



## PREVENTING ROOF COLLAPSE

Winter weather can severely damage your facility if you are not prepared for the potential threats of snow and ice. During the winter of 2010-2011, more than 500 roofs collapsed in the state of Connecticut alone due to the weight of heavy snow and during the 2016-2017 winter, many more collapsed in the state of Oregon. Fortunately, there were no deaths associated with roofs collapsing in the Connecticut storm, but it is obviously dangerous if anyone is inside when the roof collapses.

This event happened in the Northeast, but many roofs collapse in other regions that aren't accustomed to harsh winters and heavy snowfalls. Preparing for winter weather and maintaining your roof can make a big impact, no matter where you are.

## Preventing Roof Collapse

### Risk Management

You probably realize snow is heavy, but it's surprising how much one square foot of snow and ice can weigh.

- Dry snow adds about 3 lbs per square foot.
- Mixed ice and snow adds about 12 lbs per square foot.
- Wet snow adds about 21 lbs per square foot.

This means that if your roof is 1,000 square feet, you could have up to 21,000 pounds of weight resting on it. That's equivalent to 10 elephants, a small airplane or two combat tanks on your roof.

Blocked, frozen and broken roof drains are the main cause of roof collapse. When the drains are blocked, water is unable to flow off of the roof and collects or freezes after the snow melts. This frozen ice creates an even heavier load for your roof to support.

Use extra precaution if your roof is flat or multilevel. According to Factory Mutual Engineering and Research, approximately 75% of roof collapses happen to multilevel roofs. This is primarily due to snow blowing off of the upper roof and collecting on the lower roof.

#### *Other precautions to avoid a roof collapse:*

- Keep gutters and drains clear of debris and ice.
- Ensure that downspouts and roof drain outlets are clear and flow freely.  
Make sure that there are no accumulations of shoveled snow blocking the outlet.
- Talk to your building contractor or architect to find out your roof's design strength
- When 50% of the roof's design strength is reached, hire a trained team to remove the snow.

Do not attempt to remove the snow yourself. This is dangerous. Hire a professional team to carry out this task.

After winter weather, it is routine to de-ice parking lots and sidewalks. Keeping your roof clean can be just as important. The roof may be out of view, but this doesn't mean the hazard has disappeared. Protect your roof, your facility, and anyone entering the property by monitoring the weather, tracking the snowfall and maintaining your roof accordingly.

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## Risk Management

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