirements and post-disaster field observations, but do not regulate or set standards in building codes. A link to the most current version is provided at the end of this Fact Sheet.

<sup>2</sup> FEMA P-320, *Taking Shelter from the Storm: Building or Installing a Safe Room for Your Home*. FEMA Building Science publications provide criteria based on code requirements and post-disaster field observations, but do not regulate or set standards in building codes. A link to the most current version is provided at the end of this Fact Sheet.



## Residential Safe Room Siting

Storm shelters and safe rooms are not allowed in floodways under any circumstance. Unless permitted by the Board of Appeals in accordance with the International Residential Code (or the International Building Code where applicable), all residential safe rooms are required to be located outside the following high hazard areas:

- Flood hazard areas subject to high-velocity wave action (Zone V<sup>3</sup>) and
- Coastal A Zones<sup>4</sup> (where mapped)

Safe rooms constructed or installed using FEMA funds are also required to receive approval from FEMA for the above-described high hazard area siting variances. Additionally, FEMA-funded residential safe rooms are required to be located outside any areas subject to storm surge inundation associated with the maximum intensity hurricane, including coastal wave effects. For safe rooms sited in coastal regions, FEMA recommends working with your local building official or floodplain administrator to determine if your site is subject to storm surge inundation.

Figure 1 shows examples of preferred, allowable, and restricted residential safe room locations relative to the landward extent of storm surge inundation and mapped flood hazards as reflected on a typical Flood Insurance Rate Map (FIRM). Figure 2 illustrates a typical riverine cross section and perpendicular shoreline transect including the stillwater and wave crest elevations associated with the various flood zones shown in Figure 1.

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<sup>3</sup> For the purpose of this Fact Sheet, Zone V refers to Zones V, VE, and V1-30.

<sup>4</sup> Coastal A Zones are defined as the area landward of a Zone V or landward of an open coast without mapped Zone Vs. 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.



Figure 1. Example illustration of preferred, allowable, and restricted residential safe room locations

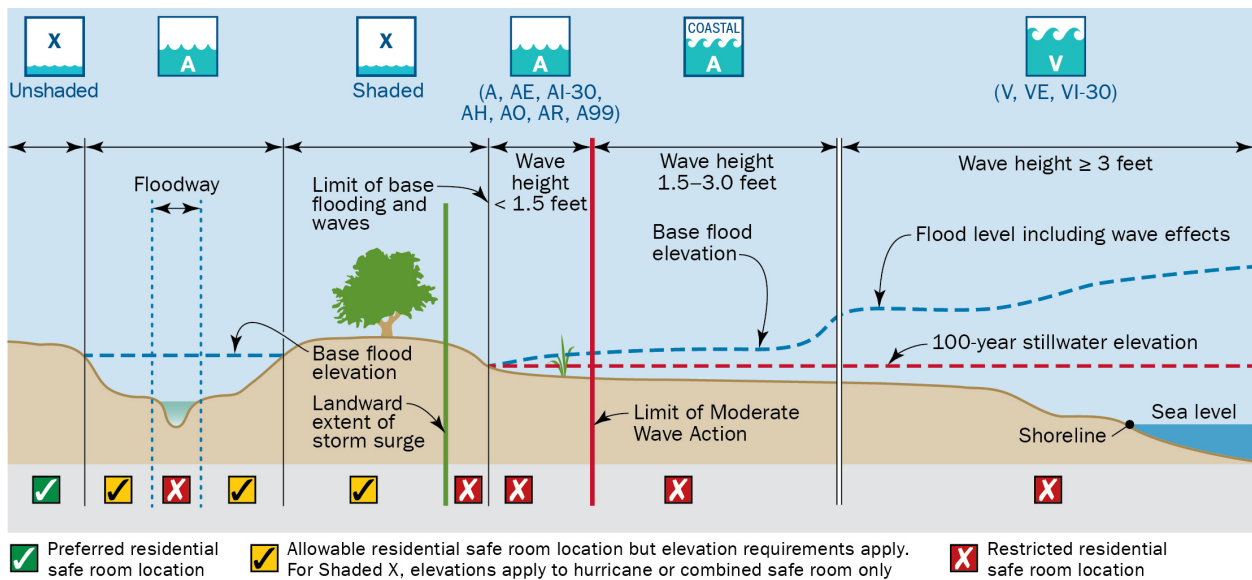


Figure 2. Example illustration of typical riverine cross section and perpendicular shoreline transect for residential safe room siting

