



Farmstead Recovery Checklist:

Snow Load & Barn Collapse

How snow load can damage farm buildings

Snow load is the downward force on a building's roof by the weight of accumulated snow and ice. The roof or the entire structure can fail if the snow load exceeds the weight the building was designed to shoulder, or if the building was poorly designed or constructed. Blizzard's aren't the only cause of problems; an imbalance of drifting snow can cause one part of a roof to give, causing a domino effect that affects the rest of the structure.

“Wood structures typically will give a warning of imminent failure with audible creaking or visible bowing of rafters,” according to Randy Tinker, P.E., Risk Management Property Engineer, Property Engineering Group, Nationwide Agribusiness Insurance Company, Des Moines, Iowa. “Metal structures, unfortunately, often don't exhibit signs of stress before failure.” Farmers need to keep a close watch on structures with heavy loads and be prepared to move livestock and equipment to safer quarters.

How much snow is too much?

Calculating the snow load on your barn takes more than an educated guess. The University of Wisconsin Cooperative Extension Service says that a ballpark estimate of snow load can be made with the following formula:

Calculated Roof Loading (lb/ft²) = Depth (ft) x Density (lb/ft² /ft depth). The approximate density (lb/ft² /ft depth) for light snow is 5-20, packed snow 20-40, packed snow with ice 40-58, and ice 58.

For example, a roof with 3 feet of light snow has an estimated roof load of 60 pounds per square foot (3 ft depth X 20 lb/ft²/ft depth density = 60 lb/ft²). You should know the roof weight limits for your barns and outbuildings, and rebuild or fortify them to withstand worst-case scenario snow loads and meet local building standards.



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What you can do

Some failures can be prevented with careful snow removal. The University of Wisconsin Cooperative Extension Service offers the following suggestions:

- Use caution if standing on the roof, making sure to wear a safety harness and use securing ladders.
- Use a snow rake, and avoid chipping or picking away at ice as that may damage the roof.
- Remove snow in narrow strips to keep the load somewhat even.
- Not all snow needs to be removed. A thin layer of snow can protect the roof from damage while snow is being removed.

Insurance checklist

A few minutes can give you reassurance during a heavy-snow winter. Check with your farm or ranch insurance agent to:

- Confirm that your property insurance covers roof or building failure due to snow load
- Make sure the policy pays for actual replacement costs, so you're not out in the cold if you have to rebuild
- Verify that valuable equipment stored in a barn or outbuilding is covered under your farm personal property endorsement

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