

## Guidelines for Clearing Snow from a Commercial Flat Roof Ver #1

A free publication for anyone involved with roof snow removal, please read our sister publication on estimating snow weight on a roof.

During the winter months in areas of North America various summer time based businesses such as lawn care, roofing and contracting entities, will transform their business into winter businesses revolving around snow removal. This is a good an efficient way to keep employees year round and fill a needed winter service. In addition to plowing snow, these companies will remove snow from residential and commercial roofs. Removing snow from commercial buildings requires 5 important ingredients:

- (1) that all employees have a basic understanding of the special situations that are found on a roof that will require a greater degree of care to protect the surface from damage,
- (2) removal techniques and tools specially designed or adapted for roof snow removal,
- (3) an understanding of roof structure/design and overloading concerns,
- (4) protection of building sidewalls where the snow is shoveled off.
- (5) and additional personal safety preparation for staff.

Here in Northern Idaho, thousands of roofs required snow removal during the 2008-09 winter season and several dozen roofs collapsed under the weight of the snow. Besides the lost profits and loss of customer traffic while repairs were being made, several business owners failed to receive enough money from their insurance company to restore the business back to a sound operating condition. Equally concerning however was the damage done to roofs not from the weight of the snow, but the aggressive and heavy handed crews doing the snow removal. One roof sustained over \$200,000 in damage. No business want to pay to have snow removed from their roof unless they really have to, and when they do, they do not want to pay any more than they have to. This forces the snow removal company to work fast and perhaps with less concern for protecting the roof membrane. Additionally it's hard cold work. This guideline was written to support our clients and customers by providing some basic best practices that will hopefully result in nearly eliminating roof damage do to snow removal activity. It is only a guideline and each job and situation should be analyzed and reviewed for it own unique circumstances.

**FAST FACT #1** Every person involved in removing snow from a roof needs to understand one very important fact ..... most all of the roofing materials used in keeping water out of a building are **“fragile”**. Roof membranes are; not made for heavy traffic, not made for sharp edged equipment, and they can be very easily damaged. The ice on a roof may be hard, but very likely the material under it will tear or puncture easily. Roofing membranes are fragile, handle with care!!



**FAST FACT #2** Every building owner needs to understand that those who are involved with removing the snow have never likely seen “your” roof, they have no idea what is hidden under the snow. If every building owner had drawings and pictures of everything on the roof that removal crews could look over just prior to beginning the work, it would greatly reduce damages. There is no way to know what tools, parts, etc were left laying on a roof until it is “hit” when the snow is being removed. By the time you’ve called a snow removal crew, everything is buried under 24” or more of snow.

**FAST FACT #3** Only **SNOWSCOOP** brand products have optional attachments that greatly reduce damage to roof surfaces. Our attachments are specifically designed to protect roof membranes from the sharp edges of a scoop. Insist on **SNOWSCOOP** brand snow removal equipment. [www.snowscope.net](http://www.snowscope.net) (roof membrane damage is truly based on the people performing the snow removal task, we make no warranty or claims to prevent damage from following this guideline or using our equipment)

**Pre-job owner/contractor conference** – The owner should meet with the crew foreman and provide all the information that he/she has regarding the equipment on the roof, conveying any knowledge about the type of roofing membrane, pipes, conduits, type of drain system, known areas of leakage and past repairs, etc. Also discuss where the snow can be deposited off the building and who and how that snow will be removed. The need if any for barricades to protect store employees and the public. The contractor and the owner should discuss the type of equipment that will be used and how the crew will avoid damage. Ideally the owner should be up upon the roof for the initial clearing to express any concerns while the work is going on. At **SNOWSCOOP** we

recommend that several “packed snow paths” be made in which the snow will be shuttled on. These would be about 2-3” thick and provide a protective layer between the snow removal equipment and the roof membrane. On a large roof these might occur every 30’ or so. All traffic would move in and out on these snow packed paths. The owner and the contractor should agree that not all of the snow needs to be removed, and that trying to get all of the snow off is more likely to cause damage from removal implements than leaving some snow on the roof. The owner should convey if any noise, creaking, or structural damage has been noticed. No one wants the crew to be part of a roof collapse as the snow is being removed. In some instances and professional engineer should be called to determine if the building should be evacuated if the snow loading is too high. Ideally the owner would know the live loading design of the roofing system. For instance the building designer may have designed the roof to support a live snow load of 20, 30, 40 or 50 lbs p/sq foot.



