

**Appendix C:**

**ARC 4496 - Guidelines for Hurricane**

**Evacuation Shelter Selection**



# Guidelines for

The following guidelines, prepared by an interagency group,

# Hurricane Evacuation

reflect the application of technical data compiled in Hurricane

# Shelter Selection

Evacuation Studies, other hazard information, and research find-

ings related to wind loads and structural problems. These

guidelines are intended to supplement information contained in

ARC 3031, *Mass Care: Preparedness and Operations*, concern-

ing shelter selection for hurricane evacuation situations.



- Buildings more than one story high (if lower stories are used for shelter)
- Buildings in sheltered areas
- Buildings whose access routes are not tree-lined

#### **Interior Building Safety Criteria During Hurricane Conditions**

Based on storm data (e.g., arrival of gale-force winds), determine a notification procedure with local emergency managers regarding when to move the shelter population to pre-determined safer areas within the facility. Consider the following guidelines:

- Do not use rooms attached to, or immediately adjacent to, un-reinforced masonry walls or buildings.
- Do not use gymnasiums, auditoriums, or other large open areas with long roof spans during hurricane conditions.
- Avoid areas near glass, unless the glass surface is protected by an adequate shutter. Assume that windows and roof will be damaged and plan accordingly.
- Use interior corridors or rooms.
- In multi-story buildings, use only the lower floors and avoid corner rooms.
- Avoid any wall section that has portable or modular classrooms in close proximity, if these are used in your community.
- Avoid basements if there is any chance of flooding.

#### **Hazardous Materials**

The possible impact from a spill or release of hazardous materials should be taken into account when considering any potential hurricane evacuation shelter.

All facilities manufacturing, using, or storing hazardous materials (in reportable quantities) are required to submit Material Safety Data Sheets (emergency and hazardous chemical inventory forms) to the Local Emergency Planning Committee (LEPC) and the local fire department. These sources can assist you in determining the suitability of a potential hurricane evacuation shelter or determining precautionary zones (safe distances) for facilities near potential shelters that manufacture, use, or store hazardous materials.

- Facilities that store certain types or quantities of hazardous materials may be inappropriate for

use as hurricane evacuation shelters.

- Hurricane evacuation shelters should not be located within the ten-mile emergency planning zone (EPZ) of a nuclear power plant.
- Service delivery units must work with local emergency management officials to determine if hazardous materials present a concern for potential hurricane evacuation shelters.

#### **Hurricane Evacuation Shelter**

##### **Selection Process**

General procedures for investigating the suitability of a building or facility for use as a hurricane evacuation shelter are as follows:

- Identify potential sites. Evacuation and transportation route models must be considered.
- Complete a risk assessment on each potential site. Gather all pertinent data from SLOSH and/or SPLASH (storm surge), FIRM (flood hazard), facility base elevation, hazardous materials information, and previous studies concerning each building's suitability.
- Inspect the facility and complete a *Red Cross Facility Survey Form* and a *Self-Inspection Work Sheet / Off-Premises Liability Checklist*, in accordance with ARC 3031. Note all potential liabilities and the type of construction. Consider the facility as a whole—one weak section may seriously jeopardize the integrity of the building.
- Have the building certified as being capable of withstanding the wind loads according to ASCE 7-88 or ANSI A58 (1982) structural design criteria. In the absence of certification, have a structural engineer review the facility and rate its suitability to the best of his or her ability.
- Ensure that an exhaustive search for shelter space has been completed. Work with local emergency management officials and others to identify additional potential sites.
- Review, on a regular basis, all approved hurricane evacuation shelters. Facility improvements, additions, or deterioration may change the suitability of a selected facility as a hurricane evacuation shelter. Facility enhancements may also enable previously rejected facilities to be used as hurricane evacuation shelters.
- If possible, work with officials, facility managers, and school districts on mitigation opportunities. Continue to advocate that the building program for new public buildings, such as schools,

should include provisions to make them more resilient to possible wind damage. It may also be possible to suggest a minor modification of a municipal, community, or school building in the planning stages to make for a more useful hurricane evacuation shelter site, such as the addition of hurricane shutters.

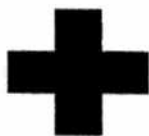
### **Least-Risk Decision Making**

Safety is the primary consideration for the American Red Cross in providing hurricane evacuation shelters. When anticipated demands for hurricane evacuation shelter spaces exceed suitable capacity as defined by the preceding criteria, there may be a need to utilize marginal facilities. It is therefore critical that these decisions be made carefully and in consultation with local emergency management and public safety officials. Guidance should be obtained from Disaster Services at national headquarters, in consultation with the Risk Management Division.

This process should include the following considerations:

- No hurricane evacuation shelter should be located in an evacuation zone for obvious safety reasons. All hurricane evacuation shelters should be located outside of Category 4 storm surge inundation zones. **Certain exceptions may be necessary, but only if there is a high degree of confidence that the level of wind, rain, and surge activities will not surpass established shelter safety margins.**

- When a potential hurricane evacuation shelter is located in a flood zone, it is important to consider its viability. By comparing elevations of sites with FIRMs, one can determine if the shelter and a major means of egress are in any danger of flooding. Zone AH (within the 100-year flood plain and puddling of 1–3 feet expected) necessitates a closer look at the use of a particular facility as a sheltering location. Zones B, C, and D may allow some flexibility. **It is essential that elevations be carefully checked to avoid unnecessary problems.**
- In the absence of certification by a structural engineer, any building selected for use as a hurricane evacuation shelter must be in compliance with all local building and fire codes. Certain exceptions may be necessary, but only after evaluation of each facility, using the aforementioned building safety criteria.
- The Red Cross uses the planning guideline of 40 square feet of space per shelter resident. During hurricane conditions, on a **short-term basis**, shelter space requirements may be reduced. Ideally, this requirement should be determined using no less than 20 square feet per person. Adequate space must be set aside for registration, health services, and safety and fire considerations. Disaster Health Services areas should still be planned using a 40 square feet per person calculation. On a **long-term recovery basis**, shelter space requirements should follow guidelines established in ARC 3031, *Mass Care: Preparedness and Operations*.



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