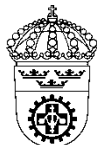


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## **Scaffolding**

**The Swedish Work Environment Authority's scaffolding regulations and general advice on the application of the regulations**

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# The Swedish Work Environment Authority's Code of Statutes



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The Swedish Work Environment Authority's  
scaffolding regulations and general advice;

adopted on XX XXXXX 201X.

AFS 201X:X

Published on xx  
xxxx 201X.

The Swedish Work Environment Authority lays down<sup>1</sup> the following by virtue of Article 18 of the Work Environment Ordinance (1977:1166) and Article 3 of the Accreditation and Conformity Assessment Ordinance (2011:811) and adopts the following general advice.

## Aim, scope, and definitions

### *Aim*

**Article 1** The aim of these regulations is to prevent cases of ill-health and accidents during work with scaffolding and weather protection.

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<sup>1</sup> See *both* Council Directive 89/655/EEC of 30 November 1989 concerning the minimum safety and health requirements for the use of work equipment by workers at work (OJ L 393, 30 December 1989, p. 13, Celex 31989L0655), as last amended by Council Directive 2001/45/EC (OJ L 195, 19 July 2001, p. 46, Celex 32001L0045),

*as well as* Council Directive 92/57/EEC of 24 June 1992 on the implementation of minimum safety and health requirements at temporary or mobile construction sites (eighth individual Directive within the meaning of Article 16(1) of Directive 89/391/EEC) (OJ L 245, 26 August 1992, p. 6, Celex 31992L0057).

Also see Directive 98/34/EC of the European Parliament and of the Council of 22 June 1998 laying down a procedure for the provision of information in the field of technical standards and regulations (OJ L 204, 21 July 1998, p. 37, Celex 31998L0034).

### ***Area of application***

**Article 2** These regulations govern the work of scaffolding and weather protection erection, work on scaffolding and under weather protection, and how scaffolding and weather protection is to be constructed.

The regulations apply to scaffolding that is used:

- as a workplace,
- as a means of access,
- as fall protection during work on a roof or other high level,
- as cover overhead,
- to bear weather protection.

The regulations do not apply to stages and stands, temporary structures for storage, or temporary structures at trade fairs, festivals, and the like.

The regulations do not apply to weather protection that is less than 3 m in height or which has a horizontal surface area of less than 6 m<sup>2</sup>.

However, the regulations always apply to weather protection that is put up on scaffolding or other temporary structures.

General advice: Some common scaffolding types to which the regulations apply include scaffolding, façade scaffolding, tube scaffolding, modular scaffolding, wooden scaffolding, mobile scaffolding, system scaffolding, aluminium scaffolding, frame scaffolding, and ladder scaffolds.

Certain structures are not covered by the regulations, even if they are built with scaffolding material. Exempted structures are those that do not meet the definition of the word scaffolding in Article 4. Props, propped structures, underpinned structures, sign towers, etc. are therefore not counted as scaffolding.

### ***To whom the regulations are directed***

**Article 3** These regulations shall be followed, in various parts, by those who

- are employers,
- control a worksite,
- manufacture, import, provide, or hire out scaffolding and weather protection,
- erect scaffolding and weather protection and thus install a technical device,
- are site OHS coordinators during the planning phase and the execution phase of building and civil engineering work, respectively,
- certify or type examine scaffolding.

Each main heading is followed by an indication of whom or what body/agency/entity is responsible for regulatory compliance.

The word 'employer' also refers to those who hire personnel and those who are self-employed, to the extent indicated in the general advice below.

The regulations also cover those who undergo training, with the exception of Articles 25, 47, and 53–57, which do not address organised school activities on school property.

The word 'worker' also includes those who are given the same status as workers under Chapter 1(3) of the Work Environment Act (1977:1160).

*General advice:* Self-employed persons are to follow these regulations in their entirety when erecting, using, or dismantling scaffolding in connection with building and civil engineering work. This follows from the Work Environment Act.

It also follows from said Act that when self-employed persons work at a joint worksite – where it does not involve building and civil engineering work – the whole of these regulations apply to them, with the exception of the Article 54 ergonomics rules.

In cases where a self-employed person works with scaffolding – where it does not involve building and civil engineering work or a joint worksite – the Article 48 rules on access delimitation and the Article 54 ergonomics rules do not apply.

## Definitions

**Article 4** In these regulations, the following words have these meanings.

*Coupler* A detachable device used to connect two tubes (also called a pipe joint).

*Prefabricated façade scaffolding* Prefabricated scaffolding primarily intended for use with façades.

*Prefabricated ladder scaffold* A prefabricated scaffold, with or without wheels, intended to be used independently and which has a maximum height of 2 metres to the working deck.

*Prefabricated mobile scaffolding* A prefabricated scaffold, with wheels, which is intended to be used independently.

*Prefabricated scaffolding* Scaffolding in which all or some parts are prefabricated with given dimensions and which has fixed connection points (also called system scaffolding).

scaffolding).

<i>Tube scaffolding</i>	Scaffolding in which the frame consists of tubes connected with detachable couplers (also called tube and coupler scaffold).
<i>Cover overhead</i>	An overhanging, sealed, and lined or sheathed construction on scaffolding that is intended to catch objects that fall from higher scaffolding bays.
<i>Scaffolding</i>	Temporarily erected or suspended device that consists of at least two components and which is intended as a worksite, means of access, cover overhead, or fall protection. Height from the ground or other underlying plane to a horizontal working deck or equivalent is at least 1.25 metres.
<i>Wooden scaffolding</i>	Scaffolding in which all load-bearing components are made of wood.
<i>Weather protection</i>	A temporary construction intended to cover or encapsulate an area where building or civil engineering work is taking place in order to protect workers and structures from the climate. Weather protection always includes a roof, but walls may also be included.

General advice: More definitions can be found in the standards to which the regulations refer.

Wrapped façade scaffolding is not considered weather protection, even if the wrapping is folded in towards the façade above the scaffolding.

