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The eastbound Jamestown Rest Area on I94. Photo Credit: NDDOT

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Remove Roof Snow Safely, Properly

An early spring snowfall blanketed building roofs across our state, a sight that went unseen this past winter.

While spring temperatures are, hopefully, right around the corner, it's important your entity promptly addresses snow removal to preserve roof integrity by reducing snow load and future roof moisture.

The Occupational Safety and Health Administration (OSHA) shared "before workers access a roof or other elevated structure, the employer should confirm that workers' weight and any equipment used can be supported by the roof structure without causing a collapse. Workers should always use caution by remaining alert to unexpected sounds or movement around surfaces that have been weighed down by snow (or water from melted snow), because the surfaces could collapse.

Shoveling or raking a roof without using the proper procedures can also increase the risk of roof collapse by creating an unbalanced load on the roof. To prevent unbalanced loading during snow removal, workers should:

- Remove snow uniformly across the roof.
- Avoid making snow piles on the roof."

Accessed March 21, 2024, from https://www.osha.gov/sites/default/files/publications/OSHA-3513roof-snow-hazard.pdf.

The NDIRF claims department received 18 collapse claims from Oct. 1, 2021, to May 1, 2023. The total loss amount incurred from these claims was $2,908,585. This total demonstrates the importance of prompt and proper snow removal as well as ensuring the roof is safe for your entity's employees prior to any snow removal begins.

Calculating Snow Load

Snow load is "the weight of the snow (generally reported in pounds per square foot. The weight of the snow will vary depending on its water content. Snow load on the ground can provide a rough indication of roof snow load, but roof snow loads also depend upon factors such as melting and re-freezing of

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snow and ice, drifting, roof slope, type of roof, and design features.

The amount of weight that a roof can safely support is based on local building code requirements and should be available within the design specifications for your building. If the structure or roof has structural deterioration, the roof might support less weight than would otherwise be expected" (*accessed March 21, 2024, from https://www.osha.gov/sites/default/files/publications/OSHA-3513roof-snow-hazard.pdf).*

By removing roof snow, your entity is also helping to prevent the occurrence of ice dams.

"An ice dam is a ridge of ice that forms at the edge of a roof and prevents melting snow (water) from draining off the roof. Ice dams form when heat from the structures interior rises and warms the underside of a snow covered roof slope. The melting snow runs down the roof until it reaches the cold roof edge, where it freezes again. Eventually, ice builds up along the eaves forming a dam that forces water back up underneath the roof surface into the attic or eave cavity. The water that backs up behind the ice dam can leak into a building causing damage to walls, ceilings, insulation and framing, heavy concentrations of ice along a roof edge can cause damage to roofing materials, gutters, soffit, fascia, eaves and downspouts.

Heavy snowfalls followed by periods of warmer weather provide prime conditions for ice dams to form. Roofs with large surface areas exposed to the sun and small run-off areas are prone to ice build-up.

The most effective way to prevent ice dams is to ensure your building has adequate insulation and attic ventilation. Finding and sealing areas where warm air may be leaking into the attic or under the roof cavity is also important. For roofs that are prone to ice damming, products such as ice and water shield and heat tape can reduce or eliminate the potential for damage.

Experienced roofing and insulation contractors can provide you with recommendation to improving the insulation and ventilation characteristics of your building along with methods to reduce the formation of ice dams" (information provided in previous Preventing Rooftop Ice Dams Advisory published by the North Dakota Insurance Department).

Spring Building Maintenance Musts

Though there may be snow on the ground, March marks the beginning of spring. In this season of revival, now's the time to start your entity's spring building maintenance review.

Here are some operational and structural building features to review to get your entity's buildings ready for spring:

1. **Inspect HVAC Systems.** As temperatures rise, it's crucial to ensure that heating, ventilation, and air conditioning (HVAC) systems are in optimal condition. Schedule a thorough inspection and cleaning of HVAC units, change filters if necessary, and calibrate thermostats to accommodate warmer weather.[1]
2. **Check Roof and Gutters.** Winter snow and ice can cause damage to roofs and gutters. Inspect for any signs of leaks, cracks, or debris accumulation. Clean out gutters and downspouts to prevent water damage and ensure proper drainage during spring showers.[1]
3. **Evaluate Exterior Surfaces.** Examine the exterior of the building for any signs of wear and tear caused by winter weather. Repair cracks in walls, sidewalks, and parking lots to prevent further damage. Consider pressure washing exterior surfaces to remove dirt, grime, and salt residue.[2]
4. **Inspect Irrigation Systems.** As landscapes come back to life in spring, it's essential to ensure that irrigation systems are in working order. Check for leaks, clogs, or damaged sprinkler heads. Adjust watering schedules to meet the changing needs of plants as they begin to grow.[1]
5. **Perform Pest Control Measures.** Warmer weather often brings pests out of hibernation. Implement pest control measures to prevent infestations within the building and surrounding areas. Seal cracks and openings that may serve as entry points for pests.[3]
6. **Prepare for Storms.** Spring is notorious for unpredictable weather, including thunderstorms and high winds. Inspect windows, doors, and other openings to ensure they are properly sealed and fortified against severe weather. Consider installing storm shutters or reinforcing vulnerable areas.
7. **Review Safety Systems.** Take the opportunity to review and test safety systems such as fire alarms, emergency lighting, and security cameras. Replace batteries, if necessary, and conduct drills to ensure that occupants are familiar with emergency procedures.

By proactively preparing buildings for spring, your entity can mitigate potential issues, improve energy efficiency, and create a safe and comfortable environment for employees and visitors.

[1.] https://www.mrhandyman.com/tips-ideas/checklists-resources/building-maintenance-checklist, accessed 21 March 2024.
[2.] https://www.bobvila.com/articles/2355-spring-home-maintenance-checklist, accessed 21 March 2024.
[3.] https://www.homeserve.com/en-us/blog/home-improvement/spring-home-maintenance-checklist, accessed 21 March 2024.