

Flood Hazard Siting and Floor Elevation Criteria for Community Safe Rooms

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

Safe rooms should be located in areas at low risk of flooding. This Fact Sheet provides guidance on siting community safe rooms relative to flood hazards and on minimum safe room floor elevations where siting in allowable flood hazard areas is necessary. The information is based on criteria found in FEMA P-361.¹

The installation of any safe room in a hurricane-prone region should be coordinated with local emergency management and law enforcement personnel to ensure its use during extreme-wind events is not a violation of any local or state evacuation plan.

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.

Community Safe Room Siting

Community safe rooms are required to be located outside of the following high-risk flood hazard areas:

- Flood hazard areas subject to high-velocity wave action (Zone V²) and Coastal A Zones³ (where mapped)
- Floodways

¹ 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

² For the purpose of this Fact Sheet, Zone V refers to Zones V, VE, and V1-30

³ 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 (FIRM) or designated by the authority having jurisdiction.



FEMA

Community safe rooms may be located within Zone V and Coastal A Zones where permitted by the Board of Appeals in accordance with the provisions of the International Building Code, published by the International Code Council® (ICC), and approved by FEMA. Community safe rooms proposed to be sited in Special Flood Hazard Areas or the 500-year flood hazard area require completion of the 8-Step Decision-Making Process for Executive Order 11988, as amended, and as provided by Title 44 of the Code of Federal Regulations Part 9.6, Decision-Making Process.

Figure 1 shows examples of preferred, allowable, and restricted community safe rooms 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 flood zones shown in Figure 1.

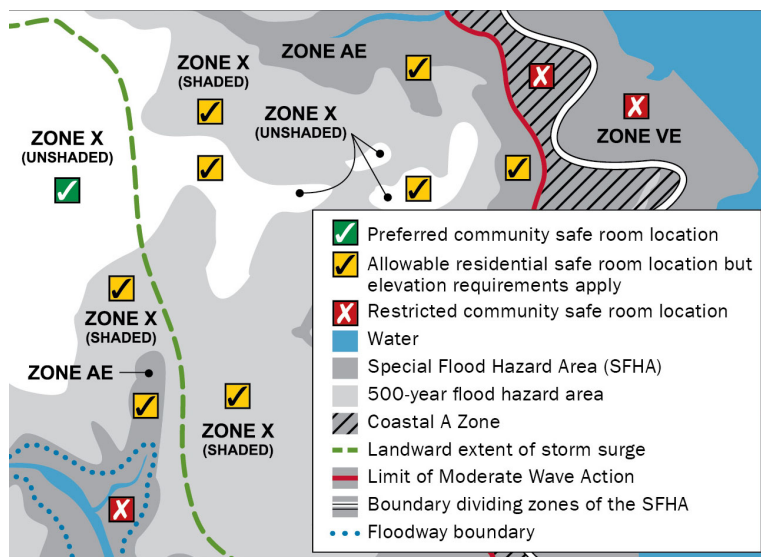


Figure 1: Example illustration of preferred, allowable, and restricted community safe room locations

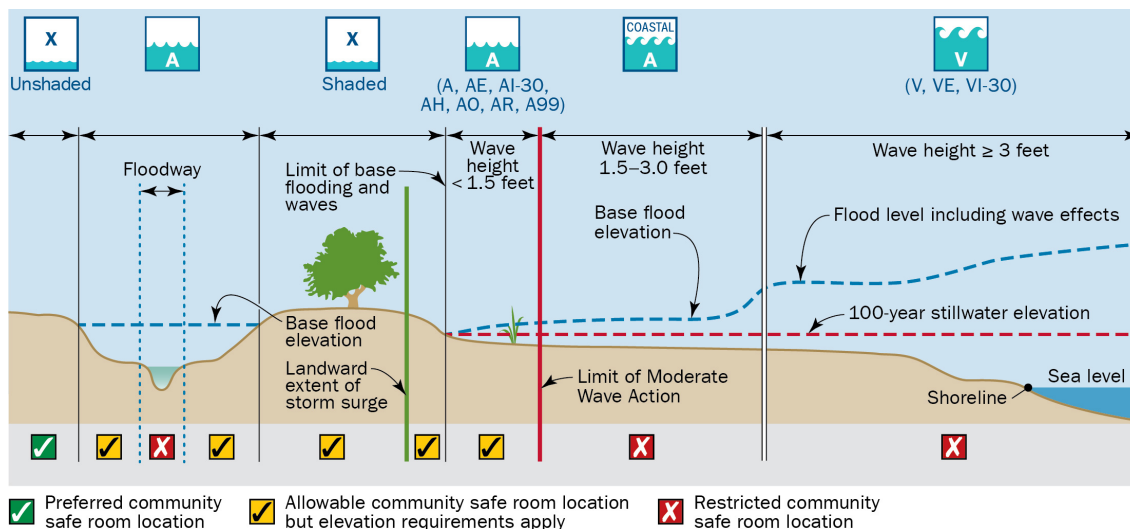


Figure 2: Example illustration of a typical riverine cross section and perpendicular shoreline transect for community safe room siting

Community Safe Room Elevation

If necessary, community safe rooms may be sited within the 500-year flood hazard area or the base flood hazard area provided that the lowest floor is elevated to or above the highest elevation specified below (refer to the appropriate Flood Insurance Study [FIS] or FIRM):

1. The minimum elevation of the lowest floor required by the authority having jurisdiction for the location where the safe room is installed.
2. 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).
3. Two feet above 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]).
4. For hurricane or combination safe rooms only: the storm surge flood elevation.