There are often temporary buildings on construction sites, such as storage sheds, workshops, and personnel spaces. These buildings are not considered weather protection.

## **Product requirements for scaffolding and weather protection**

**Article 5** Articles 6–10, 12, 15–16, 18, 21, and 22 are directed at manufacturers, importers, and those who provide scaffolding, scaffolding



components, and weather protection components. They contain requirements that must be met when unused products are placed on the market or put up for sale.

Articles 6–9, 11, 12, 15, and 16 are also directed at those who provide scaffolding and weather protection, and the requirements must be met when the transfer of possession takes place.

Articles 6–9 are also directed at those who provide used products.

Articles 13–14 and 16–20 are directed, in whole or in part, at those who type examine scaffolding.

**Article 6** Prefabricated scaffolding, couplers, components for prefabricated scaffolding, and other scaffolding and weather protection components must provide sufficient safety during erection, use, and dismantling, especially regarding

- load-bearing capacity, strength, stability, and protection against deformations,
- fall protection, and
- ergonomics and manageability.

General advice: It is important that scaffolding and weather protection components are robust enough to withstand normal handling at worksites.

## **Material requirements**

**Article 7** Prefabricated scaffolding material, prefabricated scaffolding components, and other scaffolding and weather protection components must be of a quality suitable for their purposes.

The material must be protected against external influences to the extent necessary to prevent deterioration or reductions in load-bearing capacity.

Material that will be walked on may not be treated such that it becomes slippery.

Rimmed steel materials may not be used in scaffolding.

### General advice

Materials in accordance with the standards of the SS-EN 12811 series are usually acceptable.

Steel materials should be galvanized or painted in a manner that provides good corrosion protection.

**Article 8** Tube scaffolding tubes shall have material qualities and dimensions tailored to the pipe joints that are normally used.

The nominal material thickness of steel tubes shall be at least 3.2 mm and aluminium tubes at least 4.0 mm.

General advice: The pipes used for steel tube scaffolding in Sweden normally have the following characteristics:

- nominal outer diameter of 48.3 mm,
- nominal material thickness of 3.5 mm,
- lower tensile yield limit of 300 N/mm<sup>2</sup>, and
- elongation at failure A5 17 %.

**Article 9** Lumber for scaffold planking or other load-bearing components shall be of the structural timber strength class.

Finger jointed lumber may not be used in scaffolding.

Components that consist wholly or partly of wood may not be surface treated such that the material's structure is concealed.

General advice: Lumber for scaffolding decks or other primary load-bearing components should be at least class C24 (according to Swedish Standard SS-EN 338:2009 'Structural timber. Strength classes') or equivalent.

Guardrails are a scaffolding component and finger jointed lumber may therefore not be used in them.

Impregnation, glazing, and similar treatments do not normally hide the lumber's structure.

## **Type examination**

**Article 10** Prefabricated scaffolding, prefabricated scaffolding components, and couplers may be placed on the market or put up for sale only if they are covered by a valid type examination certificate.

The certificate shall be issued by a certification body within the European Economic Area (EEA) that has been accredited to perform type examinations of the types of products specified in Annex 1. The body shall be accredited in accordance with Regulation (EC) No 765/2008 of the European Parliament and of the Council of 9 July 2008 setting out the requirements for accreditation and market surveillance relating to the marketing of products and repealing Regulation (EEC) No 339/93<sup>2</sup>.

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<sup>2</sup> OJ L 218, 13 August 2008, p. 30 (Celex 32008R0765).

Those who place a product on the market or put a product up for sale in violation of the requirements of the first paragraph shall pay a penalty fine of SEK 2 000 for each component provided, though not exceeding SEK 100 000 for each occasion of sale (see Article 75).

General advice: Because scaffolding made by a user for his/her own use are neither placed on the market nor put up for sale, they need not be type examined.

In Sweden, the Swedish Board for Accreditation and Conformity Assessment (SWEDAC) issues accreditation certificates to certification bodies in accordance with the Accreditation and conformity assessment ordinance (2011:811).

**Article 11** Prefabricated scaffolding, prefabricated scaffolding components, and couplers may be made available only if they have been approved by a type examination.

General advice: The requirement means that they must have been type examined by an accredited body as per rules applicable at that time. However, the type examination certificate may be expired.

**Article 12** Type examination is not needed for either

- system scaffolding of which less than ten are made and where no more than 100 pieces of any single component are made, or
- couplers of which fewer than 100 pieces are made.

**Article 13** The type examination shall include an assessment by the certification body of whether the product meets the requirements of Annex 1.

**Article 14** A certification body that has examined a product and found it to meet the requirements of Annex 1 shall issue a type examination certificate in Swedish.

Annex 2 sets out what the certificate is to contain.

**Article 15** A type examination certificate is valid for all products that have safety properties which match those of the type examined sample.

General advice: Changed surface treatments are normally not of importance, from a safety perspective.

**Article 16** A type examination certificate is valid for a maximum of ten years from the date on which it was originally issued.

A type examination certificate may be supplemented or amended during the 10 year period, but that does not mean that the expiration date is pushed back.

**Article 17** The certification body that has type examined and approved a product shall verify conformity of the components with the type examined sample at least once per year. The verification shall be made by sampling.

The certification body shall require the manufacturer to immediately correct any deviation(s) found and the body shall perform a verification inspection, if necessary. The certification body shall review the decision on the type examination certificate if the manufacturer does not comply with the requirement.

The certification body shall issue an annual verification report.

General advice: The certification body should take samples from the manufacturing site(s) and verify that their safety properties match those of the type examined sample. Approximately five important and separate components should be tested annually. A less comprehensive verification can be performed on simpler products.

**Article 18** Manufacturers and importers of type examined products are to have access to the documents on which the type examination was based, including reports from the examination as per Article 17. These documents shall provide the following in Swedish:

- Descriptions of the product as a whole and its components
- Statements and reports on tests and calculations
- Assessments of the product
- Draft of instructions
- Reports from the examination as per Article 17.

