

# Scaffolding

**Provisions of the Swedish Work Environment Authority  
on Scaffolding, together with General Recommendations  
on the implementation of the Provisions**

## **Translation**

In the event of disagreement concerning the interpretation and content of this text, the printed Swedish version shall have priority.

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# The Swedish Work Environment Authority's Statute Book



Provisions of the Swedish Work Environment Authority on Scaffolding, together with General Recommendations on the implementation of the Provisions

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

## Purpose, scope and definitions

### **Purpose**

**Section 1** The purpose of these provisions is to prevent cases of ill-health and accidents during work with scaffolding and encapsulation constructions.

<sup>1</sup> See *both* European Parliament and Council Directive 2009/104/EC of 16 September 2009 concerning the minimum safety and health requirements for the use of work equipment by workers at work (second individual Directive within the meaning of Article 16(1) of Directive 89/391/EEC) (EUT L 260, 3.10.2009, p. 5, Celex 32009L0104),

*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).

See also European Parliament and Council Directive 98/34/EC of 22 June 1998 laying down a procedure for the provision of information in the field of technical standards and regulations (OJ L 204, 31 July 1998, p. 37, Celex 31998L0034).

## **Scope**

**Section 2** These stipulations govern the work of scaffolding and encapsulation construction erection, work on scaffolding and under encapsulation constructions, which product requirements are applicable to scaffolding and encapsulation constructions and how these are to be designed.

The stipulations 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 a protection fan, or
- to bear encapsulation constructions.

They do not apply to temporary structures for storage, or temporary structures at trade fairs, festivals and the like. Nor do the stipulations apply to stages and grandstands.

The stipulations do not apply to encapsulation constructions that are less than 3 m in height or which has a horizontal surface area of less than 6 m<sup>2</sup>. However, the stipulations always apply to encapsulation constructions that are put up on scaffolding or other temporary structures.

General recommendations: Some common scaffolding types to which the stipulations apply include scaffolding, façade scaffolding, tube and coupler scaffolding, modular scaffolding, wooden scaffolding, mobile access tower, system scaffolding, aluminium scaffolding, frame scaffolding, bracket scaffolding, eaves scaffolding and room scaffolding.

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

Other provisions in the Swedish Work Environment Authority's Statute Book are partly applicable to temporary structures such as stages, grandstands and similar structures, such as the provisions on protection from injury due to falls, the provisions on protection against injury due to falling objects, the provisions on ergonomics, the provisions on use of work equipment, the provisions on use of personal protective equipment and the provisions on systematic work environment management.

## **To whom the stipulations are directed**

**Section 3** These stipulations shall be followed, in various parts, by those who

- are employers,

- control a worksite,
- manufacture, import, deliver or provide scaffolding and encapsulation constructions,
- erect scaffolding and encapsulation constructions and thus install a technical device,
- are site building work environment 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 who is responsible for regulatory compliance.

The word 'employer' is equated to those who hire personnel.

The provisions are not applicable to the Swedish Armed Forces during field exercises and training prior to deployment.

The requirements in Sections 25, 47, 53 and 55-57 are not applicable in the case of teaching which takes place on school premises or any other site which is arranged specifically for teaching.

*General recommendations:* Self-employed persons are to follow these stipulations 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 the Work Environment 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 stipulations apply to them, with the exception of the ergonomics stipulations in Sections 54 and 68.

It also follows from the Work Environment Act that when self-employed persons work with scaffolding – where this does not involve building and civil engineering work or a joint worksite – these stipulations in their entirety apply to them, with the exception of the stipulations on access delimitation in Section 48 and the ergonomics stipulations in Sections 54 and 68.

