



Project Planning



Risk Analysis
Maintenance Plan
Roof Shovelling Plan

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Project Planning

Upon Planning

The developer shall ensure that a work environment plan is prepared and made available before the building site is established. The plan shall contain those measures that are to be taken in order for the working environment to be satisfactory. The plan must particularly take into account the risks present during construction such as roof work. The work environment plan may contain the requirement that the persons installing roof safety devices have the appropriate training.

The work environment must always undergo a risk analysis in order to prevent illness and accidents from occurring at work.

Upon Project Planning

The property owner is responsible for the correct roof safety equipment being installed. The developer, along with the consultants he engages, shall ensure that the project planning is done in order to create the conditions necessary for a good working environment at and within the building structure, not only when it is being used but also during the construction period.

The developer, along with the consultants he engages within their fields, shall create the conditions necessary to end up with a building with as few accident risks and other risks of injury as possible. The consultants should participate in the preparation of the work environment plan. The developer shall ensure that a construction work environment coordinator is appointed for the planning phase, known as BAS-P.

The developer, along with the consultants, shall ensure that the building is designed so that unsuitable physical loads and accident risks are avoided for those who will be working in and at the buildings, both once they are completed and during the construction phase. For example, it is particularly important to choose materials and equipment so that illness and accidents are prevented and that access and material transportation can be done in a suitable way to and from the workplace on the roof. Parts of installations and other things with which someone needs to work shall be accessible in such a manner that it is possible to work in suitable working postures, for example, when such things are located in a loft or roof.

The developer is responsible for ensuring that the correct permanent safety devices are installed on the roof according to the relevant instructions and provisions.

Upon Procurement

Carefully follow the project engineer's directions and check that the prescribed products are used. If products other than those prescribed are used, make sure that the products are certified and that the installation instructions contain the relevant information.

Upon Implementation

The contractor performing the construction work is responsible for ensuring that the applicable statutes and directives are followed. The party appointed as the construction work environment coordinator for the design phase, known as BAS-U, shall also ensure that the work environment plan is prepared, followed and adapted to the prevailing conditions.

The employer bears the main responsibility for the work environment. The employer and employee shall work together to achieve a good working environment during *inter alia* roof work in accordance

with AML. The employer shall follow the given instructions, use protective devices and inform the employer about hazards that are discovered. BAS-U has an important task in ensuring that the work environment efforts work.

Once the contracted project is completed, the contractor shall hand over operating and maintenance instructions to the client with regard to roof safety and the roof.

Upon Use and Administration

According to the Swedish Planning and Building Act, the property owner shall ensure that the necessary safety devices are in place on the roof and that they are maintained, so that their characteristics and functions are maintained. This applies regardless of whether any maintenance and inspection work is done on the roof.

The property owner is responsible for ensuring that operating and maintenance instructions are available and that they are followed.

Employer Responsibility

The employer shall ensure that those performing the work can do so in a safe manner. Work on roofs involves, for example, working methods and conditions on the roof needing to be assessed and arrangements being made so that the work can be done without posing any risk of injury or illness.

The employee must report serious dangers to the employer or to the safety representative, and he may pause work until he receives further notification.

RISK ANALYSIS

The roof - the building's fifth façade - needs more care with regard to design, appearance and attention than the other façades. On the roof, there is a roof covering, as well as fixtures such as chimneys, ventilation hoods, antennas and the like which need inspection, care and maintenance. The roof needs to be inspected more often in the winter due to the risk of leakage and loads from snow and ice, as well as the risk of snow falling and the formation of icicles.

In order to manage with the inspection, care and maintenance of the roof and its fixtures, properly designed access routes are needed. In turn, the access routes need to be designed, positioned and maintained in order to take of the tasks for which they are intended.

Each year, some 120 people in f. ex. Sweden are seriously injured in connection with working on the roof. In addition, about 2500 accidents take place in leisure time. Falls from roofs result in even more serious consequences, e.g., motorcycle accidents and snowmobile accidents. Many accidents occur when gaining access to roofs via movable ladders. The high risks associated with roof work entail the statutes and regulations, as well as the adherence to them, being made ever more stringent.

By conducting a risk analysis involving risk inventorying and a risk assessment, as well as by recommending measures, it is possible to achieve a safe working environment.



Factors Affecting the Need for Access Routes and Roof Safety

Periodic and recurring inspections and maintenance, as well as repair of the roof surface, roof drainage, chimney, exhaust ducts, satellite dishes, fans and solar panels, are required in accordance with the manufacturer's maintenance instructions.

The Work Environment Act requires that being on a roof be made safe and secure. Combustion fixtures and flues must be swept and cleaned regularly in accordance with the Civil Protection Against Accidents Act. The cleaning of waterways of leaves and debris is necessary in order to maintain their function.

Snow and Ice Falling from the Roof

Snow fences with ice stops minimise the risk of snow and ice falling from the roof. Injury to persons and property damage are thereby avoided.

Snow Shovelling upon a Risk of Overloading

The roof and roof safety devices are designed to withstand a certain load of snow and ice. If there is a risk that the allowable load might be exceeded, the roof must be shovelled.

Snow Shovelling upon a Risk of Leakage

The roof covering may be of a poor quality and not withstand larger loads of snow and ice for a protracted period, for example, old roofs that are insufficiently watertight.

