

Storm Shelter Review / Frequently Asked Questions

01 We are constructing a new school, do we need to have an ICC 500 Community Storm Shelter?

If a new school is being constructed (Class E Occupancy), and it is located within the 250 mph wind zone on this [map](#), and the occupancy is greater than 50, it must have an ICC500 Tornado Shelter.

[IBC 2018](#)

423.4 Group E occupancies: *In areas where the shelter design wind speed for tornadoes is 250 mph in accordance with Figure 304.2(1) of ICC 500, all Group E occupancies with an occupant load of 50 or more shall have a storm shelter constructed in accordance with ICC 500.*

02 We are only constructing an addition to our school, do we need to have an ICC 500 Community Storm Shelter?

Any building addition to a school site located within the 250 mph wind zone, that creates a new occupancy greater than 50 persons, will need to have an ICC 500 Community Storm Shelter.

The 2018 International Building Code further clarifies additions, ICC 500 Community Storm Shelters and capacity. In summary, the ICC 500 Storm Shelter must at minimum have enough capacity to handle the occupancy created by the addition.

[IBC 2018](#)

423.4.1 Required Occupant Capacity. *The required occupancy capacity of the storm shelter shall include all of the buildings on site and shall be greater than the following:*

Exceptions:

Where a new building is being added on an existing Group E site, and where the new building is not of sufficient size to accommodate the required occupant capacity of the storm shelter for all of the buildings on the site, the storm shelter shall at minimum accommodate the required occupant capacity of the new building.

03 We are constructing an ICC 500 Community Storm Shelter, does the design have to be peer reviewed by an independent design professional?

Yes, the ICC 500 requires that the design of a Community Storm Shelter must be reviewed by registered design professional(s). The registered design professional(s) must be independent from the design professional in responsible charge of the storm shelter design.

The independent design professional performing the Peer Review must review the Construction Documents of the storm shelter for conformance to ICC 500 Chapters 3, 5, 6 and 7.

Upon the completion of the Peer Review, the independent design professional(s) must provide a signed and sealed report to the Authority Having Jurisdiction (AHJ) that:

- Fully describes the items reviewed;
- Their compliance or noncompliance with applicable codes and standards, and;
- A recommendation of acceptance or rejection of the storm shelter design or modifications to render the design acceptable.

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ICC 500 2014

106.1.1 Peer review. A peer review shall be conducted by an independent registered design professional for compliance with the requirements of Chapters 3, 5, 6 and 7 for the following shelter types:

1. Community shelters with an occupant load greater than 50.
2. Storm shelter in elementary schools, secondary schools and day care facilities with an occupant load greater than 16.
3. Storm shelters in Risk Category IV (essential facilities) as defined by Table 1604.5 in the International Building Code.

106.1.2 Peer review report. Where a peer review report is required by section 106.1.1, a signed and sealed report shall be submitted to the authority having jurisdiction with the construction documents identified in Section 107 prior to issuance of a permit for construction. The report shall fully describe the items reviewed, their compliance or noncompliance with applicable codes and standards, and recommend acceptance or rejection of the storm shelter design or modifications to render the design acceptable.

Definitions: PEER REVIEW. A review of the storm shelter in accordance with Section 106.1.1 by a registered design professional(s) independent from the registered design professional(s) in responsible charge of the storm shelter design. The peer review includes checking the construction documents, calculations and quality assurance plan for the storm shelter design.

04 Does our Community Storm Shelter have to have a water storage tank and a sewage storage bladder?

The ICC 500 does not require a water storage tank or sewer bladder be used in a Community Storm Shelter. However, if either are used, they must be of sufficient capacity to supply water and contain waste for design capacity of the tornado shelter.

The ICC 500 does not define what is considered adequate capacity in terms of supply or storage. At Farnsworth Group, we have interpreted "to capacity" to be a reasonable approximation put forth by the design.

With all of the ICC 500 Storm Shelters that we have reviewed, not one has used a storage bladder for sanitary waste. Customarily, school buildings utilize either gravity dependent or pumped discharge to a nearby and underground public sanitary main. There is some debate among designers whether a tornado event would adversely impact a gravity dependent public main (or leach field) and prevent school waste from discharging from a Community Tornado Shelter.

ICC 500 2014

702.2.3 Sanitation facilities support systems. Support systems for the sanitation facilities (e.g. bladders, storage tanks or vessels, etc.) shall be capable of supplying water and containing waste for the design capacity for the design capacity of the tornado shelter.