General advice: The basis usually also includes the following documents, which may be in other EU languages:

- Drawings and material specifications
- Examination documentation
- Calculation and dimension documents

**Article 19** Upon request of a regulatory body, a certification body shall provide the documents on which the type examinations of individual products were based, including reports from the examination as per Article 17.

General advice: The Swedish Work Environment Authority is the regulatory body for these products.

**Article 20** The certification body that has type examined a product shall participate in coordination activities arranged by a regulatory body.

General advice: Consultation meetings are usually arranged once or twice a year.

## **Markings**

**Article 21** Type examined products shall be marked in accordance with Annex 1.

## **Instructions**

**Article 22** Type examined products are to have instructions in Swedish for erection, use, dismantling, and maintenance.

The instructions are to be drawn up as follows:

- For prefabricated façade scaffolding and components (where applicable) for prefabricated façade scaffolding: according to Swedish Standard SS-EN 12810-1:2004.
- For prefabricated mobile scaffolding and components (where applicable) for prefabricated mobile scaffolding: according to Swedish Standard SS-EN 1298:1996 'Mobile Access and Working Towers - Rules and Guidelines for the Preparation of an Instruction Manual'.
- For couplers: according to applicable Swedish Standards of SS-EN 74-1:2005, SS-EN 74-2:2008, or SS-EN 74-3:2007.
- For prefabricated ladder scaffolds and components for prefabricated ladder scaffolds: where applicable, according to Swedish Standard SS-EN 1298:1996.

They must also demonstrate how these operations are to be carried out such that a good working environment is achieved.

The instructions must accompany provided scaffolding.

General advice: It is important that it is clear how erection and dismantling is to be carried out so that fall risks are minimised, for example, where personal protective equipment is to be attached.

It is also important that the specific restrictions of use, such as maximum vertical or horizontal loads, are precisely specified in the instructions.

## Planning and layout of scaffolding and weather protection

**Article 23** Articles 24–44 are directed at those who erect or substantially modify a scaffold or weather protection.

Article 26 is also directed at site OHS coordinators (for both the planning and execution phases) in building and civil engineering work.

### **Planning**

**Article 24** The choice of scaffolding must always be that which contributes to a good working environment, both for those who erect the scaffolding and for those who use it. The following must be taken into account:

- The scaffolding components' dead load and manageability
- Fall protection during both erection and use
- Load-bearing capacity and stability
- Ergonomics of use
- The means of access' properties

General advice: It is important to choose scaffolding of the lightest material possible.

**Article 25** Before scaffolding erection begins, a plan must be drawn up which indicates how erection, use, and dismantling can be done safely. Any weather protection that is included in the structure shall also be covered by the plan. The plan shall be prepared by a person who has good scaffolding construction knowledge and experience.

The plan shall contain information on:

- The scaffolding or weather protection to be used
- How the scaffolding or weather protection is to be erected, used, and dismantled
- How those who erect or dismantle the scaffolding or weather protection will be protected against falls and musculoskeletal injuries
- How possible risks will be prevented

General advice: The plan's scope and level of detail depends on the complexity of the structures concerned.

Plans for scaffolding that is erected, used, and dismantled in a similar manner and in comparable environments can apply to numerous instances.

The Swedish Board of Occupational Safety and Health's regulations on building and civil engineering work require a work environment plan to be prepared and available before a worksite is established and that said plan shall be adjusted to the working conditions on an ongoing basis. It is advisable that the scaffolding documentation be inserted as an annex to the work environment plan.

### ***Supporting surface and placement***

**Article 26** When planning for scaffolding or weather protection, the supporting surface must be inspected to ensure that it can safely and securely support the loads that may arise. The same applies for façades and other structures to which scaffolding must be anchored. The scaffolding must be able to be safely erected and used at the location in question.

*General advice:* Above all, it is important to check whether the parts of a building or other structure, which are affected by the scaffolding's load, are of sufficient strength and stability.

It is particularly important to check the strength when anchoring to facing bricks.

### ***Scaffolding and weather protection design***

#### **Scaffolding**

**Article 27** Before scaffolding erection begins, it must be dimensioned with sufficient security against material failure, instability, and deformations that are significant for safety during erection, use, and dismantling. It is to be dimensioned for the most unfavourable combination of external loads that do not reasonably exclude each other. The external loads that one should normally take into account are the working deck load and wind load. One should take into account the weight of people, materials, and tools when estimating the loads imposed on a working deck.

Scaffolding shall be dimensioned according to Swedish Standard SS-EN 12811-1:2004 'Temporary works equipment - Part 1: Scaffolds - Performance requirements and general design' or according to any other document with equivalent safety standards.

The design shall be based on calculations and shall be documented in writing in specific design documents.

General advice: One should usually choose a load class from Swedish Standard SS-EN 12811-1:2004.

The dimensioning is usually performed by one of the following options:

1. Compliance with the standard design in the type examination certificate (for prefabricated scaffolding).
2. Compliance with the standard design in the scenario (for tube scaffolding).
3. Type examination certificate or scenarios and additional, simplified calculations for deviations from the designs indicated in the certificate or scenario.
4. Specific calculations for the individual case.

SP Technical Research Institute of Sweden has developed scenarios for a number of tube scaffolding designs. They are presented in the report 'Tube scaffolding - Evaluation of scenarios' (SP Research paper 2006:58).

Option 3 can only be used when there are data and instructions that support a type examination certificate (for prefabricated scaffolding) and a scenario (for tube scaffolding). These data and instructions are usually the permitted standard load. A greater scaffolding height combined with a shorter bay length or a narrower bay width would be an example of a moderate deviation.

Option 4 is usually applicable to wooden scaffolding.

It is especially important to take wind load into account when dimensioning wrapped scaffolding.

Scaffolding can be stabilised with an appropriate combination of anchoring, bracing, staying, and stabilising weight.

**Article 28** Components from other scaffolding that are to be used in prefabricated scaffolding must be specifically examined in order to demonstrate satisfactory safety. The examination must be documented in the specific design documents.

