North Dakota State Fire and Tornado Fund

Providing affordable property insurance coverage for the state and its political subdivisions since 1919.

Snow load: prevent your roof from collapsing

North Dakota
INSURANCE
DEPARTMENT
PROTECTING THE PUBLIC GOOD
SPECIAL FUNDS DIVISION

Contents

How to keep your roof from collapsing

Snow-related building collapses are usually caused by heavy loads of snow on roofs. Warming spells can make the situation even worse, since melting snow gets soaked into the lower layers of snow creating ice buildup, which adds even more weight to roofs.

According to a 2008 report from *Structure Magazine*, causes of snow-related structural problems normally include roof step snow drift, parapet wall snow drift, gable roof snow drift, open air and freezer (uniform loads across the whole roof), sliding snow and ice dams.

How much does snow weigh?

A square foot of snow one inch deep weighs 1.25 pounds. So if you have 20 inches of snow, you've got a 25 pounds/square feet snow load on your roof. Ice weights 5.2 pounds per square foot, so be sure to factor this in.

Most roofs can withstand around 40 pounds/square foot of snow load, while older roofs and manufactured homes start to show damage around 30 pounds/square foot.

How to calculate your roof's pitch

- Divide the "rise" (vertical distance between the peak of the roof and the edge) by the "run" (distance from the peak of your roof to the edge) and convert the fraction to a ratio of 12. For example, if the rise of your roof is 15 feet, the run is 36 feet, then the pitch = 15 feet / 36 feet = 5:12
- Low-pitched and flat roofs are more vulnerable to snow accumulation.
- Adjoining lower roofs are also more vulnerable to snow accumulation.
- The steeper the pitch, the less likely the roof will collapse.

How to spot problems with your building

When you see any of the following problems, call your local building or fire official immediately.

- Sagging roofs
- Severe roof leaks
- Cracked or split wood members
- Bends or ripples in supports
- Cracks in walls or masonry
- Sprinkler heads that have dropped down below ceiling tiles
- Doors that pop open
- Sheared off screws from steel frames
- Doors or windows that are difficult to open
- Bowed utility pipes or conduit attached at ceiling
- Creaking, cracking or popping sounds

How to remove snow from your roof

- Use a snow rake for pitched roofs.
- Start from the edge and work toward the peak of the roof.
- Shave the snow down to 2-3 inches instead of scraping the roof clean; don't damage the shingles.
- Plastic shovels are better than metal ones—metal tools conduct electricity and damage roofs.
- Remove large icicles carefully.
- Wear headgear and goggles.
- Consider hiring a professional.

- Don't do it alone. Have a helper to keep you safe.
- Don't add your weight or the weight of equipment to the roof.
- Don't use a ladder since ice tends to build up on both the rungs and your shoes.
- Don't use electric heating devices like heat guns to remove snow and ice.
- Don't use open-flame devices to remove snow and ice.

What's worse than your roof buckling under the weight of the snow? Slipping and falling off the roof while removing snow. Be careful! Hire a contractor if you would like to avoid the risk.

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Let's all do our part to keep
the cost of insurance affordable.