Accumulations of ice and snow at sensitive locations, for example, gutter valleys, may lead to leakage due to water pressure under the layer of ice and snow.

Measures in Connection with Strong Winds Having Damaged Roofing Materials or Fixtures

Access fixtures and anchoring points for personal fall protection may need to be designed and positioned in order to reach vulnerable locations and to repair damages.

Emergency Escape in Case of Fire

In some cases, emergency escape in the event of a fire is possible from a balcony at the penthouse via an exterior, fixed roof and wall ladder.

Special Situations for Different Undertakings

Customer-specific requirements beyond those set out by the authorities may arise during systematic work environment initiative for the undertaking in question, for example, a means to take down stray balls etc. on top of schools/nursery schools.

Risk Analysis

The design of the roof is affected by four rules/statutes:

- The regulations issued by the National Board of Housing, Building and Planning.
- The Work Environment Act and the directives issued by the Swedish Work Environment Authority
- The Civil Protection Against Accidents Act.
- The Public Order Act

A good risk analysis will discover risks in connection with ascending and activities on the roof, for example, weaknesses and defects to fixtures on the roof, as well as deficiencies in one's own organisation. By focusing on the risks, there is a means of eliminating or substantially minimising them.

Example 1:

According to the construction regulations issued by the National Board of Housing, Building and Planning, no fixed access devices to fixtures requiring servicing or maintenance are required if the façade height is under four metres, beyond the chimney that needs to be swept. A fall from 3 metres down onto a hard surface will likely lead to extensive personal injuries or, in the worst case, death. A risk analysis would likely result in a recommendation that a solution that is more secure than what the National Board of Housing, Building and Planning demands be put in place.

Example 2:

The National Board of Housing, Building and Planning's regulations only cover the requirements on snow fences at entranceways. Falling snow and ice can injure people and damage property. There is a considerable risk of injury and damage due to a high point load at the ends of the rail. A risk analysis would likely show that a snow fence with ice stops should be installed onto other parts of the roof as well.

Example 3:

Low buildings are not subject to requirements on fixed access routes in accordance with the construction regulations of the National Board of Housing, Building and Planning. At a school or a nursery school, it happens that balls or other objects find themselves onto the roof. In order to get them down in a safe manner, a fixed access route or slipguard for movable ladders may be needed.

Risk analyses are used when preparing work environment plans and action plans.

To Conduct a Risk Analysis

There is an appendix to this brochure offering examples on how to perform a risk analysis. The risk analysis method used here is called the Work Safety Analysis or Gross Analysis and it is a simple method considered appropriate for the construction and property industry. In the appendix, you fill in the information about the workplace, do a risk inventory and conduct a risk assessment. The result becomes a compilation and an action plan with measures to reduce the risks at the workplace.

Fill in the likelihood (S) and consequence (K) of each risk based on the risk inventory. Conduct the risk assessment according to the table below. The risk factor (R) is calculated as $R = S \times K$.

Likelihood of an accident occurring	Consequence of an accident occurring
S=1 Very unlikely (<once /10 years)	K=1 Very small (1-2 days of sick leave)
S=2 Unlikely (once /10 years)	K=2 Small (3-7 days of sick leave)
S=3 Less likely (once /3 years)	K=3 Palpable (8-29 days of sick leave)
S=4 Likely (once / years)	K=4 Serious (30-299 days of sick leave)
S=5 Very likely (<once / month)	K=5 Very serious (>300 days sick leave or death)

It is recommended that measures be taken when the risk factor is high. The measures shall entail the risk of accidents being reduced to an acceptable level and that the measures are reasonable for the property owner to undertake. Select measures that are effective (reduce the risk) and that at the same time are reasonable with respect to time and finances.




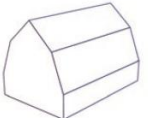







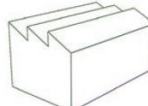
According to the directive on systematic work environment efforts, measures that are not taken immediately must be entered into a written action plan. It must be stated in the plan when the measures shall be undertaken and who will ensure that they are undertaken.

RISK ASSESSMENT

Cadastral reference: _____
 Address: _____
 Postal address: _____
 Produced by: _____ Date: _____
 Company: _____ Telephone number: _____
 Snow zone: _____

Sketch the house's roof plan below and draw in the point of ascent, chimneys, ventilation and other equipment included in the maintenance plan.

Roof covering: _____ Means of ascent:
 Pitch: _____ Access height: _____ Interior Exterior
 Other: _____

Roof type	 Saddle roof	 Half-hipped saddle roof	 Fully hipped saddle roof	 Mansard roof	 Half-hipped mansard roof	 Fully hipped mansard roof
	 Pyramid roof	 Hipped pyramid roof	 Arched roof	 Butterfly roof	 Pentroof	 Saw tooth roof

RISK IDENTIFICATION

Certified Roof Safety Devices

Roof safety devices must be certified in order to have personal fall protection equipment attached to them.