General advice: An applicable example of such is when components, which at first glance seem equivalent, are to be used in scaffolding other than that for which they are intended.

The specific examination usually consists of a combination of tests and calculations.

## **Weather protection**

**Article 29** Before erection of weather protection begins, it must be dimensioned with sufficient security against material failure, instability,



and deformations that are significant for safety. If the following loads may arise, the weather protection shall be dimensioned for them.

1. Snow load at least equivalent to the amount of snow that can fall over a period of seven days based on the 50-year value.
2. Wind load.
3. Personnel load equivalent to at least two point loads of 1.2 kN each. They need not be assumed to be located nearer than 2.0 m to each other.

One shall consider the most unfavourable load combinations.

The design is based on calculations and documented in writing in specific design documents.

General advice: A snow load of 0.6 kN/m<sup>2</sup> is usually enough to meet Point 1.

Weather protection can be dimensioned according to applicable standards if the load requirements are met.

The typical wind load value should be chosen according to Swedish Standard SS-EN 12811-1:2004.

## Combinations

**Article 30** When weather protection and scaffolding are combined, they are to be dimensioned as a composite unit.

General advice: It is particularly important that the scaffolding is dimensioned for all of the supporting forces and moments that the weather protection may entail.

## Design documents

**Article 31** Calculations and other documents referred to in Articles 27–29 must usually be in Swedish.

A design document should usually be divided into the following sections:

1. Description of the structure's location and layout.
2. Load assumptions and imperfections.
3. Summary and assessment of applicable load cases.
4. Calculation of the load cases that are considered to be included in the design.
5. Final assessment of the structure's safety.

General advice: The load assumptions usually indicate vertical and horizontal load values. Common imperfections are tilted spigots and eccentricities in connections.

The documents in Articles 27–29 and 31 may be inserted as an annex to the plan for erection, use, and dismantling that is required by Article 25.

Those who may need to consult the documents include employers, workers, and site OHS coordinators for the execution phase, purchasers, inspectors, etc.

### ***Layout of scaffolding and weather protection***

**Article 32** The scaffolding layout is to be based on the plan for erection, use, and dismantling as described in Article 25.

### **Fall protection and falling object protection**

**Article 33** Scaffolding must be equipped with guardrails where there is a risk of falling two metres or more. Where there is particular risk, there should be guardrails at lower fall heights as well.

The guardrail must be of sufficient strength and be securely fastened. It must be sufficiently high and consist of a toprail, midrail, and toeboard; or provide equivalent protection by other means.

The toeboard may be omitted from parts of the scaffolding that are neither used for work or as means of access. Toeboards are usually not needed in stairways, either.

The guardrail shall be mounted in connection with the scaffolding deck so that a hazardous gap does not arise between the deck and the guardrail.

If a weather protection roof must be walked upon, it shall be equipped with devices to protect against falling to lower levels.

General advice: A guardrail should be executed according to Swedish Standard SS-EN 12811-1:2004 and SS-EN 1004:2005. However, they may need to be higher depending on the risks.

Slits or openings between scaffolding decks and toeboards should be as small as possible.

The most common devices to protect against falls from weather protection roofs are guardrails or anchor points for personal protective equipment.

**Article 34** Scaffolding must have cover overhead if there is a particular risk of falling objects that can cause harm to persons. The cover shall be

sufficiently large, strong, and tight to catch falling materials and objects in a safe manner. It shall also be securely attached or propped up.

*General advice:* Examples of where cover overhead may be necessary include areas adjacent to stair towers, at other means of access, or at work positions directly adjacent to the scaffolding.

**Article 35** Scaffolding that is used to protect against falls from an abutting structure shall be strong enough and anchored such that it can be sure to safely catch any persons who may fall against it.

A guardrail shall normally be at least 1 m high, measured perpendicular from the working area surface.

*General advice:* Swedish Standard SS-EN 13374:2004 'Temporary edge protection systems - Product specification, test methods' is an example of how scaffolding guardrails can be executed with sufficient safety. A two-rail guardrail with a toeboard is sufficient on working decks tilted at 0-10 °, the rails need to be closer together at 10-30 °, and a net or other device that serves the same purpose is usually needed at more than 30 °.

**Article 36** In order to avoid the risk of persons falling to a lower level, and to avoid the risks of improper workloads, the distance between a scaffolding deck and a wall or other abutting structure shall be as small as practicable. The distance may normally not exceed 0.30 metres.

*General advice:* It is important to carefully plan the scaffolding placement, particularly with curved or irregular façades or other surfaces.

If it is not possible to erect scaffolding close enough to the façade, a decking unit can be installed or a guardrail can even be put up on the inside of the scaffolding.

## **Access**

**Article 37** There must be a sufficient number of suitable means of access to each scaffolding deck and each area of deck where work is to be carried out. There shall also be an appropriate transport route, where necessary. Scaffolding that consists of two or more bays lengthwise must be executed such that safe access is provided to each bay.

The means of access should usually consist of stairs or gangways. Stairs and gangways shall be of adequate width and have an appropriate slope. Gangways shall be at least 0.60 metres wide.

This section does not apply to means of access in mobile scaffolding or ladder scaffolds.

*General advice:* It is important that safe access is provided around corners, past balconies, etc.

A vertical or near-vertical ladder is usually unsuitable as a means of access.

Stairs should be designed according to Swedish Standard SS-EN 12811-1:2004.

Rules on means of access and connecting routes are also available in the regulations on building and civil engineering work.

**Article 38** Mobile scaffolding must have a means of access in the form of a leaning ladder, a step ladder, or a staircase according to Swedish Standard SS-EN 1004:2005, if the height to the working deck is greater than 2.5 metres.

Each level that can be walked upon must be fully planked if the means of access consists of a leaning ladder.

*General advice:* Building and civil engineering work usually requires a stairway for a means of access in mobile scaffolding.

**Article 39** There must be a safe and effective means of access to the roof of weather protection, if needed.

*General advice:* Access to the roof of weather protection may be needed for snow removal and repairs.