## **Definitions**

**Section 4** In these stipulations, the following words have these meanings.

<i>Working deck</i>	A horizontal surface on a scaffold, consisting of working deck components which may be stepped on and loaded. A working deck is often intended
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	for work or as an access route but does not necessarily have to be so.
<i>Component</i>	An individual part of a scaffold or encapsulation construction which cannot operate independently. A component may be prefabricated but does not necessarily have to be so.
<i>Coupler</i>	A detachable technical device used to connect two tubes where at least one of the tubes has a nominal outer diameter of approx. 48.3 mm (also called a pipe joint).
<i>Prefabricated façade scaffolding</i>	A prefabricated scaffold without wheels, primarily intended for use with façades.
<i>Prefabricated room scaffolding</i>	A prefabricated scaffold, with or without wheels, intended to be used independently and which has a maximum height of 1.25 to 2 metres to the working deck.
<i>Prefabricated mobile access tower</i>	A prefabricated scaffold with wheels, intended to be used independently and which has a maximum height of 2.0 to 12.0 metres to the working deck.
<i>Prefabricated scaffolding</i>	Scaffolding in which all or some parts are prefabricated with given dimensions and which has fixed connection points (also called system scaffolding).
<i>Product</i>	A prefabricated scaffold, a coupler or a prefabricated component for a prefabricated scaffold.
<i>Tube scaffolding</i>	Scaffolding in which the frame consists of tubes connected with detachable couplers (also called tube and coupler scaffold).
<i>Protection fan</i>	A sealed and lined or sheathed construction on scaffolding that is intended to catch objects that fall from higher parts of the scaffolding. Protection fans are often overhanging, but they may also be located inside the scaffold.

<i>Scaffolding</i>	A technical device which is temporarily erected or suspended that consists of at least two components and which is intended as a worksite, means of access, protection fan or fall protection when working on roofs or otherwise at height. Height from the ground or other underlying plane to a horizontal working deck or equivalent is at least 1.25 metres.
<i>Provide on the market</i>	Every delivery of a product for distribution, consumption or use on the community market in connection with commercial operations, for payment or free of charge.
<i>Wooden scaffolding</i>	Scaffolding in which all load-bearing components are made of wood.
<i>Type approval</i>	An activity in which the then National Swedish Board of Occupational Safety and Health reviewed a product and found that it met the requirements of applicable stipulations and issued a type approval certificate.
<i>Type examination</i>	An activity in which an accredited body reviewed a product and found that it met the requirements of applicable stipulations and issued a type examination certificate.
<i>Encapsulation construction</i>	A temporary structure 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. Encapsulation constructions always includes a roof, but walls may also be included.

*General recommendations:* More terms are explained in the standards to which the provisions refer.

Sheeted façade scaffolding is not considered encapsulation constructions, even if the sheeting 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 encapsulation constructions.

## **Product requirements for scaffolding and encapsulation constructions**

**Section 5** Sections 6–10, 12, 15–16, 18, 21 and 22 are directed at manufacturers, importers, and those who deliver scaffolding, scaffolding components, and encapsulation construction components. They contain requirements that must be met when unused products are provided on the market or put up for sale.

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

Sections 6–10 are also directed at those who deliver used products.

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

**Section 6** Prefabricated scaffolding, couplers and other scaffolding and encapsulation construction 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 recommendations: It is important that scaffolding and encapsulation construction components are robust enough to withstand normal handling at worksites.

## **Material requirements**

**Section 7** Prefabricated scaffolding, couplers and other scaffolding and encapsulation construction 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 in load-bearing capacity.

Components that will be stepped on may not be treated such that it becomes slippery.

Rimming steel materials may not be used in scaffolding.

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

Steel materials should be galvanised, painted or treated in a manner that provides good corrosion protection.

**Section 8** Tube scaffolding tubes shall have material qualities and dimensions suitable for the couplers 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 recommendations: The tubes 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 at least 17 %.

**Section 9** Timber for scaffold boards or other load-bearing components made of wood shall be made of structural timber.

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

General recommendations: Timber 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.

Finger jointed timber should not be used in scaffold boards.

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

## **Type examination**

**Section 10** Prefabricated scaffolding, prefabricated scaffolding components, and couplers may be provided on the market or put up for sale only if they are covered by a valid type examination certificate and the examination pursuant to Section 17 has been completed.

