IBC 16-1 – Storm Shelters

New 11-13-2018

2018 Group B BCAC Structural WG

[BG] STORM SHELTER. A building, structure or portions thereof, constructed in accordance with ICC 500 and designated for use during a severe wind storm event, such as a hurricane or tornado.
Community storm shelter. A storm shelter not defined as a "Residential storm shelter."
Residential storm shelter. A storm shelter serving occupants of *dwelling units* and having an *occupant load* not exceeding 16 persons.

Commented [OG1]: For context only – no change to definition.

RECOVERY FACILITY. Designated buildings intended for use after a natural disaster event to provide temporary housing and meals for people displaced by the natural disaster event.

1604.5 Risk category. Each building and structure shall be assigned a risk category in accordance with Table 1604.5.Where a referenced standard specifies an occupancy category, the risk category shall not be taken as lower than the occupancy category specified therein. Where a referenced standard specifies that the assignment of a risk category be in accordance with ASCE 7, Table 1.5-1, Table 1604.5 shall be used in lieu of ASCE 7, Table 1.5-1.

Exception: The assignment of buildings and structures to Tsunami Risk Categories III and IV is permitted to be in accordance with Section 6.4 of ASCE 7.

TABLE 1604.5
RISK CATEGORY OF BUILDINGS AND OTHER STRUCTURES

RISK CATEGORY	NATURE OF OCCUPANCY
I	Buildings and other structures that represent a low hazard to human life in the event of failure, including but not limited to: • Agricultural facilities. • Certain temporary facilities. • Minor storage facilities.
II	Buildings and other structures except those listed in Risk Categories I, III and IV.

III	Buildings and other structures that represent a substantial hazard to human life in the event of failure, including but not limited to: • Buildings and other structures whose primary occupancy is public assembly with an occupant load greater than 300. • Group I-2 occupancies with an occupant load of 50 or more resident care recipients but not having surgery or emergency treatment facilities. • Group I-3 occupancies. • Any other occupancy with an occupant load greater than 5,000.[a] • Power-generating stations, water treatment facilities f or potable water, wastewater treatment facilities and other public utility facilities not included in Risk Category IV. • Buildings and other structures not included in Risk Category IV containing quantities of toxic or explosive materials that: Exceed maximum allowable quantities per control area as given in Table 307.1(1) or 307.1(2) or per outdoor control area in accordance with the *International Fire Code*; and Are sufficient to pose a threat to the public if released.[b]
IV	Buildings and other structures designated as essential facilities, including but not limited to: • Group I-2 occupancies having surgery or emergency treatment facilities. • Fire, rescue, ambulance and police stations and emergency vehicle garages. • Designated earthquake~~,~~ and hurricane recovery facilities ~~or other emergency shelters~~ intended for use after the natural disaster event • Designated emergency preparedness, communications and operations centers and other facilities required f or emergency response. • Power-generating stations and other public utility facilities required as emergency backup facilities for Risk Category IV structures. • Buildings and other structures containing quantities of highly toxic materials that: Exceed maximum allowable quantities per control area as given in Table 307.1(2) or per outdoor control area in accordance with the *International Fire Code;* and Are sufficient to pose a threat to the public if released.[b] • Aviation control towers, air traffic control centers and emergency aircraft hangars. • Buildings and other structures having critical national defense functions. • Water storage facilities and pump structures required to maintain water pressure for fire suppression.

a. For purposes of occupant load calculation, occupancies required by Table 1004.1.2 to use gross floor area calculations shall be permitted to use net floor areas to determine the total occupant load.

b. Where approved by the building official, the classification of buildings and other structures as Risk Category III or IV based on their quantities of toxic, highly toxic or explosive materials is permitted to be reduced to Risk Category II, provided it can be demonstrated by a hazard assessment in accordance with Section 1.5.3 of ASCE 7 that a release of the toxic, highly toxic or explosive materials is not sufficient to pose a threat to the public.

Consider revising 1604.5.1…???

1604.5.1 Multiple occupancies. Where a building or structure is occupied by two or more occupancies not included in the same *risk category*, it shall be assigned the classification of the highest *risk category* corresponding to the various occupancies. Where buildings or structures have two or more portions that are structurally separated, each portion shall be separately classified. Where a separated portion of a building or structure provides required access to, required egress from or shares life safety components with another portion having a higher *risk category*, both portions shall be assigned to the higher *risk category*.

> **Exception:** Where a *storm shelter* designed and constructed in accordance with ICC 500 is provided in a building, structure or portion thereof normally occupied for other purposes, the *risk category* for the normal occupancy of the building shall apply unless the *storm shelter* is a designated *recovery facility* ~~emergency shelter~~ in accordance with Table 1604.5.

Reason: The existing language in Table 1604.5 requires Risk Category IV structural design criteria for 'earthquake, hurricane or other emergency shelters'. However, the application of the provision is problematic for each of the three cases. Firstly, people do not take shelter from an earthquake, because there is no (or insufficient) warning time for seismic events. Instead, people displaced by an earthquake come to designated facilities to recover and await notification that their residences – if still standing - are safe to re-inhabit. For hurricane, Section 423 of the IBC requires hurricane shelters that are intended to provide safety during an event to be designed and constructed in accordance with ICC 500. The structural criteria in ICC 500 far exceed Risk Category IV criteria for wind resistance. In both cases, the intent of requiring Risk Category IV is to maintain continuation of operations in the affected communities after the natural disaster, and as such should apply to facilities designated for recovery only. Lastly, the term 'other emergency shelter' is too broad and not applicable to most (or all) other types of natural disaster. Risk Category IV criteria will not protect a building against wildfire and tsunami recovery facilities are already addressed in (insert reference here).

The purpose of this code change proposal is to clarify the intent of Table 1604.5 with respect to classifying designated recovery facilities as Risk Category IV and to correlate the provisions with Section 423, Storm Shelters. Code changes to 2018 IBC (G32, developed and co-sponsored by BCAC, FEMA and NIST) was approved (AMPC) to clarify that shelters built for protection during wind storms and in accordance with ICC 500 are not emergency shelters that are required to be designed as Risk Category IV structures in accordance with Section 1604.5 unless they are also designated for emergency use after the storm. Without the proposed modification to the existing emergency shelter language in Table 1604.5, designers and code officials have no indication that the provisions in Section 423 exempt storm shelters from Risk Category IV requirements when constructed in accordance with ICC 500 and intended for use during the storm only.