Public Safety Advisory
On Potential Roof Collapses

Dangers Associated With Heavy Snow Loads on Roofs

Over the past 36 hours, there have been over 70 reports of roof collapses or buildings with potential structural damage from the weight of snow and ice loads on roofs. While these incidents have occurred throughout the Commonwealth, the majority have taken place in eastern Massachusetts. In many instances, homes and businesses have been evacuated as a result of collapses or safety concerns resulting from indications of structural weaknesses. In a normal winter season, there may be a handful of such events, making this season, with its heavy snowfall, extremely unique. The current severe roof load conditions are the result of the recent prolonged cold weather and repeated snowstorms. Short periods of rain that get absorbed in the snowpack on roofs have also made matters even worse. Compounding the situation is the short-term weather forecast of potentially two more snowstorms in the next week.

Homeowners, tenants, and businesses need to be cognizant of the danger posed by heavy snow loads on roofs, and the warning signs of potential structural weaknesses. In some instances, the risks posed by accumulated snow on roofs can be mitigated by safely removing snow from roofs of both commercial buildings and homes. Because temperatures are expected to remain cold for at least the next few days, and more snow may fall as early as this weekend, efforts should be undertaken now to safely remove snow from roofs.

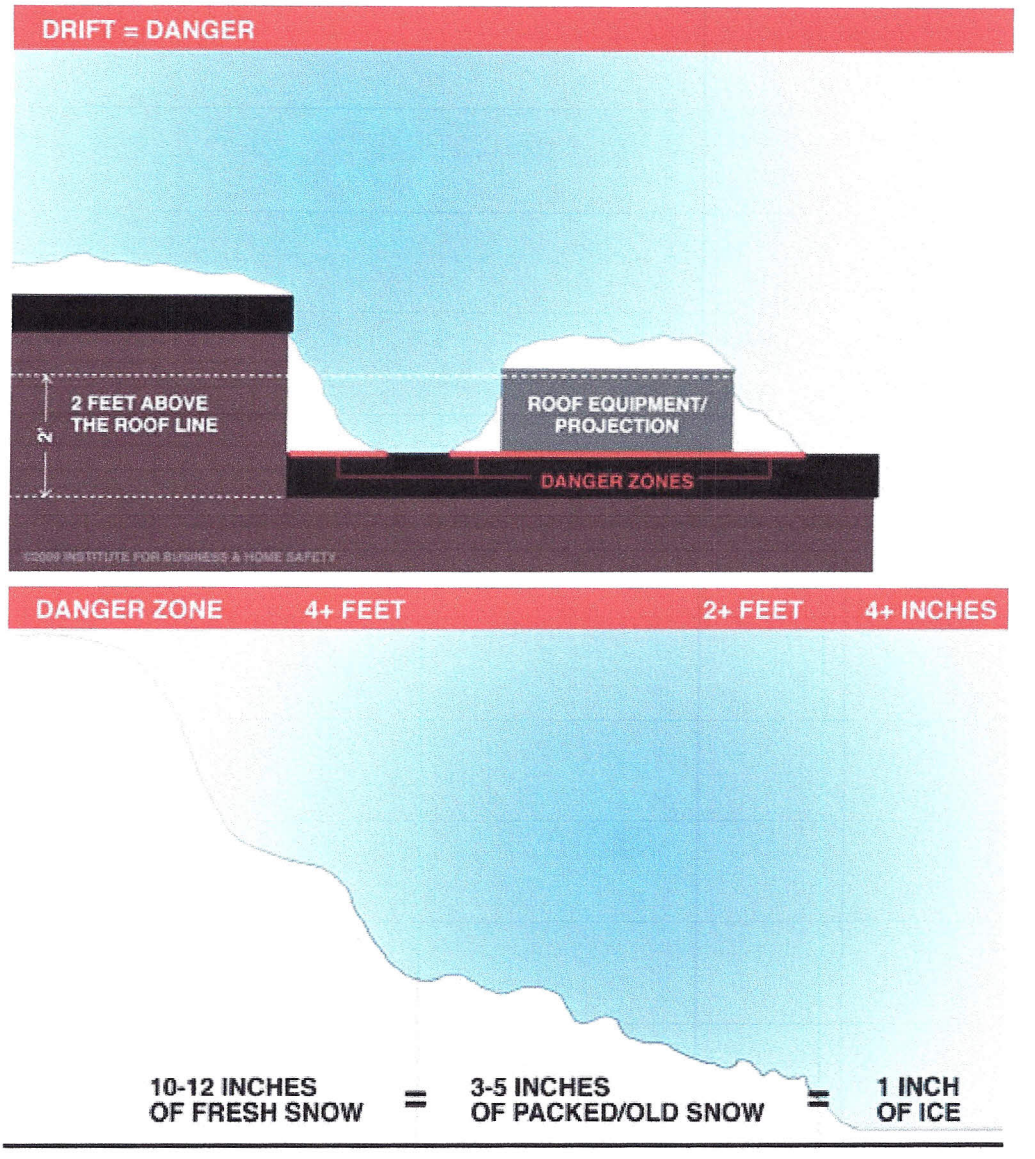
Removing snow from rooftops will minimize the likelihood of structural collapse.

Flat and low pitched roofs, most often found on industrial buildings, but are also used in certain home designs, are at the greatest risk of buckling under heavy snow and ice accumulations.