- Roof safety devices missing (A)
- Roof safety devices not certified (B)

Falling Snow and Ice

- Risk of snow and ice falling down onto people, cars or other equipment (C)
- Risk of snow pockets (D)

Activities on the Roof

- Supervision work (E)
- Interior ascent (F)
- Exterior ascent (G)
- Movements (H)
- Chimney sweeping (I)
- Snow shovelling (J)
- Decontamination (K)
- Inspections (L)
- _____
- _____
- _____
- _____

RISK ANALYSIS

Risk	Risk before			Measure	Risk after			
	S	K	R		S	K	R	Resp
Roof safety device missing (A)								
Fall to the ground								
Roof safety devices not certified (B)								
Fall to the ground after the anchor point broke								
Personal injuries when catching falls								
Risk of snow and ice falling down onto people, cars or other equipment (C)								
Risk of snow and ice falling down onto people or cars								
Risk of snow pockets (D)								
The snow fence gives out due to overloading								
Risk for damage on the roof								
Inspection of ventilation or similar (E)								
Fall upon inspection work on ...								

S= Likelihood that an accident will occur: 5 - Very likely, 4 - Likely, 3 - Less likely, 2 - Unlikely, 1 - Very unlikely, 0 - Danger eliminated
K = Consequence of an accident occurring: 5 - Very serious, 4 - Serious, 3 - Palpable, 2 - Small, 1 - Very small, 0 - None
R= S x K, Risk factor. For risks with a high risk factor prior to measures, the suggested measure shall be done with a new risk

Risk	Risk before			Measure	Risk after			
	S	K	R		S	K	R	Resp
<i>assessment after the measure</i>								
Interior ascent (F)								
Fall from loft ladder								
Exterior ascent (G)								
Fall from ground ladder								
Ground ladder slides downward								
Movement on the roof (H)								
Fall upon movement								
Fall upon transport/handling of material								
Chimney sweeping (I)								
Fall from ground ladder								
Ground ladder slides downward								
Fall from access route								
Fall from chimney								
Snow shovelling (J)								
Person falling while shovelling the roof								
Working tools falling onto people, equipment, cars								
Hit by a co-worker's working tools so that they fall								
Falling snow and ice when shovelling the roof								
Clean-up of insects/birds (K)								
Fall from attack								
S= Likelihood that an accident will occur: 5 - Very likely, 4 - Likely, 3 - Less likely, 2 - Unlikely, 1 - Very unlikely, 0 - Danger eliminated								

Maintenance Instructions

According to the Technical Requirements for Construction Works, as well as the Swedish Planning and Building Act, the property owner is responsible for undertaking the supervision and maintenance of his property. This is especially true with regard to fixed roofs and safety devices on roofs.



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Introduction

This material was produced to help you to draw up a maintenance plan and conduct inspections. Maintenance plan / Inspection protocol - CWL0057 - can be downloaded from our web page and can be found in the brochure *Documentation - CWL0062*.

General Inspection Instructions

Certain parts should be inspected yearly, while others can be inspected with longer intervals in between. Carefully note which measures need to be taken. Also make a note of the measures that have been taken. You may want to take photographs before and after the measures. Enclose these.

Function / Location

Removing or rendering roof safety devices out of use without a valid reason is prohibited. Deformed roof safety parts must not be adjusted or repaired, these must be replaced. When supplementing roof safety, parts coming from another manufacturer **must not be combined**.

Attachment / Tightening

A roof safety device never becomes stronger than its weakest link. The mounting in the roof construction can be the weakest link. Make sure that mountings, seals etc. abut against the underlay, or have a proper grasp of the edges of the seams etc., and that the screws and nuts are properly tightened in accordance with the installation instructions.

Condition / Surface

In the case of minor damages or discoloration/hint of rust on cut edges, these can be left unattended as the surface treatment has a self-repairing capacity. Upon a corrosive attack of rust found to undermine the functional qualities, the product must be replaced.

Finished / Powder-covered Surfaces

If damage has occurred to the powder-covered finish, this can be rectified in connection with other inspection and maintenance measures through cleaning and supplemental painting with paint made for zinc-treated metal surfaces in accordance with the paint manufacturer's directions.

Roof Underlay

Information

The roof underlay often consists of a waterproofing service and it holds up the roof covering, be it sheet metal, roofing tiles etc. The roof underlay is held up by the rafters and trusses. The roof underlay can also be load-bearing (stronger sheet metal profiles) as they hold up both insulation and the roof covering. In this case, there is also a waterproofing surface in the form of a further sheet metal layer or a tar paper / felt roof etc. on top of the insulation. Check that the roof underlay is intact and that it has not been affected by water leaks or debris having gathered so that moisture has been held against, e.g., the battens.

Inspection Instructions

- Inspect, if possible, from the underside of the roof structure (e.g., from the loft,) for any signs of leakage, discoloration in the wood or on painted surfaces, or condensation. Also check the joints / screws at the extensions of load-bearing sheet metal roofs (CMP).
- For tile roofs, check for any broken roofing tiles. Lift the roofing tiles in different locations, including down along the roof foot, if there is a tendency for debris, leaves, pine needles etc. to collect in pockets.
- Also have a look at the underlay tar paper. Make sure that it has not dried out and cracked, that holes have not developed at the nails and penetrations etc.
- Do an extra inspection at the roof safety device mountings so that the roof underlay is not damaged by leaks etc. in connection to these.

Roof Covering

Information

The roof's surface covering can be a waterproofing layer, e.g., tar paper / felt roof, but it can also be covered/protected (e.g., roofing tiles) where the waterproofing layer is in the form of another material underneath. The surface layer must lead away rain and must be able to manage snow and wind loads and shall be able to be walked upon by people. N.B.! If the surface layer and/or the roof structure cannot withstand the weight of a person without risking having him fall through, there must be a barrier rail placed around these areas.

