

# Be careful when removing snow from the roof and dropping snow cornice!



Otaru Labor standards Inspection Office  
Kutchan Branch

Every year, the Niseko region experiences work-related accidents during snow removal from roofs. Most of these accidents occurred because the measures are not sufficient to prevent falls. Despite meticulous planning and safety precautions, fall hazards are created during the work. This indicates that some parts of general snow removal manuals does not apply in heavy snowfall areas. Therefore, the guidelines are listed below in order to minimize the risks of working on snow-covered roofs in heavy snowfall areas.

## 1 Types of Disasters in Snow Removal and Other Operations.

Inspecting the past fatality records during snow removal, etc., we found that there are 3 types of disaster patterns.

- ( 1 ) Falling from a ladder because its feet slipped while a worker climb up and down the ladder.
- ( 2 ) Falling from roofs by stepping through the snow cornice or by sudden snow fall from the roof while removing the snow cornice.
- ( 3 ) Falling with sliding snow on roofs while removing snow.

## 2 Measures to prevent work-related accidents during snow removal and other operations.

- ( 1 ) How to use a ladder when climbing up to the roof.

If there is a fixed ladder attached to the building, it should be used in principle.

If not and in case of using a portable ladder, it is important to stabilize it properly, so that the ladder itself won't slide and falls.

- If the road is frozen over, use shovels to remove ice until the ground appear .

- If there is a lot of snow, bury the feet of ladders down to the compacted layer of snow and make sure they don't move at all.

When removing snow from the sloped roofs, make sure to install the portable ladders not on the lower side of the roof, but on the higher side in order to avoid falling accidents by sliding snow on the roof.

#### ( 2 ) Snow cornice removal

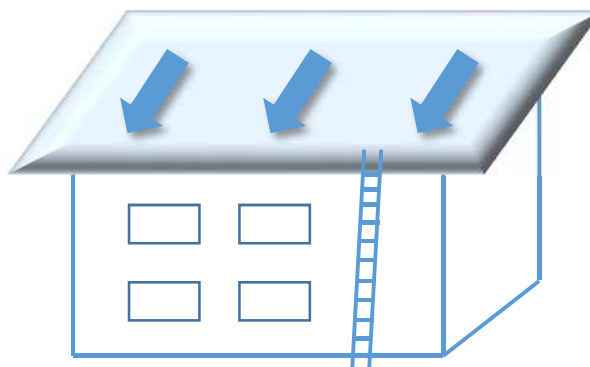
When using shovels to remove cornice snow from the ground, make sure that you are not directly under the cornice snow.

When removing snow cornice from the roofs, it is necessary to check the shape of them before climbing up. Please use life ropes and safety-belt / harness just in case of stepping through the cornice or falling drifted by sliding snow.

#### ( 3 ) Snow Removal

In most case of work-related accidents in snow removal, the workers fall with a sudden snow fall. In addition to use life ropes, it is important to check in advance whether the rope's attachment points is appropriate in the event of a snow fall. In particular, it is required to consider the shape of the roof and to install main ropes at the suitable place. (See below)

Fig.1 On a sloped roof, the accumulated snow always tends to move downward, so even a slight vibration can make snow slide off and fall all at once.



#### ( 4 ) How to prevent falling accident from roofs

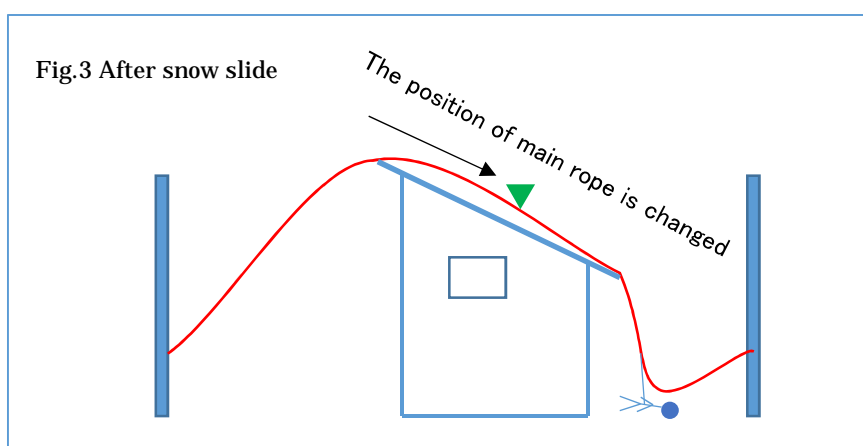
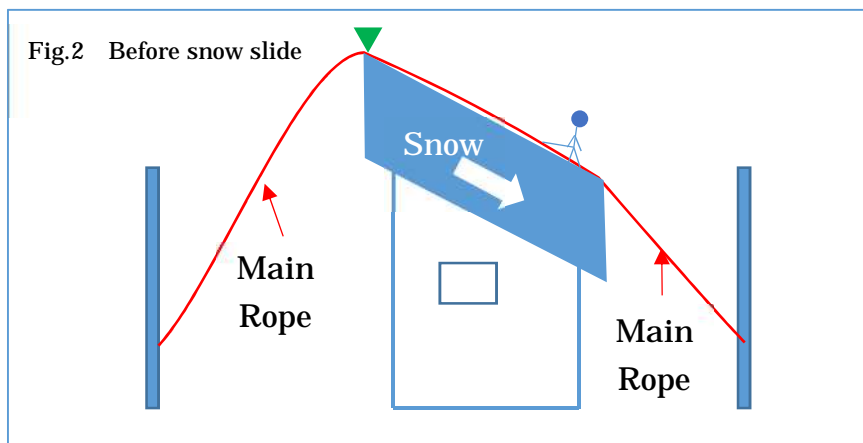
If there is a chimney or other structures on the roof, use them as objects to attach a life rope or a main rope. If there is no structures on the roof,