Figure 3 illustrates the required minimum floor elevation for community safe rooms located in flood hazard areas. For the hurricane or combination safe room shown on the left side of the example illustration, the storm surge elevation (Item 4) will be the minimum elevation required. But depending on the site, Items 1 through 3 could be higher, and would therefore be the required minimum elevation for the safe room floor. The lowest floor of the tornado-only safe room shown on the right side of Figure 3 should be at or above the 500-year elevation (Item 2). In another situation, however, Item 1 or 3 could be higher and would therefore be the required minimum elevation.

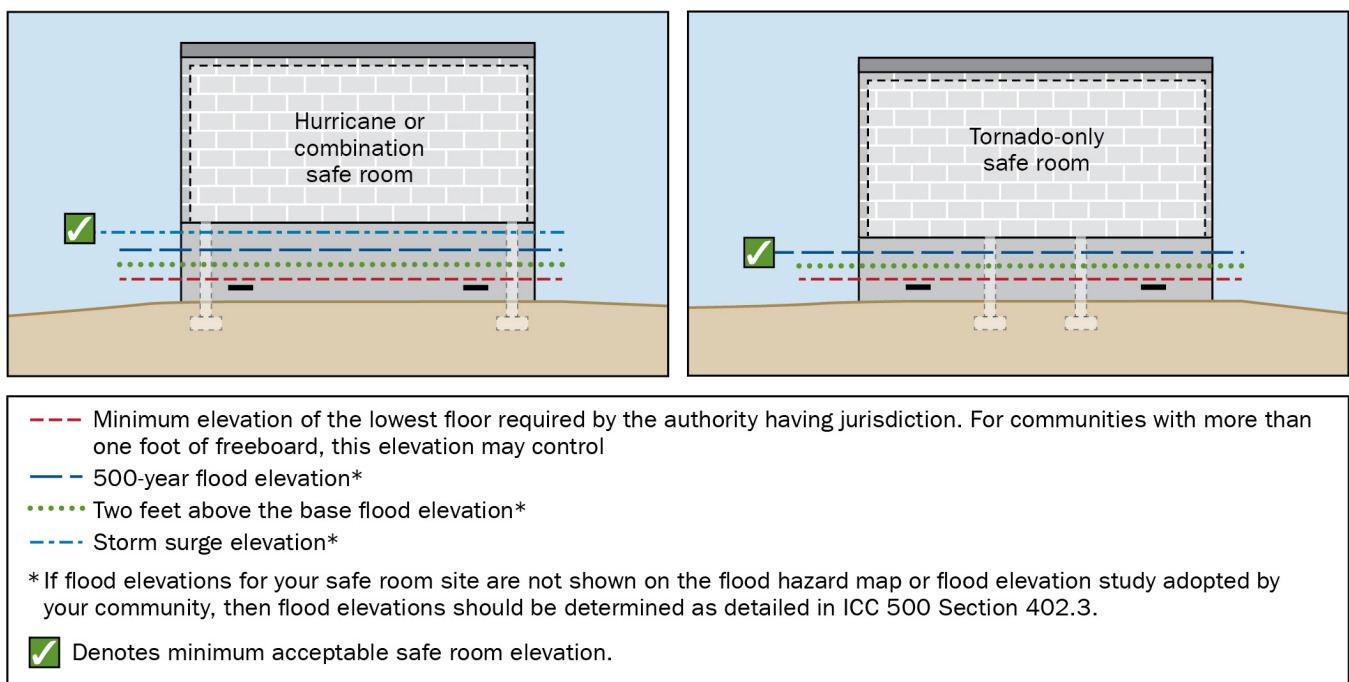


Figure 3: Illustration of community safe room examples that meet flood elevation criteria (assuming siting requirements are met)

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. ICC 500, *Standard for the Design and Construction of Storm Shelters* by the International Code Council® / National Storm Shelter Association® 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, 2021. *Safe Rooms for Tornadoes and Hurricanes: Guidance for Community and Residential Safe Rooms*. Fourth Edition. Download a free copy from <https://www.fema.gov/emergency-managers/risk-management/safe-rooms/resources>.

ICC 500, 2020. *ICC/NSSA Standard for the Design and Construction of Storm Shelters*. <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.

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