Inspection Instructions

- Make sure that all parts of the surface layer are intact. See to it that, e.g., all the roof tiles are whole.
- Make sure that the roofing material is firmly in place, that screws/nails to e.g., sheet metal roofs are in place and are sufficiently tightened/nailed, and that the holes around the screws/nails have not become too large.
- Make sure that no parts of the surface layer risk coming loose or being damaged in strong wind.
- Make sure that the surface layer is free from moss and anything else that can affect the resiliency in the material and can constitute an increased risk of slipping.
- Check particularly whether the roof has been exposed to damage during, e.g., snow shovelling.

Waterways

Information

Waterways on the roof consist of roof gutters, angle gutters, cornice gutters, standing gutters and roof drains and outlets, including downpipes. These must have the sufficient dimensions and be positioned in such a way that rain can be led away.

Inspection Instructions

- Check that the waterways and their mountings are intact.
- Check that they are free of leaves, twigs, moss and anything else that may obstruct the function of leading away water. Also check to see whether water tends to remain standing at any part of the roof surface, lack of pitch toward roof drains etc.
- Check for any deviations that can result in poor functioning, e.g., roof gutters leaning in the wrong direction.

Ground Ladder

Information

Ground ladders (movable ladders), along with the fixed mounted slipguard at the roof foot, shall constitute the access route from the ground to the roof on lower buildings. The ladders should be placed along side of the roof ladder at a pitch of less than 45 degrees and it should extend up for another 1 metre above the edge of the roof. On steeper roofs, the ground ladder must connect directly with the roof ladder and the highest rung of the ladder with the slipguard.

At access heights between 4-5 metres, the ladder must be equipped with step widener. The installed slipguard must be type approved.

Inspection Instructions

- Make sure that the ladder fulfils the applicable standard, EN 131 or SS 2091.
- Make sure that it is not damaged. Note particularly any damages to the lower part of the sides of the ladder.
- For extension ladders, check in particular the extensions and locks (when sliding down, there is a risk that they can be pulled apart).
- If there are defects in the above, do not use the ladders or brace the ladders in a reliable manner.

Slipguards for Ground Ladders

Information

The function of the slipguard is to prevent accidents resulting from ladders sliding down or laterally at the top, and tilting ladders. Slipguards that satisfy the requirements set out in the applicable standard SS831342:2014 are designed to withstand a vertical load of 1 kN with only a small deformation, and 1.5 kN with an unlimited amount of deformation; however, the ladder shall remain in place.

Inspection Instructions

- Inspect the slipguard and its mounting in the roof.
- Make sure that the slipguard for the movable ladder can withstand the vertical load. Hang the movable ladder in the slipguard so that it does not reach the ground. Then hang the ladder and note any deformations or movements. Any mounts in bad roof gutters will risk coming loose. Keep in mind the risk of being hit by falling roof gutters and other parts. If there is any doubt with regard to sufficient durability, install a new slipguard on the roof.
- Make sure that the slipguard cannot risk catching hold of clothing/work equipment and impede movement.
- Take note of any deformations/damages and deteriorations in the surface layer and rectify them in accordance with the general inspection instruction, see Page 3.

Loft Ladder

Information

The loft ladder is used to get up to the loft from e.g., a stairwell or a room on the uppermost floor. It must follow the applicable standard SS-EN 14975:2006+A1. It must have a width of at least 240 mm and a step height of between 230 and 300 mm (maximum 4 mm deviation between steps). However, the uppermost step to the loft floor is max 315 mm. The hatch opening should be at least 700 x 900 mm.

Inspection Instructions

- Check that the loft ladder is working, is firmly in place and is not rickety,
- The ladder must be at least 240 mm wide and the transition to the loft must be ergonomically acceptable.

Access to Roof in Loft, Lighting

Information

In order to come in from common areas (stairwells etc.) and up to the ascension hatch to the roof, there shall be an access route with a width of at least 800 mm (600 mm at individual short places can be accepted) and a height of at least 1800 mm (at individual short places, e.g., opening, truss, 1600 mm can be accepted). The walking surface on gangways etc., shall be at least 350 mm wide and with upward-folded edges (min 20mm), or else at least 500 mm wide if edges are lacking.

Inspection Instructions

- Make sure that the lighting functions and that all lamps light and that the lighting is sufficient for observing all obstacles and risks.
- Check the width and height in the walking area and make sure that no obstacles pose a risk of stumbling, striking or injury on sharp edges on protruding parts, nails, screws etc.
- Make sure that the gangway is sufficiently wide (350 mm) and there is no risk of stumbling.

Interior Ladder to Access Hatch

Information

In order to make one's way from the loft floor up through the access hatch, a ladder must often must be used. This may be made of wood, but it must be whole, bear the weight of a person and not come loose or slide during use. As the upper edge of the hatch shall not be lower than 1600 mm, the lower edge ends up about 1000-1200 mm over the loft floor. This requires some form of ladder/stairs.

Inspection Instructions

- Make sure that the measurements as stated above are correct.

- Ensure that the ladder to the access hatch is steady, whole and firmly in place. Note any particular defects in the attachment of the ladder rungs to the side pieces on wooden ladders.

