

Preventing Ice Dams

water

Introduction

Ice dams represent a costly (and potentially dangerous) hazard for property owners and community associations. Even worse, once a building has shown itself to be susceptible to ice dams, it is more likely to keep developing them during future cold weather.

The majority of ice dams form as a ridge of ice along a rain gutter and roof eave. As ice builds up, it creates an unintended dam that prevents melting snow from draining off of the roof. Some can be very easy to see, but others form around skylights, chimneys, and other features that make them harder to detect from the ground.

Whether they are visible or not, ice dams can cause significant damage to a building or unit. That's because water that pools up behind it can find its way under the roof and into the structure and the interior of a home. It isn't unusual for ice dams to cause damage to insulation, wall interiors, ceiling finishes, and trim. Exterior damage to roofs, gutters, and spaces below an ice dam (like windows and landscaping) is also common. Buildings with an ice dam problem can even experience a problem with mold, as built-up moisture in walls and cracks can lead to hidden growth.

Not only are these issues significant, but they can lead to even more damage in the future if the problem isn't dealt with right away. In this article we'll look at what you can do to prevent and identify ice dams, and the steps to take if you find them on your buildings.

What CAU Recommends:

- > Clean rain gutters annually to remove obstructions that can block the flow of water from the roof
- > Inspect attic insulation and ventilation
- > Install ice shields or other waterproof membranes beneath the roof covering during roof replacement projects
- > Locate a contractor that can clear ice dams from your buildings

Need More Information?

Additional information relating to ice dam prevention is available from The Institute for Business and Home Safety (www.disastersafety.org) or by contacting CAU's Loss Control Department.



What Causes an Ice Dam?

The snow or ice that accumulates on the roof surface provides the water to form an ice dam. As the upper roof surface warms up, the snow or ice melts and runs down the roof until it contacts the colder lower roof surface, where it begins to freeze. When the outdoor temperature is at or below freezing, ice dams can develop along the roof eaves, or behind other obstructions such as skylights and chimneys.

Since we can't control the temperature or moisture that exists outside, preventing ice dams is largely a matter of managing airflow within the attic space.

Heat escaping from the living space into the attic can heat the upper roof surface. Inadequate ventilation or air exchange in the attic space will intensify this heating process, meaning that proper ventilation from the eave vents up to the ridge or gable vents is important to ice dam prevention. Keep in mind that attic insulation pushed up inside the eave bays can block soffit vents and restrict air movement, but installing insulation baffles in the joist channels between the insulation and roof sheathing will create an air channel.

Improperly sealed gaps around attic penetrations from vent pipes, chimneys, electrical wiring, ductwork and recessed lights will allow warm air to leak into the attic from the living space. Other common sources of warm air include bathroom or dryer vents that terminate in the attic and appliances such as heaters and water heaters installed in the attic.

Insufficient or missing attic insulation can also allow heat to escape into the attic space. If the attic insulation does not extend fully over the exterior walls, heat can also escape through the ceiling into the attic and heat the roof surface. A key point to remember is that once insulation becomes wet, it will compact, which can lead to further heat loss into the attic.

Now, let's take a look at how you can spot ice dams and clear them away if they do develop, to prevent further damage.

Spotting and Clearing Ice Dams on Your Building

There are several warning signs that an ice dam may have formed on your building:

- ✓ Icicles are present on the eaves, from the gutters or behind them
- ✓ Ice is coming through the soffit

- ✓ Ice or water is coming down an exterior wall under an overhang
- ✓ Water is coming through a door or window frame
- ✓ Water is coming through an interior ceiling or wall

If you notice any of these symptoms in your building, your first thought should be to call a licensed contractor who specializes in ice dam removal. Once the ice dam is there, the internal damage to the building may have already begun. The longer the problem persists, the worse things are going to get.

A lot of building owners and managers decide to take a do-it-yourself approach (usually chipping the ice or placing salt on it), but those methods often lead to roof damage, corrosion, and discoloration. Professionals, on the other hand, have the right tools for the job, usually clearing ice dams with steam while preserving the look and function of the building's roof.

Preventing Future Ice Dams

If you have had problems with ice dams in the past, you should hire a roofing contractor to evaluate the level of attic ventilation and make any necessary corrections to increase air movement through the attic. You should also hire an insulation contractor to ensure that the attic is properly insulated for your region of the country, and that all penetrations are properly sealed.

If there are water heaters installed in the attic, it is best to relocate these appliances to a heated area on a lower level. In addition to helping prevent ice dams, this will also reduce the risk of water damage from a burst pipe or failed appliance. If it is not possible to relocate the appliance, construct an insulated enclosure around it to prevent heat from escaping into the attic.

Building codes now require the installation of an ice shield or other waterproof membrane along the roof eaves and in valleys.

Snow and ice melt cables installed along the roof eaves and gutters may help prevent the buildup of ice dams, but they can also increase the risk of fire. Installing low voltage radiant heat strips or mats along the roof eaves is another option. There are many brands of radiant systems designed for installation beneath the roof covering.

Installing an ice melt system is another option to consider during roof replacement projects. No matter what solution you prefer, make sure that the products are UL Listed, installed by a licensed contractor and operated according to the manufacturer's specifications.