SWEDISH WORK ENVIRONMENT AUTHORITY

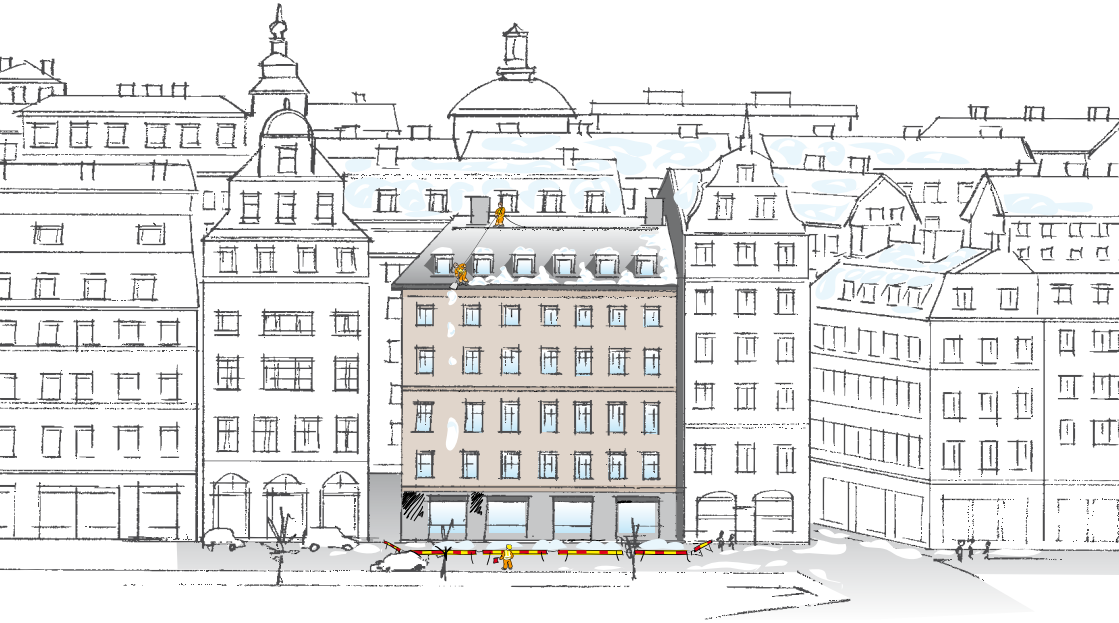
Safer shovelling

A brochure about safely shovelling snow from roofs

List of Contents

This brochure has been produced in cooperation with the central working-environment committee for the iron and ventilation industry.

This brochure is intended to improve safety precautions for persons shovelling snow from the roofs of buildings.



Shovelling snow from roofs - a risky business

Many serious accidents have been caused by snow and ice falling from roofs.

Working on a roof is always risky but cold weather and ice in winter make it even more dangerous. Working on inclined and slippery surfaces using only personal protection equipment will also exert a high load on your body. That's why it is so important that there are approved fixed access and protective devices for anchoring of safety harnesses together with a team of trustworthy workmates.

Stipulations on planning and executing the clearance of snow on roofs can be found in Building and Civil Engineering Work, AFS 1999:3

Company responsibility when shovelling roofs

A business that undertakes clearing snow from the roofs of buildings must do so under the liabilities set out in the Swedish Work Environment Act (SFS 1977:1160) and establish a written risk assessment in compliance with Systematic Work Environment Management AFS 2001:01, Sect. 8.

Employer liability

The following points are the responsibility of an employer undertaking the shovelling of snow from the roofs of buildings:

- Inspect the roof prior to personnel beginning work.
- Ensure the safety features on the roof are in good condition. In some cases it may be necessary to place extra demands on roof safety.
- Inform the workers of the risks involved with shovelling snow from the roof.
- Ensure employees possess knowledge of and are necessarily familiarised with what they must observe in order to avoid risks.
- Provide personal protective equipment that is suitable and approved for the work in hand – fall protection, protective helmet, protective goggles – and verify that the equipment is used.
- Provide high-vis jackets and communication equipment for workers on the roof and watchmen if necessary.

