2015 Codes to Require Storm Shelters

By Julie Ruth

Would you be surprised to be asked to provide windows that are impact resistant and can withstand 250 mph design wind speeds for a school in Oklahoma? With the advent of the 2015 International Codes this year, such a request might come up.

The 2015 International Building Code will require storm shelters that comply with ICC 500 Standard for the Design and Construction of Storm Shelters in schools housing kindergarten through high school students with more than 50 occupants and in critical emergency operation centers in tornado prone areas. Critical emergency operation centers include 911 call centers, fire, police, ambulance and rescue stations and other occupancies specifically intended to maintain essential functions and provide first responders with a necessary base of operations during emergency situations. Tornado prone areas include all of Arkansas, Illinois, Indiana, Iowa, Missouri and Ohio, and the parts of Alabama, Georgia, Kansas, Kentucky, Louisiana, Michigan, Minnesota, Mississippi, Nebraska, New York, Oklahoma, Pennsylvania, South Dakota, Tennessee, Texas, West Virginia, and Wisconsin that border these core states.

The shelters are to be sized to accommodate the occupant load of the building it serves. They may be incorporated into another building or be constructed as stand-alone buildings. In either case, they must meet the requirements of the applicable building code (2015 IBC) as well as ICC 500.

The 2015 IBC will require exit doors in the envelope of the storm shelter, with the number required to be determined by the designated occupant load of the shelter. If only one exit door is required, an emergency escape and rescue opening will also be required by ICC 500.

The storm shelters must also be provided with a minimum level of natural or mechanical ventilation, and with natural or artificial lighting. Natural ventilation can be provided by doors, operable windows or operable skylights that are within a certain distance from the floor of the shelter. Natural lighting can be provided by any type of fenestration that is glazed with a light transmitting material.

All of the fenestration in the envelope of the storm shelter, whether windows, doors or skylights, will be required to meet the structural criteria of ICC 500. This will mean it must be designed to resist a 250 mph design wind speed, and have been tested for impact resistance and cyclical pressure in accordance with ASTM E1886/E1996. For the sake of comparison, the design wind speed given in the 2015 IBC for schools in Miami is 200 mph.

If a manufacturer offers a line of impact resistant products for use in these applications, ICC 500 will require that both the smallest and largest size offered in that product line be tested in order to qualify for installation. Under the 2015 IBC, only the largest size is required to be tested. So, the criterion of ICC 500 for fenestration in storm shelters in tornado prone areas is more stringent than that of the 2015 IBC for occupancies of similar risk category in hurricane prone areas.

Although the 2015 edition of the International Codes is now available, a lag inherently occurs between the publication of the newest edition of a model code and its adoption and enforcement. Typically enforcement of a new code does not begin until about a year after it has been published and does not become widely enforced for another year or two after that. Adoption and enforcement of the International Codes, however, is fairly well entrenched in the United States at this point. So while you may not encounter such a request within the next year or so, it is quite likely your company will encounter a request of this or similar nature at some point in the next two to three years.

Editor’s Note: Over the next few months, this column will focus on other new provisions of the 2015 International Codes. Note that a summary of the requirements of the 2012 International Codes for fenestration was provided in the March 2015 edition of Glass Magazine.

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