## **Scaffolding deck**

**Article 40** The levels and surfaces that must be used for work or as means of access shall be fully planked.

Scaffolding decks shall be installed in such a way that their components are not inadvertently dislodged from their positions.

*General advice:* The second paragraph means that planking components usually need to be mechanically secured to the scaffolding.

**Article 41** A scaffolding deck shall be as level as possible. The risk of tripping must be prevented if there are level differences.

General advice: In order to facilitate transports and reduce the risk of tripping, it is advisable to put a bent-over edge plate or a wedge-shaped block of wood at the plank ends if the planks overlap.

**Article 42** Both ends of overlapping planks shall extend beyond the frame far enough to minimise the risk of collapse.

At the end frame, the possibility to walk on projecting sections of planking, duckboards, or other deck components is to be prevented if they cannot be walked on with sufficient safety.

General advice: Planking should extend at least 0.15 metres beyond the frame.

**Article 43** All individual planks shall be connected on planked decks of façade scaffolding.

General advice: There are specific planking cross battens for such purposes.

## **Weather protection**

**Article 44** There shall be space so that work can be carried out under weather protection without cases of ill-health and accidents. The clearance height where workers need to be should normally not be less than 2.10 metres.

General advice: Tie-rods and the like may sometimes be necessary and may infringe somewhat on the clearance height.

## **Erection and dismantling of scaffolding and weather protection**

**Article 45** Articles 46–56 are directed at employers who erect, substantially modify, or dismantle scaffolding or weather protection.

Articles 48–49 are also directed at those who control a worksite.

Articles 55–56 are also directed at those who use scaffolding or weather protection.

Article 57 is directed at those who hire out scaffolding or weather protection.

## ***Management***

**Article 46** He/she who leads the work of erecting, making substantial modifications, and dismantling scaffolding or weather protection shall be competent and have sufficient knowledge and experience for such work. This person shall have theoretical knowledge at least equivalent to the knowledge required for the actual work.

Said person shall also ensure, if necessary, that instructions on the work also reach workers with cognitive disabilities.

## ***Knowledge and qualifications***

**Article 47** The employer shall ensure that those who erect, substantially modify, or dismantle scaffolding or weather protection have the knowledge for that work. They shall, at minimum, have received appropriate training or specific information for such work as specified in Annex 3. Annex 3 also indicates the duties to which each training course applies.

Employers are to ensure that those who have gained their knowledge through general training, specific training, or through other, more extensive training, can verify their knowledge with a training certificate that shows they satisfactorily completed the training.

The employer who allows a person to erect, make substantial modifications to, or dismantle scaffolding in violation of the second paragraph requirements — for each worker who is unable to produce training certificates — shall pay a penalty fine of SEK 4 000 when general training is required for the job, or SEK 20 000 when specific training is required for the job (see Article 75).

General advice: The three different training levels are minimum requirements. Longer training is often required for workers whose primary job it is to erect, modify, and dismantle scaffolding, such as training that leads to a professional qualification or certificate of professional competence as a scaffolder.

Workers should receive training from a certified training provider.

## ***Delimitation***

**Article 48** When scaffolding or weather protection is to be erected, modified, or dismantled and is not ready for use, they must be clearly delimited as to prevent access to them.

Moreover, if it is hazardous to enter the area around the scaffolding or weather protection, that area shall also be delimited. The hazard area shall be marked with the appropriate signage.

If this only applies to parts of the scaffolding or weather protection, corresponding delimitation and signage are to be made for these parts.

General advice: The Swedish Work Environment Authority has issued specific regulations on signs and signals.

**Article 49** When scaffolding or weather protection is erected at a particularly high-risk location, such as near water, a road, a street, a railway, crane tracks or next to a power plant, protection must be arranged against the specific risks that may arise.

General advice: Scaffolding located where there is traffic may need to be protected against impacts.

A special permit may sometimes be needed for scaffolding. Special safeguards may be needed, in the form of shut-offs or closures, to put up scaffolding.

## ***Inspection of components***

**Article 50** Material for scaffolding and weather protection shall be carefully examined before each erection. Material and components with safety-related defects may not be used.

Such defects include:

- damaged components,
- components with rust or other corrosion, and
- wood material or components with rot, warping, or cracks.

General advice: It is especially important to check that the standards and components for working decks are of sound condition.

## ***Supporting surface and placement***

**Article 51** Scaffolding and weather protection may only be erected if the supporting surface can take up the loads that may occur. If weather

protection is installed on scaffolding, one must make sure that the scaffolding can safely and securely take the loads from the weather protection.

Scaffolding may only be anchored to structures that can take up the loads that may arise.

Side-slipping and eccentric load transfer between the scaffolding and supporting surface must be prevented.

*General advice:* If there is uncertainty about the anchor points' load-bearing capacity, they may need to be pull tested.

It is important to be aware of the risk that mobile scaffolding can begin to slip, especially on sloping or slippery surfaces or if there is little friction between the wheels and the ground surface.

## **Fall protection**

**Article 52** When scaffolding or weather protection is erected or dismantled and the fall height is two metres or more, workers shall be protected against the risk of falling to a lower level.

**Article 53** First and foremost, one should choose scaffolding that can be mounted such that the guardrail, wholly or most of it, is already in place when one goes up to a higher level.

As a second choice, one should use a temporary railing system.

As a final choice, fall protection can be achieved by the worker's use of personal protective equipment.

*General advice:* It is possible to mount the guardrail from a lower level on several makes of prefabricated façade scaffolding.

It is important that the guardrails are set up as quickly as practically possible and are not removed until all work is completed and there is no longer any fall risk.

A temporary guardrail system is assembled at a lower level, pushed up to the next level, and then removed when the ordinary railing is set up.

If personal protective equipment is to be used, it is important that it is attached to spots that can take the forces that can occur when a person falls.

