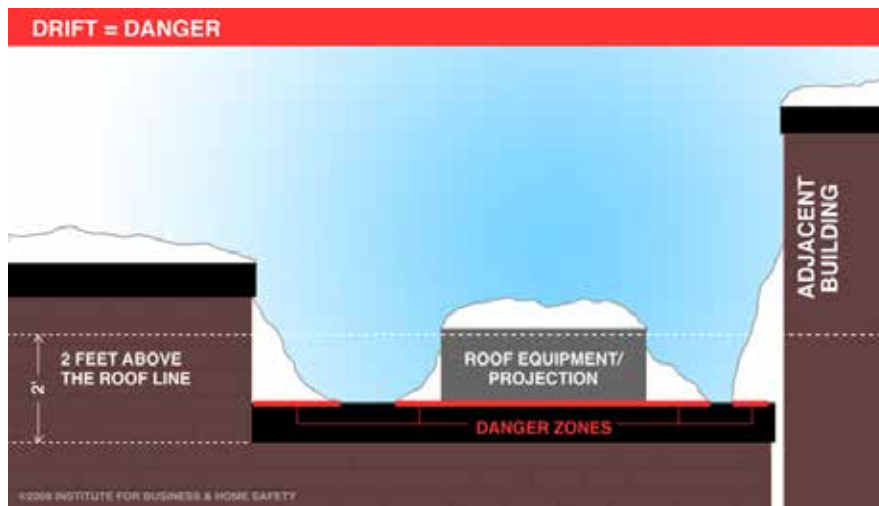


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Preventing Ice Dams on Businesses

Reducing the risk of ice dams forming will help avoid water damage. Ice dams are ridges of ice that form at the edge of a roof or around drains and prevent melting snow from draining off your roof. The water that backs up behind this ice dam can leak into the building and cause damage to walls, ceilings, insulation and other areas. Additionally, when the roof doesn't drain properly, snow, ice and water remains trapped on the roof, adding loads that put your roof at greater risk of collapse. Safely removing the snow will remove the source of the ice dam.



Preventing Ice Dams

To help prevent ice dams from forming:

Increase insulation above ceilings. If the ceilings are suspended non-combustible mineral fiber, then install fiberglass batt insulation. If the ceilings are drywall nailed directly to wood joists, blown insulation or fiberglass batt insulation can be added. When adding fiberglass batt insulation, if there is a paper facer, place the paper side facing down.

Create a roof preventative maintenance plan that includes periodically inspecting the roof drainage system for proper flow including drains, scuppers, gutters, and down spouts.

Self regulating heating cables can be permanently installed on gutters, downspouts, and around roof drains. Since their power is self-adjusting based on the ambient temperature, they are cost effective.

The American Society of Heating, Refrigerating, and Air-Conditioning, Engineers (ASHRAE) can be a valuable resource for guidance on the use of heating cables. Some suggestions include:

- Keep all drains, scuppers, gutters, and downspouts free of debris and vegetation that may restrict proper flow.
- Prune trees that may hang over the roof to prevent an accumulation of tree leaves and branches that may clog or slow roof drainage.
- Improve ventilation. An option for improving roof ventilation is to install electric power vents with thermostats.

For Steep Sloped Roof Systems:

- If the building has a history of ice dams, removing the snow will remove the source of a potential ice dam.
- A roof rake may be used for most single story buildings while remaining on the ground to pull snow down the roof slope.
- Do not pull snow back against the slope or sideways since the snow may get underneath the cover and can break shingles.

For buildings with a history of ice dams with roofs that cannot be reached with a roof rake from the ground, consult a roofing contractor. Occupational Safety and Health Association (OSHA) regulations and standards should always be followed when working on a roof. Fall protection should always be implemented when working on a roof.

Remove or relocate heat sources that are installed in open areas directly under the roof, such as an attic or mechanical room. A warm attic melts snow on the roof, causing water to run down and refreeze at the roof's edge where it's cooler.

Increase ventilation in attic spaces.

- Soffit/ridge vents provide good ventilation for gable roof systems, however due to retrofit costs they are not always a practical solution for existing roofs.
- Gable end vents are not quite as effective as soffit/ridge venting, however they are cost effective.
- Electric fans can be placed over the gable end vents to increase the flow of air. Box or static vents are practical improvements for hip roofs.
- Recessed light fixtures in the ceiling below the open area that is directly under a roof, such as attic space, should be insulated to prevent the release of heat into the attic.
- Check to see if there is any visible light from recessed light fixtures in the attic. If there is visible light, they are not adequately sealed or insulated.
- Insulate or seal all attic penetrations such as partition walls, vents, plumbing stacks, electric and mechanical chases, and access doors.
- If the roof covering is going to be replaced in the near future, ensure that a sealed roof deck is installed using at least two layers of underlayment cemented together or a self-adhering polymer modified bitumen sheet (similar to underlayment).
- The sealed roof deck should extend from the edge of the eaves to at least 24 inches beyond the inside of the exterior wall. See [Sealing the Roof Deck](#) at IBHS's Disaster Safety site.

For Flat, Monoslope, Low Sloped Roof Systems:

- Commercial buildings with flat roofs are particularly vulnerable to water leaks if ice dams keep water from flowing into roof drains.
- If the building has a history of ice dams, removing the snow will remove the source of a potential ice dam.

- A heavy duty push broom with stiff bristles may be used to brush off the snow on low slope or flat roofs. A shovel or snow blower should not be used since they may tear up the roof cover system. Hanover Risk Solutions recommends that fall prevention measures should always be implemented when working on a roof.
- Ice dams don't actually have to clog the drains and in fact the drains are frequently clear and open. The ice forms a ring around the drain and sometimes a dome over the drain that keeps water from flowing.
- If ice dams form around the drains, heating cables can be connected to the drains to prevent ice buildup.
- Heating cables can be installed in a zig zag manner in gutters.
- Heating cables can also be placed on the roof, connecting them to the drainage system so a path is created for the melting ice to follow.
- If there is extensive ice build-up around the drains, consult a roof contractor to ensure that the roof cover system is adequately sloped to the drains.
- When the roof is dry, inspect the roof cover for evidence of long term standing water. This will be evident by the presence of mold, mildew, and even small vegetation growing. This indicates a problem with the slope of the roof cover system; which will reduce proper water shed and drainage. The roof cover system can likely be re-pitched with additional insulation boards by a roof contractor.
- In low sloped roof buildings, the space above a suspended ceiling located below the roof may be heated and cooled like the occupied area below. If that is the case, there is no need to insulate above the suspended ceiling or seal the ceiling's penetrations.

Removing Ice Dams

Removal will result in better drainage and reduce the risk of water damage.

The Insurance Institute for Business and Home Safety does not recommend chipping or breaking ice dams due to the damage that can be inflicted on the roof.

For low slope roofs or flat roofs:

- Removing the snow will remove the source of a potential ice dam.
- Use a heavy duty push broom with stiff bristles to brush off the snow on low slope or flat roofs. A shovel or snow blower should not be used since they may tear up the roof cover system. Hanover Risk Solutions recommends that fall prevention measures should always be implemented when working on a roof.

For steep slope roofs:

- Removing the snow will remove the source of a potential ice dam.
- A roof rake may be used for most single story buildings while remaining on the ground to pull snow down the roof slope.
- Do not pull snow back against the slope or sideways since the snow may get underneath the cover and can break shingles.

For buildings with roofs that cannot be reached with a roof rake from the ground, consult a roofing contractor. Occupational Safety and Health Association (OSHA) regulations and standards should always be followed when working on a roof. Fall protection should always be implemented when working on a roof.

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