Access Hatch

Information

The dimensions of the access hatch shall be measured in the opening (daylight measurement). Previously, access hatches measuring 500 x 500 mm were considered to be acceptable. At present, this is considered too small and it must be replaced. In recent years, the requirement has been 600 x 600 mm, but currently the measurement is 700 x 900 mm. Hatches measuring 600 x 600 mm can be accepted until a major roof reconstruction/re-covering is conducted. One problem with a large hatch is that it becomes heavy and if snow accumulates on top, it can be very difficult to open. It may become necessary to install some kind of lifting aid in the form of a pneumatic spring or similar device.

In addition to having an acceptable opening size, the hatch must also withstand the weight of a person and be able to be raised during use without blowing shut. It should also be possible to lock the hatch from the inside, but there is no requirement that it be locked.

Inspection Instructions

- Make sure that the access hatch has acceptable measurements. Openings of 600 x 600 mm should be replaced in connection with future upgrades of roofs, smaller openings shall be replaced as soon as possible.
- Make sure that no sharp edges or protruding parts pose any hazards to people coming up or down through the hatch.
- Check to see that the hinges are intact.
- Check to see that the hatch can be propped up during use.
- Check to see that the hatch can be locked from the inside. (However, it does not need to be locked).
- Check to see if the roof at the hatch is firm and intact.

Façade Ladder, Handrail, Fall Protection, Back Guard

Information

The function of the façade ladder is to constitute an access route to roofs for buildings with façade heights up to 8 metres. At heights exceeding 4 m, you must always be secured. In order to make access to roofs safe, there are supplementary devices such as dragline or rail systems for the anchoring of personal fall protection. The handrail between the façade ladder and the roof ladder makes the ascent on the roof easier.

According to the Swedish Work Environment Authority's directive (ADI 698) concerning fall protection, the back guard is not approved as a fall protection. One must always be anchored, even if a back guard is in place.

There are many instances of defectively attached façade ladders. It is difficult to see how good or poor a mounting is and it is often difficult to check an existing mount. The façade ladder itself must comply with standard SS 831331. However, this standard entails no requirement that the ladders need to withstand the anchoring of personal fall protection and may not normally be used for this. Rails/draglines for the anchoring device for personal fall protection must therefore be installed in order for them to be able to withstand this strain, i.e., a test corresponding to the dynamic test of the roof safety device.

The façade ladder can be supplemented with a safety rail, which allows one to move along the entire length of the ladder and remain anchored to the personal fall protection.

Inspection Instructions

- Inspection of function/durability. Method 1: Hang by using a harness, line and connection device as far up as on the façade ladder as you can reach. Apply your own body weight. Pull outward and observe the movements in the ladder and mountings. If there are visible movements in the mountings against the façade, these must be replaced or rebuilt before being subjected to loads.
- Check the mount. Screw in each hole of the bracket/strut. If there are French wood screws in panelling, make sure that they are tightened and have a satisfactory attachment. Remove one of the lower screws and study the screw and timber as to whether they seem fresh. Small screws, e.g., in wood panelling, shall be tailored to the panelling's thickness and shall be tightened without coming loose.
- Note in particular whether water has penetrated into the wood panelling and resulted in damage. When in doubt, replace the panel and screws in question, or change to another mount or mounting location. The uppermost mount is the most important one.
- Inspection of handrail and strut to the roof ladders. Inspection of the particular mount in the ladders. Inspection of screws, welds etc. If the strut is missing between the handrail and the roof ladder, install one. If one is present, check the screw joint.
- If there is a fall protection system in the form of a dragline or rail, check to see that these are firmly attached in their own mounting system (or that the façade ladders have the supplementary/appropriate connection), correctly installed and intact. If the façade ladder has no means of being anchored, this must be rectified or replaced. Use scaffolds, rope access systems or mobile work platform when doing such work.
- Take note of any deformations/damages and deteriorations in the surface layer and rectify them in accordance with the general inspection instruction, see Page 3.

Rood Ladder, Guardrail

Information

The function of the roof ladder is to be an access route to the service location on roofs, as well as to constitute an anchoring point for personal fall protection equipment. The roof ladder is not to be used as an escape route and **must not** be used as a place to store building materials, for example. Roof ladders that satisfy the requirements in the applicable standard are rated to withstand a point load of 1.5 kN, and withstand the loads, including falls, that may occur upon the anchoring of a safety line. SS-EN 12951:2006, Class 2.

If there is a guardrail (1 m high) or a low rail (0.5 m high), this shall be used to increase the security and safety at the when walking on the ladder and it can also be used for anchoring personal fall protection.

Roof ladders can have tread plates or rungs and the purpose is for tread plates to be used for pitches between approx. 10-35 degrees and runs for pitches of more than 25 degrees. The individual tread plates should not lean more than about 3 degrees relative to the horizontal plane.

The roof ladder can be supplemented with a safety rail, which allows one to move along the entire length of the ladder and remain anchored to the personal fall protection.

Inspection Instructions

- Check that the roof ladders, the roof ladders' mounts to the brackets are correctly designed and that they are intact. Particularly check the tightening of the fold mounts according to the applicable installation instruction.
- The roof ladder must have at least one upper and one lower mount in order to prevent moving/breaking sideways. Roof ladders that might be subjected to snow loads must withstand the loads in question. Alternatively, the roof should be supplemented with a snow fence.
- In particular, check that extensions between roof ladder sections sit together.
- If there are guardrails/rails, check to make sure that these are intact, that they sit together and that they are properly attached to the roof ladder or roof.
- Take note of any deformations/damages and deteriorations in the surface layer and rectify them in accordance with the general inspection instruction, see Page 3.
- Make sure that the roof, roofing tiles, folds etc. at the mounts are intact.