A major safety factor is that the work is carried out by a well-drilled team with two knowledgeable people on the roof and at least one traffic guard on the ground. It is also essential the work is supervised by personnel with a great deal of knowledge concerning working on roofs.

Employee liability

The employee shall follow the rules that apply, use protective devices supplied and observe necessary caution.
If the work involves immediate and serious danger to life and health, the employee shall inform the employer or safety officer immediately. Employees are entitled to stop work while waiting for a response.

Personal fall protection – life insurance

- Make sure the seams on safety harnesses are in good condition and that other details are not damaged.
- Make sure lines and adjustment devices are not damaged and are in working order.
- Harnesses and lines shall be stored suspended dry, dark and ventilated.
- Equipment that is torn, has damaged seams, mechanical faults or is rusty must be destroyed.
- Lines that have been dropped over the edge of a roof must be destroyed.

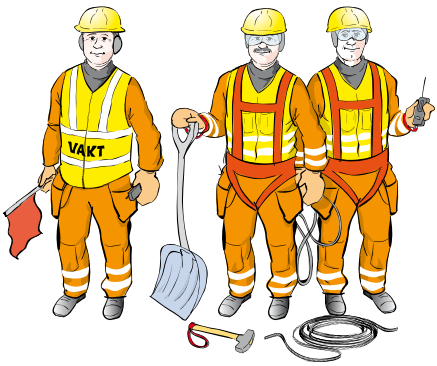
Teamwork

"The man in the street"

Is to be equipped with protective helmet, high-vis jacket and signalling device as well as communication equipment to the workers on the roof, a whistle, siren or telephone.

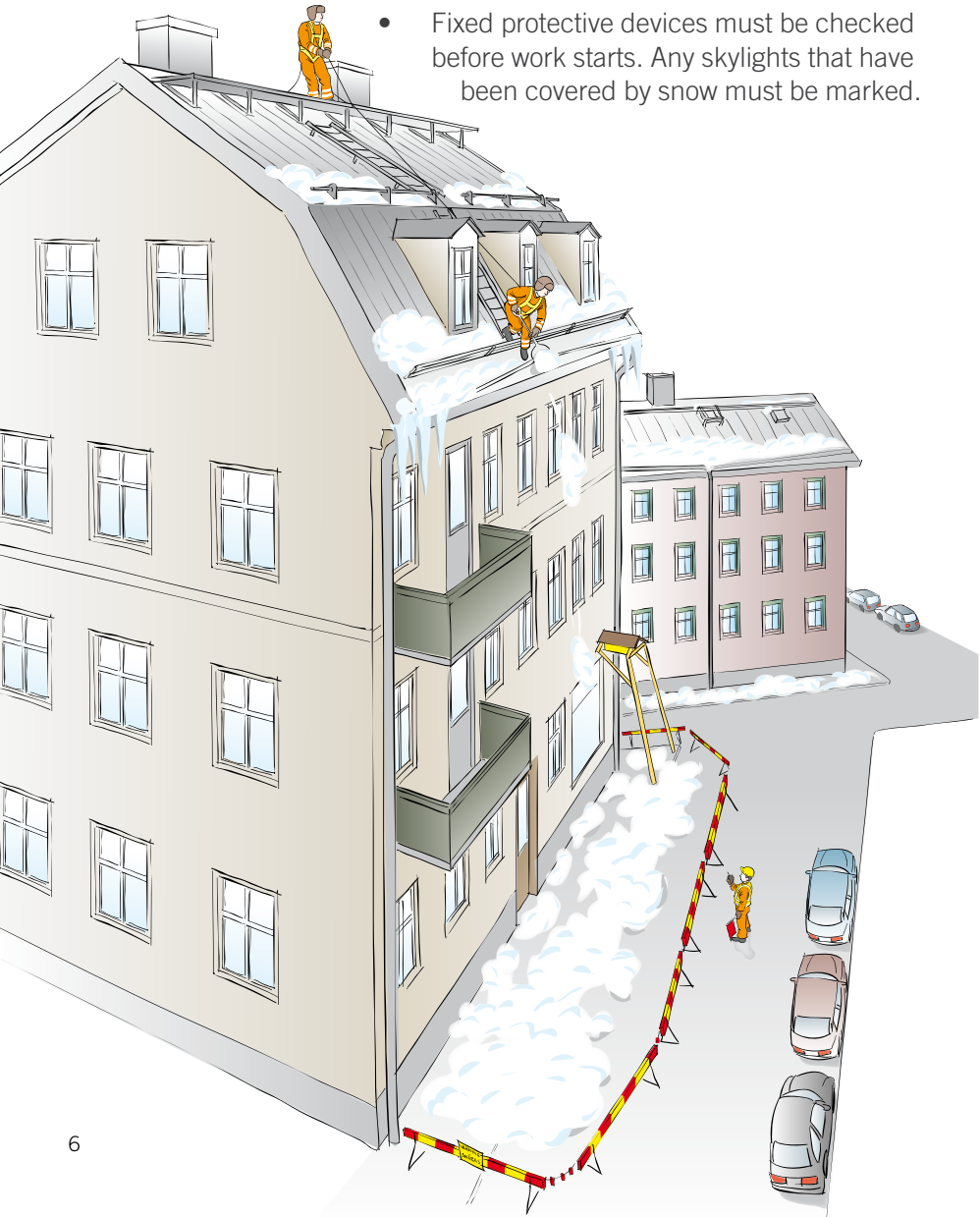
"Workers on the roof"

