



How Severe Winter Weather Can Affect Your Roof

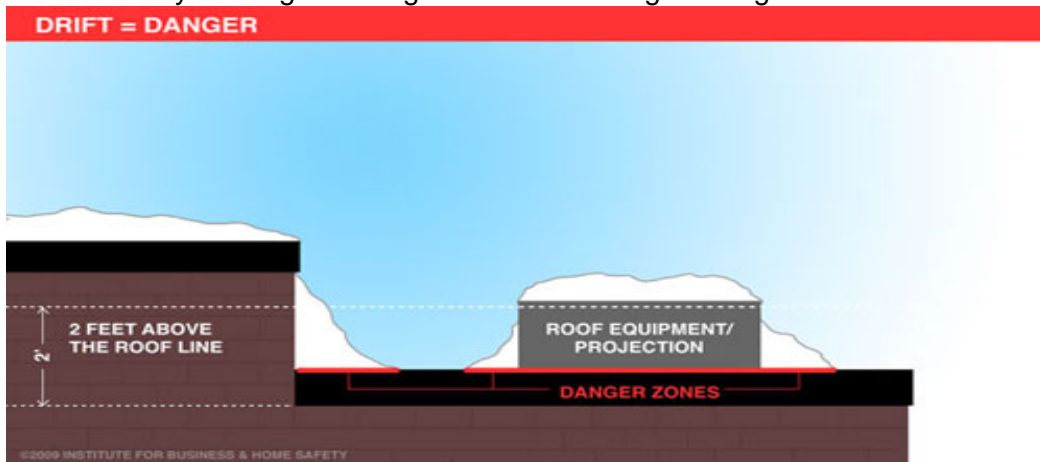
Ice or snow collection

Deep snow can be deep trouble – and rain on top of snow can significantly add to the weight. Even a partial roof collapse can cause extensive damage to the interior contents of a business. When all that snow comes in, it melts and can flood the building. The age of the building can be a major factor in the snow-load risk. Newer building codes provide much better guidance for estimating snow loads – particularly increased loads near changes in roof elevations where snow drifts and snow falling from the upper roof can build up on the lower roof near the step.

Older roofs can also suffer from corrosion of members and connections, which can reduce its ability to resist high snow loads. Buildings with lightweight roofs, such as metal buildings or built-up roofs on bar joists generally provide less protection from overload than heavy roofs do. The safety margins used by engineers are based on a combination of the weight of the roof and the snow loads. Consequently, there is usually a larger margin of safety against excess snow loads for heavy roofs than for lightweight roofs.

For flat roofs, the step-down area between roof sections is particularly susceptible to roof overload because of the tendency for ice and snow collection, especially during windy weather. Rooftop equipment and roof projections, such as mechanical equipment over 2 feet tall, cause snow accumulation due to drift, creating the need for higher snow-load consideration in these areas.

An even more serious condition can be created when a taller building or taller addition is built adjacent to an existing building. Unless the existing building is strengthened in the area next to the new taller building or addition, snow accumulation on the lower roof near the step could produce much higher loads than those considered by the original designer for the existing building.



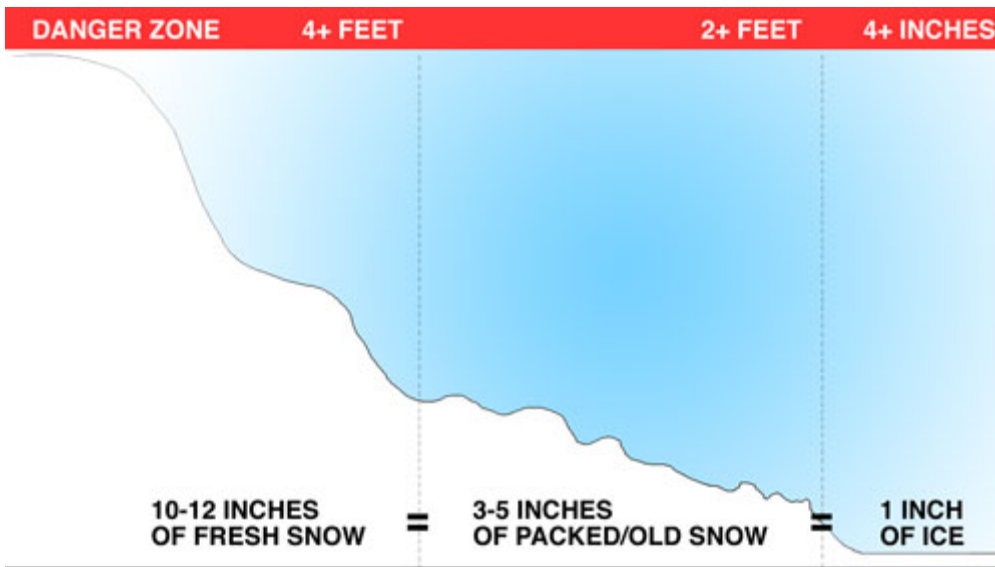
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The best source for determining how much snow load a building can handle is the design plan. These designs can range from having a snow load of 10 to 20 lbs. per square foot in Mid-Atlantic states, to between 40 and 70 lbs. per square foot in New England. The Institute for Business & Home Safety (IBHS) offers these general guidelines to help estimate the weight of snow:

- Fresh snow: 10-12 inches of new snow is equal to one inch of water – or about 5 lbs. per square foot of roof space; therefore, you could have up to 4 feet of new snow before you need to worry.
- Packed snow: 3-5 inches of old snow is equal to one inch of water – or about 5 lbs. per square foot of roof space; therefore, anything more than 2 feet of old snow could be dangerous.
- The total accumulated weight of 2 feet of old snow and 2 feet of new snow could be as high as 60 lbs. per square foot of roof space, which is getting toward the design limits of even the best-designed roof.
- If there's ice, it's much heavier, with 1 inch equaling about a foot of fresh snow.



For safe removal that won't endanger you or damage your roof, consult a roofing contractor.

To help minimize the risks from melting snow on sloped roofs, IBHS suggests keeping attics well ventilated to reduce the risk of ice dams forming. A warm attic melts snow on the roof, causing water to run down and refreeze at the roof's edge where it's cooler. An ice build-up blocks water from draining and forces water under the roof covering and into the attic or down the inside walls. Water can also find its way inside on sloped roofs along the eaves.

Commercial buildings with flat roofs are particularly vulnerable to water leaks if ice dams keep water from flowing into roof drains. Ice dams don't actually have to clog the drains and, in fact, the drains are frequently clear and open. The ice forms a ring around the drain and sometimes a dome over the drain that keeps water from flowing. When the roof doesn't drain properly, snow and ice are retained, adding loads to the roof. Rainfall can add significant loads because it remains trapped on the roof.

Snow build-up around windows and against walls also can lead to water damage. To maintain proper drainage and reduce the risk of leaks in basements, remove snow from window wells and against all walls. Clear debris from basement drains. Make sure gutters are clean and stable to ensure proper drainage.

Severe winter weather can't be avoided, but following these guidelines will help your business avoid the costly pitfalls that often accompany it. Maintaining your building is critical to continuing to serve the customers and employees that have come to count on you.

Utica National has a wide array of materials available to assist you in controlling these risks to your property. Visit us online at www.uticanational.com or contact your local Risk Management Representative for more information.

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