Movable Roof Steps - Batten Steps

Information

The roof step's/batten step's function is serve as an access route to service location on the roof. Movable roof steps/batten steps must not be used on houses with façade heights over 4 m or roof pitch of more than 45° according to the type approval in question. Roof steps/batten steps shall always be installed in a straight line one above the other in order to form an access route. Roof steps are **not** intended for the anchoring of personal fall protection equipment. This shall be able to be done with other devices in connection to the access route's upper end, e.g., ridge rail.

Inspection Instructions

- Make sure that the batten holding up the batten step is intact, has no weaknesses, e.g., deformed edges, and that no debris or the like that can affect the batten's durability are present. The likelihood of problems and damages are greatest at the lowest step.
- Make sure that the roof, roofing tiles, etc. at the batten steps are intact.
- Take note of any deformations/damages and deteriorations in the surface layer and rectify them in accordance with the general inspection instruction, see Page 3.
- Make sure that there is a separate anchoring point for personal fall protection equipment in connection with the access route's upper end.

Ridge Rail

Information

The function of the ridge rail is to form an anchor point for personal fall protection equipment when working on the roof. Ridge rails that satisfy the requirements in the applicable standard are rated to withstand the loads, including falls that may occur upon the anchoring of a safety line.

Previously, there were roof foot rails with a tube that constituted a foot support at a roof break or a roof foot. Currently, these are replaced by snow fences, which are to be installed where snow shovelling may occur and which provide/fulfil the function as a foot step.

The ridge rail can be supplemented with safety draglines, which allow one to move along the entire length of the rail and remain anchored to the personal fall protection.

Inspection Instructions

- Check that the rails and mounts on the roof are correctly designed and that they are intact. Particularly check the tightening of the fold mounts according to the applicable installation instruction.
- Make sure that the extensions between the rail tubes are done correctly and that they are intact, that the locking of the tool is correctly done and intact, and that the uppermost tube cannot rotate or slide sideways.
- Take note of any deformations/damages and deteriorations in the surface layer and rectify them in accordance with the recommended instructions, see Page 3.
- Make sure that the roof, roofing tiles, folds etc. at the mounts are intact.

Walkway

Information

The function of the walkway is to be a gangway to the service location on roofs, as well as to constitute an anchoring for personal fall protection equipment. The walkways are not to be used as an escape platform or escape route and **must not** be used as a place to store building materials, for example. Walkways that satisfy the requirements set out in the applicable standard SS-EN 516:2006 are rated to withstand a point load of 1.5 kN. In Sweden, only walkways of Class 2 type B may be used, which means that they withstand the loads that may occur, including falls upon anchoring of personal fall protection. The walking surface shall be at least 350 mm wide with upturned edges (min 20 mm).

Guardrails (1 m high) can be installed on walkways and then serve as walking support and as fall protection. These can normally also constitute an anchoring of personal fall protection equipment. The guardrail shall be placed at the side of the walkway at a distance from the walking surface such that walking is not encumbered. A marker may be placed approx. 350 mm from the middle of the walkway. Guardrails placed at the roof foot side constitute sufficient fall protection if the entire walkway is located at least 1 m below the ridge.

The walkway can be supplemented with safety draglines, which allow one to move along the entire length of the walkway and remain anchored to the personal fall protection.

Inspection Instructions

- Check that the walkways and mounts on the roofs are correctly designed and that they are intact. Particularly check the tightening of the fold mounts according to the applicable installation instruction.
- In particular, check that the extensions between walkway sections are correctly done and that they are intact.
- Take note of any deformations/damages and deteriorations in the surface layer and rectify them in accordance with the general inspection instruction, see Page 3.
- If there are guardrails, make sure that their placement, mount in the walkway and that the tube's extensions are correctly done and that they are intact, as well as that the uppermost tube cannot rotate or slide sideways.
- Make sure that the roof, roofing tiles, folds etc. at the mounts are intact.

Rail at Access Hatch, Light Transmission

Information

Rails (0.5 m high) at the access hatch and around the light transmission etc. serve as support for ascent/decant to and from the roof, as well as preventing people from going onto roof surfaces that cannot withstand the weight of a person. Rails that satisfy the requirements in the applicable standard have a stability and energy absorption capacity that allows them to withstand the loads, including falls that may occur upon the anchoring of personal fall protection equipment.

Inspection Instructions

- Make sure that the rail is sufficiently steady in order to be used as a support when ascending.
- Check that the rails and mounts are correctly designed and that they are intact. Make sure in particular that the fold mounts are tightened according to the applicable installation instructions.
- Check that the tube's extensions are correctly designed and that they are intact.
- Take note of any deformations/damages and deteriorations in the surface layer and rectify them in accordance with the general inspection instruction, see Page 3.
- Make sure that there are rails around all areas that cannot withstand the personal loads.

Work Platforms, Guardrail

Information

Work platforms constitute standing surfaces while working with e.g., chimneys, ventilation facilities or other fixtures. Mounts in the chimney must not be designed with fasteners made of the chimney's material. A mounting must be done with a strap or similar device around the chimney, outside of the chimney's material.