## Residential Safe Room Elevation

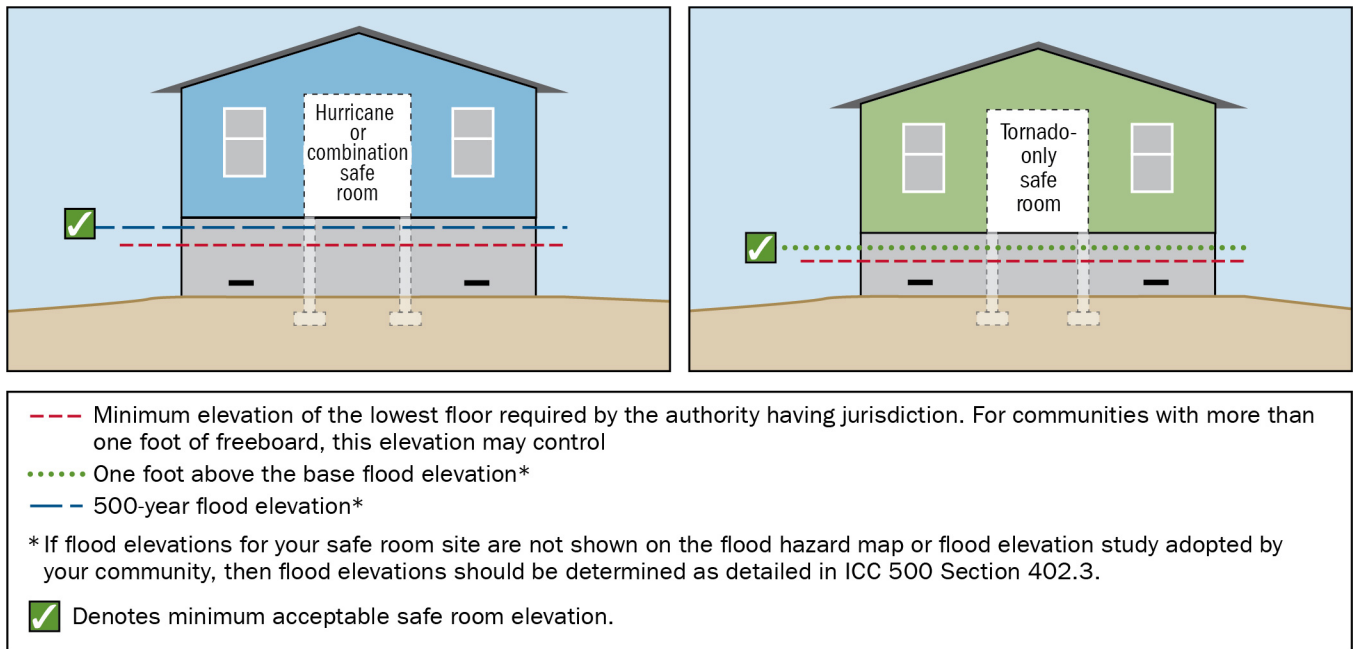
If necessary, residential safe rooms may be placed in flood hazard areas that have been determined to be in Zone A,<sup>5</sup> but still outside the high hazard areas identified in Figure 1 and Figure 2. If a residential safe room is desired in Zone A, the safe room should be elevated to or above the highest elevation specified below (refer to the appropriate Flood Insurance Study [FIS] or FIRM):

- The minimum elevation of the lowest floor required by the authority having jurisdiction (AHJ) for the location where the safe room is installed.
- The base flood elevation (i.e., the flood elevation having a 1-percent annual chance of being equaled or exceeded in any given year [100-year event]) plus 1 foot.
- For hurricane or combination safe rooms, the 500-year flood elevation (i.e., the flood elevation having a 0.2-percent annual chance of being equaled or exceeded in any given year).

Figure 3 illustrates a safe room elevated to meet all of the flood elevation criteria for residential safe rooms. Figure 3 is an example, so the relative height of each elevation shown on the figure is not necessarily applicable to all locations. For instance, the 500-year flood elevation may not always be higher than the minimum elevation required by the AHJ.

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<sup>5</sup> For the purpose of this publication, Zone A refers to Zones A, AO, AH, A1-30, AE, A99, AR, AR/A1-30, AR/AE, AR/AH, and AR/A, but excludes Coastal A Zones.



**Figure 3. Illustration of residential safe room examples that meet flood elevation criteria (assuming siting requirements are met)**

In many flood hazard areas around the country, the FIS and accompanying FIRMs may not specify flood elevations. This type of unspecified area is commonly referred to as unnumbered Zone A or approximate Zone A. In such cases, the flood elevation requirements for the base flood or the 500-year flood are not defined by FEMA. The International Code Council® publication ICC 500 Section 402.3 now includes minimum requirements for determining flood elevations and floodways where the data are not included in the flood hazard map or where a flood elevation study has not been adopted.

## Resources

FEMA P-361, *Safe Rooms for Tornadoes and Hurricanes: Guidance for Community and Residential Safe Rooms*, 2021, <https://www.fema.gov/emergency-managers/risk-management/safe-rooms/resources>.

FEMA P-320, *Taking Shelter from the Storm: Building a Safe Room for Your Home*, 2021, <https://www.fema.gov/emergency-managers/risk-management/safe-rooms/resources>.

ICC 500, *ICC/NSSA Standard for the Design and Construction of Storm Shelters*, 2020, <https://codes.iccsafe.org/content/ICC5002020P1>.

If you have additional questions pertaining to FEMA safe room guidance publications, please email the Safe Room Helpline at [Saferoom@fema.dhs.gov](mailto:Saferoom@fema.dhs.gov).

More information on the National Flood Insurance Program and flood hazard mapping can be found at <https://www.fema.gov/flood-insurance>.