Are to be equipped with line and safety harness, eye protection against ice fragments, snow shovel with wrist strap, small sledge hammer with wrist strap for cracking ice and warm, flexible clothing, suitable footwear and communication equipment to the guard on the street.



Safer shovelling from roofs

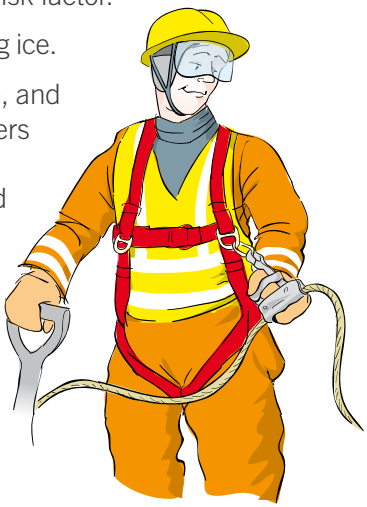
- The team must first be given information on access routes and the keys to the roof level. Check whether there are heating cables in drain inverts. If so, there must be warning signs concerning heating cables at the point of ascent to the roof.
- Fixed protective devices must be checked before work starts. Any skylights that have been covered by snow must be marked.



- Depending on its pitch and height, the roof must be fitted with fixed access and protective devices such as anchorage points for safety lines. There should be catwalks installed all along the ridge of the roof if the face of the building is at least 8 m high and the roof pitch greater than or equal to 6°.
- There should normally be two people on the roof when shovelling snow. One person is to move the anchorage points for the line and keep it taut while the other is to carry out the actual shovelling. The person not shovelling must always have signal contact with the traffic guard on the road/ground to avoid accidents.
- Both people on the roof should be well anchored before starting work. Further lines may be needed on roofs with steep pitches, 45° or more, for extra safety.
- Hand-held tools, such as shovels and light sledge hammers for cracking ice, should have wrist straps to prevent them from accidentally sliding off the roof and becoming a risk factor.
- Protective goggles are required when cracking ice.