The guardrail (1 m high) is intended as an aid when walking and working and a protection against falling, as well as serving as an anchoring point for personal fall protection equipment. The guardrails have a stability and energy absorption capacity that allow them to withstand the loads, including falls that may occur upon the anchoring personal fall protection equipment.

Inspection Instructions

- Make sure that the working platform's mounts in the roof or around the chimney etc. are intact.
- Also inspect the condition of the chimney so that no parts can come loose and injure people or jeopardise the durability of the working platform.
- Check to see that the walking surface is whole and in particular that extensions are correctly made and are intact.
- If there are guardrails, make sure that these are satisfactorily mounted to the platform and that the tube's extensions are correctly made and that they are intact, as well as that the uppermost tube cannot rotate or slide sideways.
- Take note of any deformations/damages and deteriorations in the surface layer and rectify them in accordance with the general inspection instruction, see Page 3.

Anchor Loop

Information

The function of the anchor loop is to form an anchor point for personal fall protection equipment when working on the roof. Anchor loops that satisfy the requirements in the applicable standard are rated to withstand a point load of at least 1.5 kN in all directions, and withstand the loads, including falls, that may occur upon the anchoring of personal protective equipment.

An extra anchor point must be placed in the corner of the roof 2 metres from the edge of the roof and roof foot in order to reduce any pendulum effects in the event of a fall.

In order to find the anchor loop more easily, e.g., while shovelling snow, it may be marked with a pennant.

Inspection Instructions

- Make sure that the placement offers a means of gaining access to the parts of the roof surface in question with personal fall protection equipment without posing serious risks of pendulum effects and diagonal loads.
- Check that the anchor loops and mounts on the roof material are correctly designed and that they are intact. Particularly check the torque according to the applicable installation instruction.
- Take note of any deformations/damages and deteriorations in the surface layer and rectify them in accordance with the general inspection instruction, see Page 3.
- Make sure that the roofing tar paper, roofing felt, seams etc. at the mounts are intact.

Snow Fence

Information

The function of the snow fence is to prevent snow from falling uncontrollably from roofs and to serve as an anchor point for personal fall protection equipment. A snow fence offers a means, given a large amount of snow, to remove the snow from the roof in a controlled manner. Snow fences that satisfy the requirements in the applicable standard are rated for a load of 5 kN/m and to withstand the loads, including falls that may occur upon the anchoring of a personal fall protection equipment. Where snow loads are greater than 5 kN/m (depending on the actual snow zone and the pitch and size of the roof), more snow fences or snow stoppers must be installed.

If there is a risk of an overload on the roof and/or snow fence, the snow must be removed from the roof. This is determined by weighing the quantity of snow on the roof (kg/m²), the roof pitch, roof size etc. and comparing them the load-bearing capacity of the roof and snow fence. The assessment when snow removal is to be done is made via the aforementioned information and by how much of the snow period remains. There should be a roof shovelling plan.

Inspection Instructions

- Make sure that the number and placement of the snow fences correspond to the relevant snow conditions, snow zone, the length of the roof pitch etc. Note in particular if there are short snow fences over the entranceways or the like. (N.B.! Short snow fences seldom withstand the snow loads in question, see the brochure on winter-safe roofs - PR0033).
- Make sure that the snow fence is of sufficient size/density - at least three tubes, sheet metal profile or grating. Supplementary devices, e.g., ice stoppers, may be needed at the lower edge of the snow fence against the roof in order to prevent ice and snow from passing through.
- Make sure that the area between the roof surface and the lower edge of the snow fence is not greater than 30 mm.
- Check that the snow fence and mounts on the roof are correctly made and that they are intact. Make sure in particular that the fold mounts are tightened according to the applicable installation instructions.
- Make sure that the extensions between the rail sections are done correctly and are intact, and that the uppermost tube cannot rotate or slide sideways.
- Take note of any deformations/damages and deteriorations in the surface layer and rectify them in accordance with the general inspection instruction, see Page 3.
- Make sure that the roof, roofing tiles, roofing tar paper, roofing felt, seams etc. at the mounts are intact.

Snow Stopper

Information

The snow stopper's function is to limit snow and ice from sliding on sloped roof surfaces. The snow stopper tubes and rake are rated for a load of 3 kN/m. The CWL grapple for tile-covered roofs is rated for 1 kN in the direction of the roof pitch. Snow stoppers are **not** intended or approved for the anchoring of personal fall protection equipment. A snow stopper does not replace a snow fence at roof breaks or roof feet.

If there is a risk of an overload on the roof and/or snow fence, the snow **must** be removed from the roof. This is determined by the density of snow on the roof (kg/m²), the roof pitch, roof size etc. and comparing them the

load-bearing capacity of the roof and snow fence. The assessment as to when snow removal is to be done is made via the aforementioned information and by how much of the snow period remains. There should be a roof shovelling plan.

Inspection Instructions

- Make sure that the number of stop stoppers or the combination with snow fences corresponds to the relevant snow conditions, snow zone, the length of the roof pitch etc.
- The snow stopper tube can be supplemented with ice stoppers in order to prevent ice and snow from passing.
- Check that the snow stoppers and their mounts on the roof are correct and that they are intact. Make sure in particular that the fold mounts are tightened according to the applicable installation instructions.
- Make sure that the extensions between the rail sections are done correctly and are intact, and that the uppermost tube cannot rotate or slide sideways.
- Take note of any deformations/damages and deteriorations in the surface layer and rectify them in accordance with the general inspection instruction, see Page 3.

