

Western lab creates climate-, disaster-resistant buildings

Farm buildings have a DOD (Degree of Damage) scale ranging from one to eight with DOD 8 being total destruction of the building

BY LISA BOONSTOPPEL
Ontario Farmer

The ‘Three Little Pigs’ lab at the University of Western Ontario is where research on improving building design is being conducted so structures are more resistant to extreme weather events.

“It’s a full-scale testing facility located at the London Airport,” said Dan Sandink, the director of research at the Institute for Catastrophic Loss Reduction who spoke of how proposed new building standards and guidelines can protect against high wind, flooding and wildfire damage. Sandink was one of several speakers at the

Canadian Farm Buildings Association’s annual conference held April 23 in Stratford.

“Since 2016, there has been growing interest nationally on disaster risk reduction in building codes to deal with climate change,” said Sandink. The Three Little Pigs lab, otherwise known as Insurance Research Lab for Better Homes, is where buildings are pummeled by wind to test for resiliency.

The roof is often the first place to get damaged. “Roof construction and the connection between roof structures and supporting walls has been identified as a particular vulnerability in residential construction in Canada,” said Sandink.

This is particularly relevant in Ontario where tornadoes can be disastrous. Classified from EF0 to EF5, most of Canada’s tornadoes are classified EF0 with only two in the last six years reaching the level of EF4. Ninety per cent of tornadoes in Canada are EF2 or less, but they



Dan Sandink: “Roof construction and the connection between roof structures and supporting walls has been identified as a particular vulnerability in residential construction in Canada,”

still cause a lot of damage.

Sandink referred to the 2021 tornado in Barrie which was classified at EF2. Using a Degree of Damage Scale (DOD), most of the damage was DOD 1 (the threshold of visible damage) to DOD 2 (loss of roof cover, damage to vinyl or metal siding and shutters). More severe tornadoes will cause DOD 3 (broken glass), DOD 4

(damage to wood decks, significant loss of roof cover, garage door failure and carport failure). However, there was also DOD 7 damage (exterior wall collapse) in even the Barrie tornado.

Farm buildings have a DOD scale ranging from one to eight with DOD 8 being total destruction of the building. This occurs when wind speeds are 150 to 210 kilometers per hour.

Sandink said upload resistance from winds is not well covered in the building code. In high wind events, there tends to be an uplift which pulls the roof cover and roof structure off. Once the roof comes off, the walls come down. To mitigate this loss, builders need to enhance the vertical strength of buildings using structural ties, which transfer uplift forces from the roof to the foundation. High wind resilience also includes enhanced anchoring to the foundation as strongly secured walls to foundations reduce wind damage.

“A cost benefit assessment on vertical uplift enhancement indicated that for a new home, costs are about \$3,600 or one per cent of construction costs,” estimated Sandink.

Though wildfires are not a high risk in southern Ontario as compared to the western provinces or northern Ontario, Sandink said part of the problem is misunderstanding how fires spread. Most people think damage occurs when a wildfire front moves into a community. However, the more common cause of ignitions is from embers.

“During a fire event, embers can travel several hundred metres,” said Sandink. “They land on a building or can ignite fuels, such as vegetation, gas-powered equipment, or debris by a building.” Fires in fuel close to buildings can then spread to other buildings.

Part of fire safety is to reduce debris around a building. A poster from Fire-Smart shows the three levels of home ignition zones which advocates managing combustible material in an areas extending from 1.5 metres to 30 metres from a building.

It’s early days coming up with changes to the building code for climate change but Sandink said builders should expect to see more climate and risk reduction integrated into the codes within the next 10 years.



Mira Lyonblum, AgScape executive director, highlighted AgScape reaching a monumental milestone in 2023: one million educational experiences for youth in Ontario via Ag Career Competitions, Camp AgScape, Virtual Field trips, Teacher Ambassador Programs, and Digital Resource Library (PHOTO BY SHARON GROSE)

Tribunal tosses CFIA fine

Genevieve Parent of the Canadian Agriculture Review Tribunal cancelled a \$13,000 fine the Canadian Food Inspection Agency had imposed for trucking a cow from a farm to a packing plant when the inspector deemed the cow unfit for transportation.

Three people testified that the cow did not appear unfit when it was loaded at the farm on Sept. 21, 2020.

The trucker transported it from Ms. Bianca Foley’s farm the evening of September 22, 2020, outside business hours, and delivered it to the slaughterhouse the next day.

The Foley farm breeds prize-winning Ayrshires at Piopolis, Quebec.

Their Vieux Village farm won 12 consecutive premier breeder and exhibitor awards at the Royal Agricultural Winter Fair.



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