

Implement Short-Term Disaster Management Measures

John: What can you do in the near term before tornado and hurricane season?

In the short term, you can consult the ECLKC Facility Guide and Checklist. We have a slew of checklists that can help you assess your facility for its resiliency to different kinds of natural disasters.

You can strengthen your building's exterior shell, and we'll take a look at that in a few minutes. If compromised, high winds can blow out your windows, blow out your doors, over pressurize your interior, and lift your roof off.

Consider grants from FEMA and OHS, and possible nonprofits to retrofit your centers to withstand the forces of natural disasters, or to modify them to make them more secure against intruders. Have your centers assessed by a registered architect or engineer to identify any changes to withstand high winds and rain. Some of your centers, if they predate 1980 and 1990, building codes have been updated. You might want to update your center to comply with building code.

I talked about safe rooms. I showed you this slide in the first webinar. Storm shelters and safe rooms are covered by the International Code Council, National Storm Shelter Association. Daycare facilities are exempted from the requirements of the International Building Code that governs over 30 states. It affects K through 12, but not daycare centers, and your daycare centers are still under the same tornado threat as K through 12.

If we can see in the country this big red blob in the center of the country, these states and communities stand the risk of seeing a 250 mile per hour tornado windstorm, the orange 200 miles an hour, the yellow 160. Now the International Building Code might require you to withstand a wind of 90 or 100 or 110 miles an hour, depending on if you're in a coastal area or on the plains. No way does the International Building Code protect you like you're building against tornadoes. The message here is when you have an architect or engineer, look at your facility. Look at this weather map and decide whether you can withstand those high winds.

In the last webinar, we did look at a school that was destroyed by an F5 tornado, that was fully occupied at the time, and there were injuries and fatalities. States encourage you to shelter in the hallway, but the hallways don't really protect you from flying debris and destruction. If you have high winds, the only thing that really protects your children and staff are emergency shelters or storm shelters.

Now let's talk about the envelope. What you can do in the short term. For the windows, you can install hurricane shutters. You can install inline brackets on the outside of your building and get some corrugated steel that you can slide in between the brackets to cover your windows and store the steel, the steel sheeting someplace around your facility or in your facility and put it in before a hurricane strikes. You can board up your windows with plywood. We recommend

laminated glass, but laminated windows are about \$2,000 a piece. Lamination is the laminate, a polyvinyl, butyral plastic between two layers of glass. When it shatters, it breaks into very small pieces, like in your car. It doesn't become a flying object. You also have rolls of polyvinyl that you can adhere to the inside of your glass. That has almost the same effect.

I will add that it's not just for high wind. If you went with laminated glass school buildings, it's bullet resistant, it's UV resistant and it reduces your noise.

The second part of your facade you can do in the near term is, as I said, hire an architect or an engineer to evaluate it and strengthen the roof connections with the building to strengthen the roof connections to the studs. If you're in a wood building, to install hurricane clips or brackets to hold the building together. In structural engineering, we talk about a load path where if you consider the uplift forces on a roof caused by a hurricane, those forces have to be held back by the columns, by the studs. And that force has to be held back all the way into the ground. You have this path of load from the roof down to the ground. If you have a weak connection anywhere in that path, your structure fails. You want to take a look at the load path to see if it's interrupted by poorly construction joints. These modifications should be under \$250,000.

Then there are outdoor hazards, things that you can do to keep your drains and your gutters clear of debris, take down any large trees and trim plantings away from the building. If you have loose outdoor furniture or playground equipment or benches, move them inside and ensure that your fences and heavy objects are securely anchored to the ground and they don't become flying objects.

One word on modulars. Well, maybe a few words on modulars. There are many different types of prefabricated structures to fall within the general term. A modular unit, you might have one. Some are structurally similar to traditional constructions subject to local building codes. They're firmly attached to an underlying foundation, and these can provide high quality learning environments with a useful life span similar to traditional construction. But at the end of the spectrum are units that arrive on wheels and are installed by placing them on supports without a full foundation, tying them with cables to the ground. Local codes are not usually applicable to these types of units. They're often referred to as manufactured or mobile units. The use of life is significantly less than traditionally constructed buildings, especially in harsh climates, and these units tend to deteriorate very quickly, you lose the quality of your learning environment pretty quick. They're also structurally unstable during high windstorms, and you do not want to shelter in them.