## **Ergonomics**

**Article 54** The employer must plan the work to ensure that those who erect or dismantle scaffolding or weather protection have the work equipment



necessary for the work to be performed in an ergonomically correct manner. For example, the employer must ensure that:

- Materials and components are transported to and placed as close to the installation location as possible.
- Machinery is used to raise material and components up onto the scaffolding as well as to lower them down from the scaffolding.
- The means of access are installed early so that they can be used by the personnel who assemble the scaffolding or weather protection.
- There is sufficient space on the scaffolding during erection.

*General advice:* It is especially important that the working deck components are easy to carry and handle.

It is important that there are transport routes to the installation location so that the material can be unloaded near it.

If an elevator is to be used, it should be installed as early as possible and then built upwards accordingly.

Space is usually sufficient if the working deck is at least 0.6 metres wide.

## ***Inspection***

**Article 55** When scaffolding or weather protection is completed, the party that performed the work shall also perform an inspection to ensure that it is properly built and well-functioning.

If the user of scaffolding or weather protection is a different legal person than the entity that built it, the user shall participate in the inspection, if possible.

*General advice:* The user has the same obligation as the erector to inspect the scaffolding or weather protection, in accordance with the regulations on the use of work equipment. It is therefore advisable to coordinate the inspection.

**Article 56** The party that performs the inspection shall ensure that the scaffolding or weather protection's execution is consistent with the documents that form the basis for the design (see Articles 27–29 and 31). The inspection is to be documented in a specific document.

*General advice:* It is advisable that the scaffolding or weather protection erector and the user both sign this document.

Documentation support may consist of photographs of the scaffolding, especially if it is large.

It is important to specifically check that:

- the scaffolding is properly jacked,
- the anchorings are whole and properly executed and that they are test pulled if there is uncertainty about their load-bearing capacity,
- the guardrails are in place where needed,
- the distance between the scaffolding decks and abutting structure is not too large,
- plank components are correctly mounted,
- the scaffolding can be safely accessed, and
- all components are secured against accidentally getting lodged out of their positions.

## ***Handing over***

**Article 57** When the party that erected scaffolding or weather protection hands them over, the following documents are also to be handed over:

1. the erection, use, and dismantling plan as per Article 25,
2. the design documents as per Articles 27–29 and 31,
3. the inspection documentation as per Articles 55–56,
4. information on snow removal, roof access, and fall protection from the weather protection,
5. information on how the weather protection is to be inspected,
6. specific instructions for the erection, use, dismantling, and maintenance of the weather protection, if there are such, and
7. the instructions for the erection, use, dismantling, and maintenance according to Article 22, if it involves prefabricated scaffolding.

General advice: It is important that the coordinating party for measures to protect against ill-health and accidents have access to the documents. In the case of building and civil engineering work, the site OHS coordinator for the execution phase should keep them available.

## **Use of scaffolding and weather protection**

**Article 58** Articles 59–74 are directed at employers, i.e. those who use scaffolding as a workplace, means of access, or as protection against falls from an abutting structure, or who use weather protection.

The last paragraphs of both Article 60 and Article 61 are also directed at site OHS coordinators for the execution phase of building and civil engineering work.

### ***Site survey and risk assessment***

**Article 59** Prior to starting work on scaffolding or beneath weather protection, the employer shall check the worksite conditions and assess the specific risks there.

The employer must also make sure that the chosen scaffolding is suitable for the job.

**Article 60** The employer shall make sure that the scaffolding or weather protection documentation under Article 57 is available and ensure that the documents under Article 57(1) and (3)–(7) are available at the worksite.

The employer shall ensure, if necessary, that information on the scaffolding or weather protection also reaches workers with cognitive disabilities.

Before use begins of scaffolding or weather protection that is to be used by several employers in building and civil engineering work, the employer must provide copies of the documents to the site OHS coordinator for the execution phase. The responsibility of controlling the documents' on-site availability rests with the site OHS coordinator.

General advice: The design documents under Article 57(2) can be extensive and therefore do not normally need to be available at the worksite.

The last paragraph means that the documents only need to be provided to the site OHS coordinator once, i.e. before the scaffolding or weather protection is put into use for the first time.

### ***Inspection***

**Article 61** The employer shall inspect scaffolding or weather protection both before they are put into use and also on an ongoing basis during the period in which the workers use them. If scaffolding or weather protection has deficiencies that are important from an OHS point of view, they may not be used until the deficiencies have been remedied.

The site OHS coordinator for the execution phase shall supervise the ongoing inspections of scaffolding or weather protection that is used by several employers in building and civil engineering work.

General advice: It is particularly important to inspect the following:

- jacking,
- anchoring,
- guardrails,
- scaffolding deck and planking,
- securing of components, especially working deck components,
- means of access, and
- weather protection roofs, including its fastening and the need for snow removal.

The documents specified in Article 60 may be helpful in the inspections. It is important to particularly inspect scaffolding that has been subject to high winds, other weather conditions that may have affected it, when it has been exposed to any other unforeseen event, or has stood unused for a long time.

### ***The worksites***

**Article 62** When scaffolding or weather protection is used, they must meet the requirements of Articles 24–44, 49, 51, and 55–57.

**Article 63** Free-standing ladders may not be used on the working decks of façade, mobile, or ladder scaffolds.

**Article 64** Scaffolding may not be used as an earth lead for electrical welding.

### ***Load-bearing capacity and stability***

**Article 65** The employer must provide the following information to those who work on scaffolding or beneath weather protection:

- permissible load on the scaffolding, and
- the designed load for the weather protection.

General advice: It is important that the scaffolding not be overloaded with construction and demolition materials, sandblasting sand, or the like.

If several companies use the scaffolding or weather protection, they should be informed of the permissible load with an unambiguous notice.

For weather protection, it normally concerns snow load.

**Article 66** Work on scaffolding may only be carried out on one working level at a time, unless the scaffolding is specifically designed for work on more than one level.

*General advice:* The assumptions that form the bases for type examination certificates (for prefabricated scaffolding) and scenarios (for tube scaffolding) only apply to work on one level at a time.

**Article 67** Heavy equipment and heavy machinery or the like may only be present on the scaffolding if it is designed for such. The same applies to machinery or other items that give rise to additional dynamic loads.