Removing snow from rooftops will minimize the likelihood of structural collapse.

Flat and low pitched roofs, most often found on industrial buildings, but are also used in certain home designs, are at the greatest risk of buckling under heavy snow and ice accumulations.

Lower roofs, where snow drifts or accumulates from higher roofs are also vulnerable.
Some potential signs of imminent roof collapse.



Tips for Homeowners in removing snow and ice from roofs and other areas

- **DO's**
- Use a snow rake for pitched roofs (available at most hardware stores) to remove snow from your roof.
- Start from the edge and work your way into the roof.
- Try to shave the snow down to a 2 or 3 inches on the roof instead of scraping the roof clean, which will risk damage to your shingles or other roof covering.

  Keep in mind that any metal tool could conduct electricity if it touches a power line.

  Also, metal tools will do more damage to your roof.

Shovel snow from flat roofs throwing the snow over the side away from the building.

Most plastic shovels are better, except for the ones with curved blades—those too will do some damage to your roof.

- Remove large icicles carefully if they're hanging over doorways and walkways. Consider knocking down icicles through windows using a broom stick.
- Wear protective headgear and goggles when performing any of these tasks.
- Consider hiring professionals to do the job. The combination of heights plus ice makes this one of the more dangerous house chores.
- If you don't hire professionals, at least have someone outside with you in case anything does go wrong
- Keep gutters, and drains clean, free of ice and snow and keep downspouts clean at ground level.

Tips for Homeowners in removing snow and ice from roofs and other areas

- **DON'T's**
- Unless approved by a registered professional engineer, don't add your weight or the weight of equipment to the roof.
- Don't use a ladder since ice tends to build up on both the rungs of the ladder and the soles of your boots.
- Don't use electric heating devices like hair dryers or heat guns to remove snow and ice.
- Don't use open-flame devices to remove snow and ice.

According to Meteorologist Tony Petrarca, a cubic foot of dry snow weighs about seven pounds, while a cubic foot of wet snow weighs anywhere from 12 to 18 pounds. So, if it's possible, hire someone to help with all of the snow clearing.

How to Recognize Problems with Roofs

- Sagging roofs
- Severe roof leaks
- Cracked or split wood members
- Bends or ripples in supports
- Cracks in walls or masonry
- Sheared off screws from steel frames
- Sprinkler heads that have dropped down below ceiling tiles

- Doors that pop open
- Doors or windows that are difficult to open
- Bowed utility pipes or conduit attached at ceiling
- Creaking, cracking or popping sounds

Other Safety Tips for Homeowners

- Make sure you smoke alarms and carbon monoxide detectors are working.
- Check your outside fuel and dryer exhaust vents, making sure that they are not obstructed by snow or ice. Never use cooking equipment intended for outside use indoors as a heat source or cooking device. Never use your oven for heat.
- Clear snow away from furnace and dryer exhaust vents to prevent carbon monoxide poisoning.
- Space heaters need space, so use them in a 3-foot circle of safety; free of anything that catch fire. Space heaters are not designed to replace your central heating system; they are only designed to provide a little extra heat on a temporary basis. So be sure to turn them off when you leave room or go to bed at night.
- Clear snow away from downspouts so water has a place to go.
- Do not be tempted to use a heat gun or open flame torch to melt the ice; the risk of starting a fire is huge.
- If you feel you are in immediate danger, get outside and call 9-1-1.

Tips for businesses in removing snow and ice from roofs and other areas

- **DO's**
- **The same tips apply. However, if you are going to use a snow blower, make sure that it has been approved by a structural engineer to be used on a roof, and that the blower is set to a high level above the roof so as not to damage roof membrane.**
- Use a snow rake for pitched roofs (available at most hardware stores) to remove snow from your roof.
- Start from the edge and work your way into the roof.

- Try to shave the snow down to a 2 or 3 inches on the roof instead of scraping the roof clean, which will risk damage to your shingles or other roof covering.

  Keep in mind that any metal tool could conduct electricity if it touches a power line.

  Also, metal tools will do more damage to your roof.

  Shovel snow from flat roofs throwing the snow over the side away from the building.

  Most plastic shovels are better, except for the ones with curved blades—those too will do some damage to your roof.
- Remove large icicles carefully if they're hanging over doorways and walkways.
- Wear protective headgear and goggles when performing any of these tasks.
- Keep gutters, downspouts and drains clean.

How to Recognize Problems with Roofs in Commercial Buildings

- Many of the same apply - added
- Sagging roof steel – visually deformed
- Severe roof leaks
- Cracked or split wood members
- Bends or ripples in metal supports
- Cracks in walls or masonry
- Cracks in welds of steel construction
- Sheared off screws from steel frames
- Sprinkler heads pushed down below ceiling tiles
- Water puddles where it never has before
- Doors that pop open
- Doors or windows that are difficult to open
- Bowed utility pipes or conduit attached at ceiling
- Creaking, cracking or popping sounds
-

What to do if you have problems

- Call your local building or fire official.
- If there is imminent danger, evacuate the building and call 911.

What other assistance is available?

- Many fire departments have regional technical rescue teams available to local departments in case of collapse.
- Massachusetts Task Force 1 is an Urban Search and Rescue Team in Beverly. The team is comprised of Police, Fire, EMS and Civilians who respond to major disasters under a contract with the Federal Emergency Management Agency (FEMA). Currently there are 150 people on the MATF-1 team.