  On roofs with gutters filled with snow and ice, and with icicles hanging from the eaves, the gutters can be cleared and icicles removed first with "partial clearing" if the property owner should request it.

  This can be done if the roof also has a snow rail mounted one metre above the gutter plus a ladder stretching from the ridge to the gutter on each slope of the roof. Otherwise, snow and ice will slide into the gutter again.



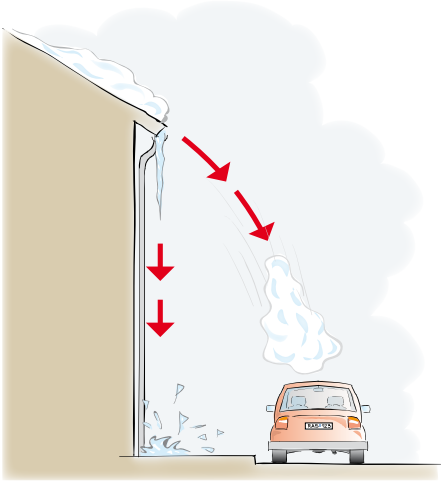
Snow slides and avalanches

Start shovelling from the ridge of a saddle roof to avoid being brought down with snow sliding off the roof. Workers may also cause "avalanches" when they walk on the roof. Roofs with pitches between 18° and 45° are most prone to snow slides/avalanches.

The risk of snow slides and the formation of ice in gutters and pipes are also affected by the direction of the roof and solar radiation.

Remember that…

… cooperation between the workers on the roof is an important safety factor. The line should be kept taut and anchored straight above the person shovelling.



Also remember that…

… icicles drop straight down with a powerful force. Snow slides along the roof incline and may therefore end up further away from the building.

Shallow pitch roofs below 6˚

The snow load on roofs with shallow pitches may be more than the roof is designed for and must therefore be cleared. In this case, the snow can be cleared by several people. Use a snow pusher that can transport the snow directly to the edge of the roof and be tipped over to avoid point loads on the roof structure. If the face of the building is higher than 3 metres, the roof should be fitted with anchorage points, at least eyebolts, irrespective of the pitch of the roof. The safety line must never be long enough, from its anchorage point to the worker, for the worker to fall over the edge of the roof.

Consider the pendulum effect when working from side to side! Anchor as close to the vertical as possible. A safety line used for work on a roof should normally not exceed 10 metres in length.

The worker can adjust the length of the safety line using an adjuster shackle.

NB! Use a safety harness, not a waist belt.

Cordoning off the area of risk

Measures need to be taken to safeguard people and property from falling snow and ice as well as when snow is being shovelled from the roof. This can be done by cordoning off the risk zone. The guard on the street must wear high-vis clothing and protective helmet. The guard must be able to easily keep in contact with the workers on the roof.

Shovelling snow from roofs places great demands on safety zones, signing and safety guards.

Good signalling system essential

Signalling between workers on the roof and the traffic guard on the street is extremely important to avoid accidents.

Signals must be conveyed clearly. In order to do this, a whistle, siren, telephone or comm radio will be needed.

Every member of the team must know how to interpret the signals. To safely remove snow and ice from a roof, the following signals can be sent:

One signal – Stop!

Two signals – Get going!

Injuries to third parties

Injuries to residents and damage to property are not covered in the Swedish Work Environment Act. However, the company clearing the snow is liable in accordance with other legislation.

Accidents do not need to happen if everything has been done correctly from start to finish.

SWEDISH
WORK
ENVIRONMENT
AUTHORITY

Further copies of this publication can be ordered from:
Work Environment Authority
Publication Service
S112 79 Stockholm
Tel. +46 (0)10-730 90 00
www.av.se

ADI 660

Our vision: Everyone is willing and able to create a good working environment

Davidsons Tryckeri, December 2011. Original text by Jarl Alenius. Illustrations by Hans Sandqvist. Layout by Nowa Kommunikation.