## **Ergonomics**

**Article 68** Scaffolding may only be used if there is enough space for the intended work, for transports, and to load material.

Work shall be possible with appropriate working postures and movements.

*General advice:* The following scaffolding width classes, according to Swedish Standard SS-EN 12811-1:2004, are usually applicable:

- Minimum W18 for jobs that include both stacking and carting (for example, bricklaying in the traditional Swedish method).
- Minimum W12 for jobs that include either stacking or the transport of material by means other than carting.
- W06 for other jobs.

W18 means a working deck width of at least 1.80 m, W12 at least 1.20 m, and so on.

## **Material loading and stacking**

**Article 69** Material loading and stacking on scaffolding must be carefully planned and specifically supervised. It may only be done if the scaffolding is specifically designed and adapted for such.

*General advice:* It is particularly important that loading bridges are designed for the loads for which they are intended.

**Article 70** Material loading and stacking with machinery should preferably be done by vertically lowering the material onto the scaffolding. Material

must always be set down gently in order to avoid subjecting the scaffolding to dynamic loads.

If the materials are loaded or unloaded horizontally, it must be done with methods that do not subject the scaffolding to horizontal forces.

Workers who are not engaged in loading or stacking may not remain on the scaffolding section where the loading or stacking is in progress.

*General advice:* Material loading and stacking with a telescopic forklift or similar device can only be done if the forks, or the like, can be drawn out horizontally in a manner that does not produce horizontal forces.

### **Specific requirements for mobile scaffolding use**

**Article 71** Mobile scaffolding is normally only to be used for quick jobs where the scaffolding needs to be moved frequently.

Only work that does not expose the scaffolding to any significant horizontal forces may be carried out.

*General advice:* The replacement of lamps, fixtures, hanging or taking down signs, and minor painting, electrical, ventilation, and sheet metal work are examples of such work.

Mobile scaffolding is unsuitable for major façade work, such as façade painting.

A prefabricated mobile scaffold is designed for a horizontal load of 300 N.

**Article 72** The wheels or rollers of mobile scaffolding must be locked when the scaffold is in use.

**Article 73** When mobile scaffolding is moved, no persons or material that can fall may be on it.

If mobile scaffolding has stabilisers, they may not be removed during movement.

*General advice:* It is important that mobile scaffolding is moved carefully so that it does not become unstable. When moving mobile scaffolding with stabilisers, the stabilisers may need to be lifted slightly.

### ***Specific requirements for ladder scaffold use***

**Article 74** Ladder scaffolding may normally only be used for simple jobs where the scaffolding needs to be moved frequently. They may only be used on flat and paved surfaces and only on horizontal surfaces if the legs cannot be adjusted for height.

Ladder scaffolds may only be used by one person at a time.

Only work that exposes the scaffolding to minor horizontal forces may be carried out.

*General advice:* If a surface is slightly sloped, one can sometimes jack up the scaffolding legs so that the working deck is made horizontal.

A ladder scaffold is usually designed for a horizontal load of 100 N.

### **Provisions on penalties and penalty fines**

**Article 75** The provisions in the first paragraph of Article 10 and the second paragraph of Article 47 are regulations under Chapter 4(2) of the Work Environment Act (1977:1160).

Those who violate these provisions shall pay a penalty fine according to Chapter 8(5)–(10) of the Work Environment Act. The size of the penalty fine is calculated according to the grounds specified in Articles 10 and 47 of these regulations.

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This statute enters into force on XX XXXXX 201X. It simultaneously abrogates the Swedish Board of Occupational Safety and Health's Scaffolding regulations (AFS 1990:12).

Type examinations for prefabricated scaffolding, prefabricated scaffolding components, and couplers under the Swedish Work Environment Authority's scaffolding regulations (AFS 1990:12) are also valid as type examinations pursuant to Article 10 of these regulations. The requirements in Articles 17–18 do not apply to these products.

Type approvals for prefabricated scaffolding, prefabricated scaffolding components, and couplers under the Swedish Work Environment Authority's scaffolding regulations (AFS 1990:12) or under older rules are not valid as type examinations.

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## **Annex 1 – Product requirements for prefabricated scaffolding and couplers**

### **Prefabricated façade scaffolding and independent components for prefabricated façade scaffolding**

Prefabricated façade scaffolding shall meet the technical requirements contained in the following Swedish Standards:

- (a) SS-EN 12810-1:2004 'Façade scaffolds made of prefabricated components - Part 1: Product specifications'
- (b) SS-EN 12811-1:2004 'Temporary works equipment - Part 1: Scaffolds - Performance requirements and general design'

The standards apply under this regulation, with the following clarifications:

- Clearance height between working decks: The height class should be H2 according to Chapter 4 in (a) and Chapter 5.3 in (b).
- Toeboard: The toeboard's height shall be 0.15 m or greater according to Chapter 5.5.4 in (a).
- Access to the working deck: The vertical access class must be ST or LS according to Chapter 4 in (a).
- Stairs: Both Class A and Class B according to Chapter 5.8.2 in (b) are admissible.
- Component installation: Bridging beam under Chapter 7.1(d) in (a), first indent, need not be included in the system.
- Load class: The load class shall be at least class 2 according to Chapter 6 in (b).
- Build height for load class: Minimum build height of 24 m applies to at least one configuration for each load class indicated in the type examination certificate according to Chapter 7.2.2 in (a).

### **Prefabricated mobile scaffolding and independent components for prefabricated mobile scaffolding**

Prefabricated mobile scaffolding must meet the technical requirements of Swedish Standard SS-EN 1004:2005 'Mobile access and working towers made of prefabricated elements - Materials, dimensions, design loads, safety and performance requirements'.

