Property – Winter Weather Preparations

Risk Engineering – Your Business Insurance Specialists

Prepare Your Property for Winter Weather

Cold weather can cause significant damage to buildings. Heavy snow, ice and water can cause a roof to collapse. Pipes can freeze and burst, causing water damage and impairing the fire sprinkler system.

As a building owner or tenant, you might also see freezing weather damage heating and air conditioning equipment, steam piping and boilers. Along with the property damage, you could have a costly interruption to your business operations.

State Auto Insurance provides this guide to help you prepare for winter weather and reduce your chances of damage.

Roof collapse: The greatest winter loss

All buildings are susceptible to damage in severe winter weather, but these types of buildings face the greatest risk:

- Multi-level roofs. Snow drifts usually accumulate at the point of a change in elevation. This could be against an adjacent wall or piece of roof-top equipment. Collapse is caused by the concentrated weight of snow in excess of the roof's load design.
- Low slope or flat roofs, roof overhangs, canopies or covered porches.
- Poorly designed roof drainage or those more susceptible to freezing ice dams that block or obstruct gutters, downspouts and drains. This results in roof-top ponding and excessive weight.
- Roofs that are poorly maintained or have roof-top equipment or other weight loads not factored into the building's original structural design.

Control your exposure to cold weather damage. Prepare your building and operations now with these steps.

Plan for emergencies now

- Create a plan before an emergency happens. How will you deal with water damage and snow removal? Designate specific people to handle tasks. Also assign someone to monitor daily weather reports.
- Monitor the levels of snow on your roof. Pay special attention to areas where large snow drifts might accumulate.
- Create and document a roof snow removal program, so you're ready to act immediately after a heavy snow. This will help reduce the chance of excessive snow loads and blocked roof drains from ice.
- Develop a list of contractors, suppliers and their phone numbers to call in event of a winter emergency. Include contractors that could be called to clear snow off the roof if necessary.
- Consider installing a back-up electric power generator to help maintain operations in case of a snow storm that knocks power out.

Prepare your buildings

- To keep your pipes from freezing, maintain at least a 40-degree temperature in the building.
- Install low temperature alarms with central station monitoring for parts of the building where it is likely to dip below 40 degrees.
- Make sure your heating equipment is able to maintain adequate temperatures in remote areas of the building. You may need to consult with a qualified HVAC contractor.
- Seal unnecessary openings and cracks in outside walls. Ensure windows, doors and skylights are weather-tight.

- Insulate walls. Inspect areas that may lack adequate insulation.
- Make sure outside water faucets are “frost-proof” self-draining types or isolated indoors and opened to drain.

Prevent roof collapse

You’ll need to work with a qualified structural engineer on these steps to prevent roof collapse.

- Assess your roof’s capacity for snow loads.
- Evaluate any changes or additions to the structure that may increase the load on the roof. This would include any roof-top or hanging equipment, mechanical apparatus, cranes, etc. which may compromise the integrity due to excess weight.
- Evaluate the adequacy of nearby adjacent structures with lower roof heights for snow load. Roofs of a lower structure immediately adjacent to a higher structure should be designed to anticipate a much greater snow load from blowing drifts.

Conduct routine roof inspections to check:

- Roof membrane, flashing and structure is in good condition.
- Sagging roofs are repair, reinforced and braced.
- There is no ponding of water on the roof, and roof drains are clear and properly draining water away from the building.
- Insulation is increased above ceilings to avoid ice dams. You can also install self-regulating heat cables on gutters, downspouts and roof drains.
- The attic is well ventilated so snow doesn’t melt and re-freeze at the roof’s edge.

There is a right way and a wrong way to remove snow from a roof. Make sure you take these steps:

- Don’t take the risk that you or one of your employees will be injured trying to remove snow. Hire a snow removal contractor with verified general liability and workers compensation coverage.
- Do not use snow removal equipment and shovels on the roof. They might cause damage to your roof, which you are trying to avoid.
- For safe removal from single-story structures, a snow rake with long extension handles may be used by employees to pull snow off without getting on the roof.
- Have the snow removed before it reaches your roof’s snow-load capacity. Remember, dry fresh snow weighs less than wet snow that has thawed. For example, one foot of accumulated dry snow equals about 3.5 pounds per square foot (or 21 pounds per square foot of wet snow). As a rough estimate, you can double the weight for each foot of snow. If you don’t know your roof’s capacity, use 20-25 pounds per square foot as the threshold to begin snow removal.
- Do not chip away ice or use a torch to melt ice dams.

Properly care for fire protection equipment

- If you have wet pipe systems in unheated areas, convert them to dry or anti-freeze systems.
- If you have wet pipe standpipe systems with piping located in areas subject to freezing, make sure these areas are heated.
- Check the specific gravity of all existing anti-freeze systems to see if more concentrate is needed.
- Maintain the temperature of dry-pipe sprinkler rooms or enclosures above 40 degrees. Insulate the valve enclosure and provide Underwriters Laboratories (UL) listed heaters as needed.
- Drain all dry pipe low points and verify adequate piping pitch to insure proper drainage.
- Make sure the fire pump room is properly heated and its heating system is operational.
- Check the water temperature of the fire pump suction tank or gravity tank daily. The tank temperature should be kept above 40 degrees.
- Lubricate all sprinkler control valves and locks to permit ease of operation.
- To make sure sprinkler systems and alarms are reliable in case you need them, inspect and test them routinely.

Maintain domestic plumbing and process equipment

- Insulate water supply, drain and condensate pipes that are susceptible to freezing (in crawl spaces, attics, near doorways, uninsulated outside walls or adjacent to open windows).
- Wrap pipes with heat tape or thermostatically-controlled heat cables. Use only products approved by an independent testing organization such as Underwriters Laboratories (UL) and only for the intended use (exterior or interior).
- For air conditioners, remove water from oil coolers and water jackets, and drain condensers of chilling units.
- For water-cooled equipment such as pumps and compressors, provide adequate heat or locate in heated enclosures.
- Use lubricants on low-temperature applications in equipment such as pumps, blowers and compressors, in areas subjected to freezing temperatures.
- Check pressure vessel vents, relief valves and safety valves to assure that moving parts are functional.
- Construct wind breaks for piping and instruments subjected to low wind chills.
- You need to have a contract in place for replacement parts and technical support. Contact manufacturers and contractors of critical machinery to establish a contract.

Maintain heating systems

- Before cold weather starts, inspect the heating system including boilers, piping, burners and controls. Make necessary repairs.
- To maintain boilers:
  - Completely drain idle equipment, elevate low points or provide drain valves on condensate return lines
  - Remove low points and dead ends
  - Check all service lines for possible freezing
  - Install heat tracing around control lines transmitter boxes and piping that carries water to the water glass
- Consider the provision of a reserve or dual fuel source for heating or processing equipment that can provide adequate duration in event of a large storm.
- If you use space heaters in your building, make sure they are UL listed or approved types. Make sure there is adequate ventilation and maintain adequate clear distances from combustible materials to prevent fire.

Post-storm precautions

- Secure the site and assess the damage.
- Look for live downed power lines.
- Look for structures in danger of collapse.
- Implement your emergency repair program with utility contractors after loss of electric or gas power, telephone services or public water supply.
- Return all fire protection systems to service as soon as possible.
- Watch for flood potential. Rapidly melting snow adds large quantities of water that needs to drain away from the building. Watch for storm water, stream and river overflows as well.

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