SUMAssure
Protection and Ownership for Urban Municipalities

INSURANCE RECIPROCAL

January 2019

Winter Roof Collapse

Oh that dreaded snow. It's something Canadians just have to get used to and prepare for. Avoiding it can lead to heavy build-up and cause roof collapse. If rain comes along and adds to previous moderate snow accumulations, it can overload the structure and lead to collapse as well.

To the best of our knowledge, the National Building Codes of Canada provide suitable structural strength for snow, ice and rain loading on buildings. However, building codes are only as good as the engineering and workmanship at the time of construction. Furthermore, building codes cannot predict additional loading of the structure by occupant use or poor maintenance. Also, there is always a deterioration factor over time with any building.

Building collapses occur in Canada for the following reasons:

- snow, ice and rain accumulations higher than those anticipated by the codes like freak weather events;
- drifting snow in isolated areas such as roof elevation changes or near large equipment which creates localized loads;
- poor workmanship and materials in the construction;
- inadequate engineering design; and
- additional loading on the structure by the occupant (ex. hanging heavy loads such as temporary or permanent storage from the building joists or beams).

Buildings most susceptible to collapse are those with roof elevation differences — especially those where the lower roof is older than the higher roof.

Check your roof drains

- Are they blocked with debris?
- Are the filter caps in place to prevent debris from accumulating in the drain pipe?

Take immediate action to rectify any problems.

Check the interior structural elements (beams, joists, columns)

- Is there any evidence of corrosion, cracking, damage?
- Are any temporary loads like large amounts of hanging clothes, racks or shelving suspended from the joists?

Promptly involve facilities engineering and professional engineers to review any perceived problems with the structure and remove any loads which would have not be anticipated in the original design.

Prepare a plan to for safe removal of snow from the roof if necessary

We recommend using qualified snow removal contractors who have adequate liability insurance coverage in place. This should be established ahead of time. If you plan to do this with employees, a detailed plan for removal should be developed. Employees should be fully trained and the necessary tools should be on hand to accomplish this.

Key points for a safe snow removal plan

- Avoid producing uneven or concentrated loading on the roof
- Areas onto which snow will be dumped from a roof should be secured to prevent access
- Workers on a roof must use fall-arrest or travel-restraint equipment in accordance with the fall-protection requirements of the Occupational Health and Safety legislation. This ensures workers are protected from falling when undertaking such work. This may be accomplished through the use of guardrails and barricades, or other effective measures. Appropriate fall protection is required for work on all types of roofs, including flat roof structures.
- A civil or structural engineer should be consulted to:
    - Determine whether snow loads are excessive;
    - Determine whether there are signs of structural distress;
    - Obtain a removal procedure that will not cause more structural problems; or
    - Reinforce a structure that is over-stressed.
- Snow removal should use tools and procedures that will not damage the roof cover, flashing, and skylights, etc.

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During the winter months

1. Periodically check the roof for snow accumulations. Take note of drifting snow near roof elevation differences, signs, facades, and large equipment. Watch for areas of unusual ice accumulations. Keep a record of these conditions and report them to the facilities engineering.
2. Continue to check roof drains even if there is no snow on the roofs and rectify any problems.
3. Look for roof leaks and take temporary corrective action as necessary. Document the locations of leaks and report them to facilities engineering.

Review snow depth in your area against historical norms and maximums

The www.theweathernetwork.com/ provides useful information on current conditions and climate history. Current snow depth for your area can be found by selecting the weather station in your area. Keep in mind that ice, older snow, or wet snow will weigh more than new snow.

If collapse appears imminent, vacate the building and contact the utilities or contractors to shut down gas, water, electricity and sprinkler systems if it is safe to do so.

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