The standard applies under this regulation, with the following clarifications:

- Clearance height between working decks: The height class should be H2 according to Chapter 7.2.
- Toeboard: The toeboard's height shall be 0.15 m or greater according to Chapter 7.4.4.
- Access to the working deck: There should at least be class A, B, or C in accordance with Chapter 7.6.1, i.e. not just class D.
- Maximum distance between platforms: For access with ladders (classes C and D according to Chapter 7.6.3), the intermediate platforms must be fully covered with platform components.
- Loads: All loads indicated in Chapter 8.1 shall be presumed to be characteristic static loads.

In addition, the design of scaffolding as a whole may not presume the friction coefficient between the stabilisers or outriggers and surface to be greater than 0.2.

#### **Prefabricated ladder scaffolds**

Ladder scaffolds shall meet the following requirements:

- The load-bearing capacity shall be adequate by having a load class equivalent to at least class 2 according to SS-EN 1004:2005 'Mobile access and working towers made of prefabricated elements - Materials, dimensions, design loads, safety and performance requirements'.
- Stability should be adequate with a safety margin against tipping of at least 1.2 with the following loads:
  - Tipping horizontal load of 100 N on the working deck in the most unfavourable direction.
  - Stabilising vertical load of 750 N 0.100 m from the platform's side.
  - The above loads are to be placed in the most unfavourable way.
  - The scaffolding should be whole, but without railing, and any wheels must be placed in the most unfavourable position.
- All primary components for prefabricated ladder scaffolds are to be marked to indicate to which product the component belongs, the manufacturer, and the year of manufacture.

One should be able to get up and down safely from the scaffold platform.

#### **Couplers**

Couplers shall meet the requirements of the following Swedish Standards:

- (c) SS-EN 74-1:2005 'Scaffolding - Couplers, spigot pins and baseplates for use in falsework and scaffolds - Part 1: Couplers for tubes - Requirements and test procedures'.

- (d) SS-EN 74-2:2008 'Scaffolding - Couplers, spigot pins and baseplates for use in falsework and scaffolds - Part 2: Special couplers - Requirements and test procedures'.
- (e) SS-EN 74-3:2007 'Scaffolding - Couplers, spigot pins and baseplates for use in falsework and scaffolds - Part 3: Plain base plates and spigot pins - Requirements and test procedures'.

The standard applies under this regulation, with the following clarifications:

- Couplings - mode of operation: All couplers should be screw couplers (not wedge couplers) according to Chapter 3 in (c) and Chapter 3 in (d).
- Coupler classes: All couplers shall be class B or BB according to Chapter 4.2.1 in (c) and Chapter 5 in (d).
- Joint couplers: Couplers for axial tube joints should be of type SF according to Ch. 4.1 in (c); not snap pins according to Ch. 3 in (e) or expanded pins.

General advice: It is important that the marking is clear even after the component has been surface treated.

## Annex 2 – Type examination certificate

All type examination certificates are to contain the following information:

- Name and address of the manufacturer and at least one distributor.
- Type designation of the product.
- Description of the product and all its parts.
- Summarized information about the components' materials.
- Markings.
- Reference to instructions for erection, use, dismantling, and maintenance.
- Information on how the annual inspection under Article 17 shall be conducted.

Type examination certificates for prefabricated scaffolding shall also include the following information:

- Description of the product's different standard designs including dimensions, load classes, and build heights.
- Means of access.
- Where personal protective equipment can be attached, if applicable.
- Components that can be used with the scaffolding but which are not provided by the manufacturer (system-free components), if applicable.

Type examination certificates for individual components for prefabricated scaffolding shall also include the following information:

- The scaffolds in which the component can be used.
- Permissible loads or equivalent for the component.
- Bearing pressure that the component can transfer to the scaffolding.

Type examination certificates for prefabricated scaffolding can also contain information and instructions for calculating the load-bearing capacity with specified deviations from the standard designs.

General advice: Information and instructions under the last paragraph usually consist of an indication of the permitted spigot load.

## **Annex 3 – Training**

### ***Training levels***

The following training levels are normally used:

- Specific information.
- General training.
- Specific training.

### ***Contents of the training***

#### **1 Mandatory elements for all levels of training**

***All information and training must include the following elements:***

- Understanding of the plans for the erection, dismantling, or modification of the scaffolding in question.
- Safety during the erection, dismantling, or modification of the scaffolding in question.
- Measures to prevent the fall risk of persons or objects.
- Precautions when weather conditions change in ways that adversely affect the safety of the scaffolding in question.
- Conditions regarding permissible loads.
- All other risks which the abovementioned work with erection, dismantling, or modification may entail.

#### **2 Additional elements for the various levels of training**

***In addition to Point 1, specific information shall include:***

- Orientation of which scaffolding rules apply in Sweden.
- Review of type examination certificates and installation instructions for the scaffolding that is planned to be used.

This information applies to those who, to a limited extent, perform work with scaffolding with a maximum height of 2 m to the working deck and where the design is shown in general assembly instructions.

***In addition to Point 1, general training shall include:***

- Orientation of scaffolding rules in Sweden.
- Review of different types and makes of prefabricated scaffolding.
- Methods to protect oneself from falls during the erection and dismantling of scaffolding.
- Methods for up-and-down transports and lifting scaffolding equipment.
- Anchoring of scaffolding.

This training applies to those who perform work with scaffolding with a maximum height of 9 m (four plank platform heights) to the working deck and where the design is shown in general assembly instructions.

***In addition to Point 1, specific training shall include:***

- A thorough review of scaffolding rules in Sweden.
- General principles for the erection of tube and coupler scaffolding.
- Review of different types and makes of prefabricated scaffolding.
- How scaffolding can be used in ways other than as shown in the instructions.
- Methods to protect oneself from falls during the erection and dismantling of scaffolding.
- Methods for up-and-down transports and lifting scaffolding equipment.
- Anchoring of scaffolding.
- Wrapping of scaffolding.
- Scaffolding design.
- Special scaffolding structures.
- Weather protection.

This training applies to those who perform work with higher or more complex scaffolding than those mentioned in Points 1 and 2.

General advice: Appropriate length of each type of training is as follows:

- 2–4 hours for specific information,
- 16 hours for general training, and
- 80 hours for specific training.