Dragline / Rail System

Information

The function of the dragline/rail system is to form an anchor point for personal fall protection equipment when working on the roof. Such allows one to move along the length of the dragline/rail and be continuously anchored with personal fall protection equipment without needing to reconnect the safety line. The Swedish Work Environment Authority's directive on building and structural work (AFS1999:3 with the amended directive AFS2014:26) require that one be "constantly anchored" when present on a roof.

When a dragline or rail is used on a walkway or roof ladder, they are part of these product systems and satisfy the requirements set out in them, EN 516 - Walkways etc. Class 2 and EN 12951 - Permanently installed roof steps, Class 2 (Category 2). When draglines or rails are used in other contexts, for example at roof ridges or as a particular dragline system, they meet the selected requirements for anchoring devices in other relevant standards, for example, dynamic loads. A new European standard for permanently installed anchoring devices is in the process of being developed.

Inspection Instructions

- Make sure that the mounting of the roof safety such as the dragline or rail system has been installed correctly and is intact, and that the underlay is in good condition. The dragline system does not have to be rigidly stretched.
- Check that the safety system's mounts are correctly done and that they are intact. Make sure in particular that the fold mounts are tightened according to the applicable installation instructions.
- Make sure that the system does not have any damages than can affect the anchoring system's function and durability.
- Make sure that the runner to the dragline or rail can pass through the draglines/brackets without getting stuck.
- Make sure that the labelling and/or sign showing which system is installed, by whom and when, as well as write in that the inspection has been conducted.

Information Sign Roof Access

Information

Upon a new installation or in connection with an inspection by CW Lundberg roof safety, information signs according to Industry Standard - Roof Safety, shall be put up and filled in with information about the installer, installation date and inspections carried out. The sign provides information about approved permanent anchor devices for personal fall protection equipment. The information sign is to be placed visibly in connection with the access to the roof.

Inspection Instructions

- If there is a sign, check its legibility and improve it, if necessary. Add the new inspection data. You might want to document it with a camera.
- If there is no sign, put up a new one in accordance with the installation instruction and fill in the details.

ROOF SHOVELLING PLAN

Cadastral reference: _____
 Address: _____
 Postal address: _____
 Produced by: _____ Date: _____
 Company: _____ Telephone number: _____

Inventorying/preparation for efficient and safe work

Keys/code to the premises: _____
 Access to the roof: Access hatch with interior ladder Door from fan room/loft
 Façade with fall protection Other: _____
 Safety measures ground level: _____

Information on the roof

Low-pitch roof Saddle roof Curb roof Hipped roof Pentroof Arched roof
 Pitch: _____ degrees Roof covering material: _____
 Length of roof: _____ m Pitch length: _____ m Roof surface area: _____ m²
 House width: _____ m Access height: _____ m

Roof safety equipment/anchoring devices:

Walkway Ridge rail Roof ladder Guard rail
 Anchor loop Other: _____

Areas with particular risks:

Gutter valley Chimney Dormer window Lantern light Access hatch Ventilation hood
 Extension Other: _____

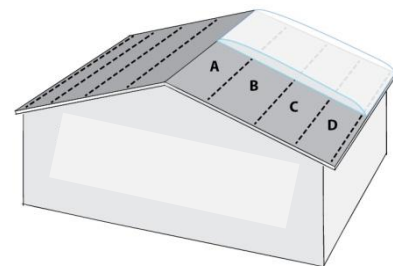
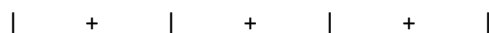
Snow quantity check

Measurement with tape measure Tube samples and weighing
 Snow pennant with adjustable marking:
 Other: _____

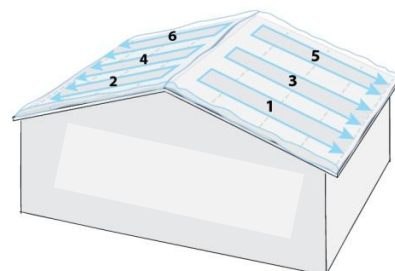
Inspection points: _____
 Max snow load: _____
 (snow zone) _____

Shovelling procedure

Each half of the roof is shovelled in parallel in according to the following procedure:



Measuring of snow quantity at various inspection points.



Shovelling procedure in order to prevent uneven roof load.

www.cwlundberg.com



**EXPERTS IN
ROOF SOLUTIONS**

CALCULATOR - CALCULATE YOUR ROOF →

On our web page, we have gathered all of our products, as well as installation instructions, films and the associated documentation in order to make it safe for you to be on the roof.

Use the Calculator - Calculate Material Consumption and Prices Directly on the Home Page.

CALCULATOR - CALCULATE YOUR ROOF →

The brochures and the latest documentation are available on our home page for downloading and printout; alternatively, you can contact us and have them e-mailed/sent to you.



CWL0058

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CWL0059



ROOF SAFETY MORA SWEDEN

• CW Lundberg Sp. z o.o. • ul. Dworska 1 • PL-05-503 Wola Gołkowska • Polska •
• +48 71 881 15 00 • www.cwlundberg.com • info@cwpl.com •

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