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April 24<sup>th</sup>, 2023

Terry Heustis, Superintendent  
Westville Public Schools  
500 Chincapin St  
Westville, OK 74965

RE: Storm Shelter Building Code Reference Origin

Mr. Heustis,

Thank you to you and your Board of Education for calling on our firm once again to assist you in your journey through the processes that direct building design and construction.

Concerning your recent inquiry into the source of currently adopted storm shelter requirements controlling the Lower Elementary School Addition project as well as the proposed design for the 2023 Bond Proposal, we would like to guide you along a brief reference path that starts with the state organization that establishes the building codes and standards to how the storm shelter requirement is derived from those standards. You or others that you may share this letter with will likely recognize some of the code language as we describe it. Hopefully we effectively illustrate a clear line from the source of the requirement to the requirement itself.

#### **State of Oklahoma Building Code Authority**

The Oklahoma Uniform Building Code Commission (OUBCC) was created by the Oklahoma Legislature in 2009 to develop minimum building code requirements for construction across the state. The Commission was established through The Oklahoma Uniform Building Code Commission Act, Oklahoma Statute Title 59. Within the Act, Section 1000.23, paragraph "A" mandates the following:

***"The [OUBCC] shall have the power and the duty to review and adopt all building codes for residential and commercial construction to be used by all entities within this state. Codes and standards adopted by the Commission shall be the minimum standards for residential and commercial construction in this state."***

Furthermore, paragraph “B” of the same section stipulates the following:

***“All public projects shall abide by such minimum standards and requirements; provided, nothing in the Oklahoma Uniform Building Code Commission Act shall prevent or take away from state agencies the authority to enact and enforce requirements containing higher standards and requirements than such minimum standards and requirements.”***

As a result, public construction projects are subject to the building code minimums adopted by the OUBCC. Typically, the OUBCC has adopted base-model codes researched, written, and periodically updated by the International Code Council. However, the OUBCC reserves the authority to modify adopted codes as necessary to balance the safety and welfare of the public with prohibitive circumstances that the burden of code compliance may render on a public subdivision such as the State’s public school districts.

Most recently, the OUBCC has adopted the International Building Code, 2018 Edition (IBC, 2018) with some modifications to the base-model code. For the sake of clearly understanding the following code journey, we would like to establish a couple of definitions. First, Section 305 of the IBC, 2018 defines “Educational Group E Occupancies” as:

***“...occupancies by six or more persons at any one time for the educational purposes through the 12th grade.”***

In other words, if a building is occupied by more than six people with the purpose of conducting school activities from infant daycare through the 12th grade, then code guidelines for Group E occupancies shall apply.

Second, the IBC, 2018 defines “occupant load” as follows:

***“The number of persons for which the means of egress of a building or portion thereof is designed.”***

To further translate, the occupant load is the maximum number of people allowed to occupy a building or building area.

### **Storm Shelter Requirements**

Storm shelters, as they relate to Group E occupancies such as public schools, are addressed in Section 423 of the IBC, 2018 as follows:

***“423.4 Group E occupancies. In areas where the shelter design wind speed for tornados 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.”***

An illustration (not shown in this letter) referred to as Figure 304.2(1) of the ICC 500, as referenced in the section above, shows a national map with all eastern and central parts of Oklahoma being in a 250 MPH wind speed zone. Given the location of Westville within the State, Section 423.4 of the IBC, 2018 applies to your school district. For the

sake of brevity, we do not show the map, however, a link to Figure 304.2 is provided at the end of this letter.

Beyond the wind speed zone figure reference, Section 423.4 also stipulates that any occupancy (or building) with an occupant load of 50 or more people also activates the requirement for a storm shelter. In the case of the storm shelter requirement for Educational Group E occupancies such as the Westville Public School District, the OUBCC has modified the occupant load requirements from 50 or more occupants to 200 or more occupants. In Title 748, Chapter 20, Subchapter 2, Paragraph (10), the OUBCC states the following:

***"Section 423.4 Group E occupancies. This section has been modified to require all Group E occupancies with an occupant load over 200 to have a storm shelter constructed in accordance with ICC 500; and add a fourth exception requiring all additions to existing Group E occupancies comply with the International Existing Building Code. This section has been modified to read: 423.4 Group E occupancies. All Group E occupancies with an occupant load of 200 or more shall have a storm shelter constructed in accordance with ICC 500."***

Paragraph (11)(C)(i) of the same Title 748 subchapter goes on to address the required occupant load capacity for the storm shelter. The language states:

***"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 a minimum accommodate the required occupant capacity for the new building."***

Considering the nature of the Westville Public Schools campus and the fact that the school currently does not possess a storm shelter on its existing site that meets or exceeds ICC 500 code standards, the minimum number of occupants required by code for a storm shelter must meet the maximum number of occupants allowed for a new building on the campus.

In summary, based on the reference path that we have established in this letter, one may see that the storm shelter requirement code journey for public schools starts with respect toward the establishment of the Oklahoma Uniform Building Code Commission Act. Ultimately that journey leads us to the modified IBC, 2018 code adoption by the OUBCC. The modification explains that an occupant load of 200 or more occupants within an Educational Group E occupancy shall trigger the requirement of a storm shelter of sufficient size to accommodate the required occupant capacity of the new building.

Please let me know if this explanation satisfies your original inquiry or if we need to dive into it any further.

Respectfully,



Joshua Schoenborn  
Principal Architect, Partner

## **Document Reference Links**

Oklahoma Uniform Building Code Commission Act (scroll to relative paragraph):

<https://www.ok.gov/oubcc/documents/Title%2059%20OUBCC%20Statute%20updated%2011%2010%202014.pdf>

The IBC®, 2018 code references for Group E Occupancies (scroll to Section 305):

<https://codes.iccsafe.org/content/IBC2018P6/chapter-3-occupancy-classification-and-use>

The IBC®, 2018 code references for Storm Shelters (scroll to Section 423):

<https://codes.iccsafe.org/content/IBC2018P6/chapter-4-special-detailed-requirements-based-on-occupancy-and-use>

The 2020 ICC 500 code references (scroll to Figure 304.2(1):

[https://codes.iccsafe.org/content/ICC5002020P1/chapter-3-structural-design-and-testing-criteria#ICC5002020P1\\_Ch3\\_Sec304.1](https://codes.iccsafe.org/content/ICC5002020P1/chapter-3-structural-design-and-testing-criteria#ICC5002020P1_Ch3_Sec304.1)

OUBCC IBC 2018 Adoption Permanent Rule (scroll to page 16):

<https://www.ok.gov/oubcc/documents/2021%2009%2014%20IBC%202018%20Permanent%20Rule.pdf>