

Winter Storm Preparation Guide

Winter snow accumulation in excess of building design conditions can be vulnerable to structural failure and possible collapse if basic preventative steps are not taken in advance of a snow event. ***Are you prepared?*** Use this guide to help you understand your roof collapse risks from snow and to develop plans for mitigating the damage.

Understand your winter storm exposures

- ❑ Understand the winter storm and ground snow loading exposures in the area of your property. This information can be obtained from local authority.
- ❑ Understand your structural vulnerabilities and collect baseline Information such as 1) applicable building codes 2) Design Snow load 3) Structural framing system 4) Thermal properties and 5) Renovation history.
- ❑ Consult with a license structural engineer if roof retrofit is needed for the existing building to support additional snow load.
- ❑ Understand how winter storm and roof collapse by snow will impact your operation (people, structural, equipment, stock, egress, ingress, etc.)

Implement Pre-Winter Mitigation

- ❑ Develop Emergency Response Program covers winter emergencies, including appropriate response procedures for excessive snow loads, operation shut down and evacuation.
- ❑ Develop and train an Winter Storm Response Team to initiate pre-winter storm and post-winter storm recovery actions.
- ❑ Establish a list of contractors to aid in Winter storm preparedness and recovery. Place contractors on alert.
- ❑ Prior to winter, inspect the roof structure for damage or deterioration, and repair or reinforce it as needed.
- ❑ Reinforce structural members to adequately resist additional snow drifting and unbalancing loading by licensed engineers and contractors.
- ❑ Prior winter, conduct regular inspect all roof drains and down spouts, and remove debris from the roof to prevent clogging of the roof's drainage system
- ❑ Ensure emergency gear and equipment (fire protection, backup generators) are ready and accessible.
- ❑ Develop a snow removal plan, and ensure not overloading the existing roofing. Locating areas where snow removed from a roof can be stored on the ground away from entrances, exits, canopies, and building equipment. Accessibility for snow removal vehicles should be checked.
- ❑ Maintain an adequate inventory of materials such as snow removal equipment (shovels, ice spades, snow blowers, etc.)
- ❑ Develop an business continuity plan to mitigate business interruption by winter storm.



Preparing for the next winter storm can dramatically decrease damages. Those who are prepared with defined plans, adequate equipment and trained employees have a much better chance of rapidly restoring business operations. ***Are you prepared?***

Total economic losses globally from natural catastrophes and man-made disasters were USD 337 billion in 2017.

At least 11,000 people died in natural catastrophe and man-made disaster events in 2017.

From 2007 to 2018, total Winter Storm insurance claims by Swiss Re Corporate Solutions was averaged more than \$45 million.

Source: Swiss Re Sigma Dec 2018; EarthquakeSmart.gov: Statistics – Official NFIP Site.

Determine What to Do During Winter Season

- Define a methodology to determine an approximate snow load and at what point snow removal should be initiated.
- Elevate if any signs of overstress conditions occur on structural components. (Crack of walls, Sagging roof members, and creaking noises)

Develop Post-Winter Procedures and Precautions

- Notify relevant authorities and notify SwissRe immediately if your property suffer a loss.
- Be aware of structural collapse, and should conduct safety evaluation before enter your property or send employees onto the roof for cleanup.
- Notify relevant contractors involved with resuming building operations, cleanup, repairs, and etc. (electrical, sprinkler, fire alarm, gas, machinery/equipment, HVAC, general contractor, and etc.)
- Ensure all fire protection systems are functional and in service (fire pumps, automatic sprinklers, special protection systems fire alarms and security systems). Contact fire contractor if required.
- Activate a Fire Protection Impairment Permit if required (for frozen pipes). Follow all guidance including implementing a designated fire watch in all impaired areas.
- Restore power by emergency generators or portable generators since public utilities could be unavailable for days/weeks.
- Begin Salvage operations

Create a Winter Storm Emergency Response Plan (WSERP)

- Formalize the pre-winter and post-winter procedures and precautions into a written WSERP.
- Form a Winter Storm response team, assign a leader, and assign specific tasks to members of the team.
- Document all hazardous operation shut down procedures in the WSERP.
- Give authorization for the winter storm response team to initiate equipment or process shutdowns.
- Provide external/internal winter storm related training as required.
- Conduct drills to practice the execution of the plan such as real-life simulation or computer simulation.
- Validate the WSERP annually. Adjust/update as needed.

Swiss Re CatNet Natural Hazard Modelling Online:

- Winter Storm and other natural hazards exposure profiles for any location worldwide are available though Swiss Re's CatNet online tool. Use the following link to register:
http://www.swissre.com/clients/client_tools/about_catnet.html

Useful Links

<http://snowload.atcouncil.org/>
https://www.fs.fed.us/t-d/snow_load/
https://www.fema.gov/media-library-data/7d8c55d1c4f815edf3d7e7d1c120383f/FEMA957_Snowload_508.pdf

Contact

Contact your Swiss Re Corporate Solutions Risk Engineer or representative for additional information or assistance with quantifying earthquake severity, identifying hazards, and developing an Earthquake Emergency Response Plan.



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