**Pre-work job inspection** – Performed by the contractor foreman and ideally with the owner. They go up on the roof and walk around discussing any known potential issues, discuss where the snow will be piled, effects of piled snow against the sides of the building, how it will be removed, who will be responsible for removing it, where it will be taken, followed by an internal visual inspection of the type of underlying roof structure (beams, trusses, penetrations) and any other topics unique to the job. Are there buried skylights or other locations where a person could fall thru if they waked on that area? Are there roof or attic vents under the snow?

**Contractor crew safety meeting** – Just prior to the work beginning the contractor should do a brain dump of the important information he has obtained and convey that to the employees doing the work. New employees should be paired with experienced crew members for both safety and preventing damage to roof membranes. Every employee should be educated on how fragile roof membrane systems can be and how to avoid damage. Explain the type of roofing membrane such as; spray foam, EPDM, Hypolon, built up tar and felt, ballasted, etc. ) discuss vent pipes, electrical conduits, drains, gutters, etc.. While cleats improve traction and safety, they can damage roofing materials and should not be worn. Safety concerns, staying away form the roofs edge, fall protection rules and equipment, activities to avoid. If employees knowingly damage some portion of the roof or find damage, they should immediately report it. They should be instructed not to remove snow immediately near (usually within about 8-12”) equipment, pipes walls as there will be rubber boots or chamfered corners at the base which are much more easily damaged. Its important that water or other fluids be provided to workers to keep them hydrated. Discuss areas of the roof that might not support much additional weight such as overhangs, awnings and the like.

**Doing the job** - Every job will have unique circumstances that will require the job foreman to adjust and account for. At many jobs the snow will begin being removed at the points the snow will be dumped at, with crews gradually working their way into the main portions of the roof. At other jobs a snow ramp or plywood ramp may be constructed to allow the snow to be carried up and over parapet walls.

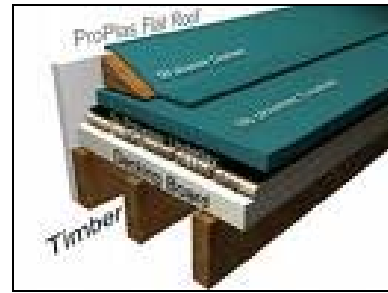
As discussed before, we recommend that 2-3” packed snow pathways be utilized every 30’ or so and the crews directed to run back and forth on them rather than moving snow over all areas of the roof. The 2-3” packed snow path provides a protective layer between the roof membrane and the snow removal equipment. If the packed snow base will not remain in tact due to the foot traffic, make sure other means are used to protect the roof surface. Some jobs will position one or more snow throwers at a point on a roof to “throw” the snow away from the building. Our **SNOWSCOOPS** can be used to feed the snow throwers. Our **SNOWSCOOP** brand scoops have optional roof ski’s that will leave about 1.5” of snow on the roof and keep any metal edges or corners away from the roof membrane. While plastic scoops are generally more forgiving, once cold, they can be as destructive as a metal shovel against a thin roof membrane. Sometimes crews will pile snow on plastic tarps and drag them over to the roofs edge. However it should be noted, the sharp edge of a shovel is still used to put the snow upon the tarps. In general terms, snow should not be “dumped” down onto one roof from another. The repeated “pounding” is likely to cause damage to the structural components of the roof below.

Crews can also use “Tyvek” building wrap to make pathways that will be very slippery.

Workers should proceed slowly into areas of deep snow until they know what lies underneath the snow. While a certain amount of enthusiasm is good, running rapidly into deep roof snow will likely lead to roof membrane damage.



**Post clearing job inspection** – After the job has been completed the owner should inspect the job with the snow removal contractor. If roof drains or gutters have been plugged from packed snow or ice, the owner should be advised about the condition. Make sure no equipment is left on the roof, and if any damage has occurred that it will be repaired to prevent water intrusion into the building.



Information freely provided by:

**SNOWSCOOP**  
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The information may not be altered but may be copied and distributed.

**Disclaimer:** This informational flyer is meant to provide you with some "general and basic" information regarding snow removal on a roof. It is not meant to be specific advice on when you should be concerned, nor shall it imply that we have inspected your roof, that this information applies directly to your roof, or that we are making any specific recommendations regarding your roof. Please consult a structural engineer or your local building dept.