

RETROFIT Improvements

Prevent Ice Dams

Making
Homes
Safer in
Disasters

Retrofit Opportunity

- Measures to eliminate ice dams should be taken as soon as the damage from these is noticed
- Redundant barriers that protect against ice dams can be incorporated into reroofing and attic insulation retrofits

Purpose

- To prevent roof leaks caused by water backing up under shingles due to blockage with ice at eaves

Benefits

- Durability of roof, walls, insulation, and finishes
- Tighter building envelope
- Less energy waste
- Roofs resist leaks in wet weather

Hazards

Wind



Rain



Flood



Seismic



Fire



Snow



Summary

Three things are required for an ice dam to form: snow, heat to melt the snow, and freezing temperatures to refreeze the ponding water behind and underneath the frozen mass. Ice dams can form when snow or ice accumulates on a roof at the eaves. Heat escaping from the house at the wall-roof interface and heat from warming daytime temperatures and sun melts some of the dammed frozen water which backs up under roof shingles. As a result, the backed up water finds a path through or around the underlayment and sheathing into attics and walls.

More snow and freezing temperatures followed by thaws increase the likelihood and size of ice dams.

Water-stained ceilings, dislodged roof shingles, sagging gutters and icicles, peeling paint, and damaged wall finishes are all evidence of ice dams where water has penetrated the attic and walls.

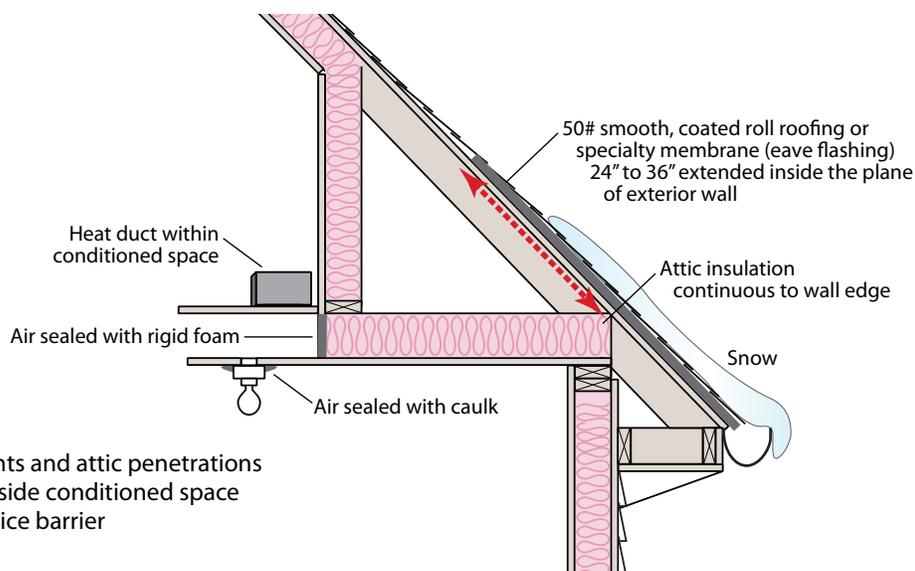
Air leaks through wire and plumbing penetrations in the ceiling beneath the attic and attic ductwork that isn't insulated properly will also exacerbate the freeze/thaw cycle effecting buildup of frozen roof masses.

Most of the measures to curtail ice dams are "Do-It-Yourself" projects using materials that are either on hand or very affordable. Projects like reroofing and adding additional attic insulation which may be left to the professionals merely require the correct specifications to be included in the contracts (i.e., self-adhering bituminous flashing at eaves and install/repair baffles).

In cold climate states many roofing contractors will inspect roofs and perform the tasks necessary to eliminate ice dams including removal of ice and snow masses from the eaves. Inspections run \$250-\$500 and repair costs are based on the scope of the project.

Illustration

Retrofit



Retrofit:

1. Caulk/seal lights and attic penetrations
2. Place ducts inside conditioned space
3. Self-adhering ice barrier

Potential Damage



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Key Steps

- Remove snow from eaves (in areas of persistent winter snowfalls consider removing and storing rain gutters for the winter).
- Inspect/install attic ventilation and insulation including blanket insulation around ducts
- Air seal ceiling below attic with caulk or fixture gaskets.
- To prevent melting of snow, maintain the entire roof surface at ambient outdoor temperatures (with insulation below and ventilation in the attic).
- Provide redundant barriers when renovating, such as installing 36" of eave and rake self-adhering bituminous flashing under new underlayment.
- When adding insulation in the attic maintain a 2-inch "air-chute" for soffit ventilation with properly installed baffles. Have all ducts in attic sealed with mastic and insulated (including bath fans).
- Your contractor may have additional ideas on how to improve the safety of your home.
- For more details about this retrofit improvement, please refer to the list of Resources in the section below.

Resources

NAHB Research Center, *Durability by Design: A Guide for Residential Builders and Designers*
<http://www.huduser.org/portal/publications/destech/durdesign.html>