in general, it is proposed to fasten a main rope to a structure on the ground, hang the main rope over the roof, fasten it to another structure on the other side of the building, and connect a life rope to it. (Fig.2) However, if the snow accumulation is high (generally 1 meter or higher ), the position of the main rope will be greatly shifted when snow falls from the roof, then lose its function (Fig.3) In this case, it becomes extremely difficult to ensure safety of the work. Therefore, it is necessary to make systematic preparations, such as clearing snow before the snow accumulation becomes too high, or, installing equipment to attach a life rope before the winter season starts.

**【Case 1】**

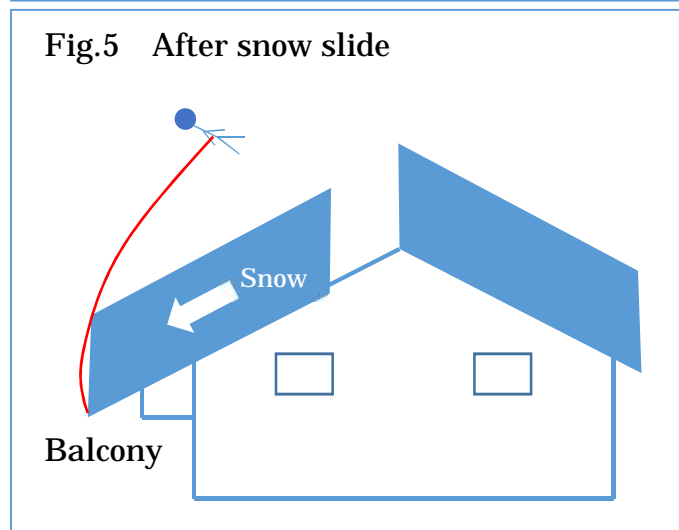
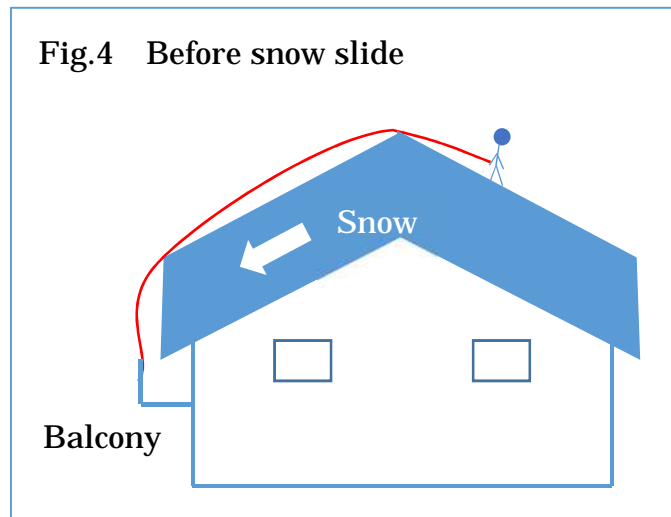
The position of the main rope is out of proper place by falling snow so that the snow removal worker who is connected to a life rope falls down.

(Main rope nullification phenomenon)



The safety devices such as a main rope to attach a life rope must be installed not to be affected by sliding snow.

**【Case 2】** Snow slides and pulls a rope, and a worker is thrown and falls.



Ropes should be fastened on both sides of the building.

( 5 ) Equipment to prevent fall accident.

**Fall Protection Equipment**

According to the Industrial Safety and Health Act, when it is difficult to set up temporary handrails, etc. at the sides of work area on the roof with a height of 2m or more, it is mandatory to use “fall arrest system.” The type of the system is specified by the height.

Over 6.75m Full-body Harness type

6.75m or Under Full-body Harness type or Waist-belt type.

**Helmet**

Please wear a helmet to protect your head from the accidents.

Ex. Impact of a crash of falling snow / Fall from the roof.