The type examination certificate for a product pursuant to the first paragraph shall be issued by a certification body within the European Economic Area (EEA) that has been accredited to perform type examinations of the rel-

evant type of products. 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>

Used prefabricated scaffolds, components for prefabricated scaffolds and couplers may be transferred only if they are covered by:

- a valid type examination certificate,
- a type examination certificate which is no longer valid for new delivery, or
- a type approval pursuant to older stipulations.

Those who provide a product on the market without following the requirements of the first and second paragraph shall pay a sanction charge of SEK 2 000 for each component supplied, though not exceeding SEK 100 000 for each delivery occasion (see Section 75).

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

**Section 11** Prefabricated scaffolding, prefabricated scaffolding components, and couplers may be provided only if they have been approved by type examination.

General recommendations: The requirement means that they must have been type examined by an accredited body as per stipulations applicable at that time. However, the type examination certificate may be expired. The requirement also means that the products which were previously type approved by the then National Swedish Board of Occupational Safety and Health can no longer be provided unless they have been type examined at a later date.

**Section 12** Type examination is not needed for

- prefabricated scaffolding of which less than ten are made and where no more than 100 pieces of any single component are made,
- couplers of which fewer than 100 pieces are made, or
- duckboards implemented pursuant to Annex 4.

However, the requirements in Annex 1 are also applicable to these products.

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<sup>2</sup> EUT L 218, 13.8.2008, p. 30 (Celex 32008R0765).

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

**Section 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.

**Section 15** A type examination certificate is valid for all products which have the same design as the type examined sample and which match this from a safety perspective.

*General recommendations:* Changed surface treatments are normally not of importance, from a safety perspective, while changing profiles, for example, is of importance from a safety perspective.

**Section 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 validity period will be extended.

**Section 17** A certification body shall verify conformity of the product with the type examined sample at least once per year. The verification shall be made by sampling. The results of the examination shall be documented in a report.

The examination shall be performed by the certification body which type examined the product. If this certification body has ceased operations, another certification body may carry out the examination.

The certification body shall require the manufacturer to immediately correct any deviation found. The certification body shall perform a verification inspection, if necessary. The certification body shall withdraw the type examination certificate if the manufacturer does not comply with the requirement.

*General recommendations:* The certification body should take samples from the manufacturing site or sites, or from the supplier's stocks, and verify that their safety properties match those of the type examined sample. At least five important, separate components from the product should be

tested. A verification of fewer components can be performed on simpler products.

**Section 18** Manufacturers, importers and assigners 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 Section 17. These documents shall provide the following in Swedish or English:

- Descriptions of the product as a whole and its components,
- Statements and reports on tests and calculations,
- Assessments of the product,
- Draft of instructions for erection, use, dismantling and maintenance, and
- Reports from the examination as per Section 17.

**Section 19** Upon request of a regulatory body, a certification body shall provide the documents which formed a basis for the type examinations of individual products, including reports from the examination as per Section 17.

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

**Section 20** The certification body that has type examined a product shall, if so required, participate in coordination activities arranged by a regulatory body.

General recommendations: Consultation meetings are a type of coordination activity and are usually arranged once or twice a year.

## **Markings**

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

## **Instructions**

**Section 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 access towers and components (where applicable) for prefabricated mobile access towers: according to Swedish Standard SS-EN 1298:1998 '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 room scaffolds and components for prefabricated room scaffolds: where applicable, according to Swedish Standard SS-EN 1298:1998.

They must also demonstrate how erection, use, dismantling and maintenance are to be performed.

The instructions must accompany provided scaffolding.

*General recommendations:* It is important that it is clear how erection, modification and dismantling are to be carried out so that fall risks are minimised, for example, where personal protective equipment is to be anchored (where applicable).

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 encapsulation constructions

**Section 23** Sections 24–44 are directed at those who erect or significantly modify scaffolds or encapsulation constructions.

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

### **Planning**

**Section 24** The choice of scaffolding must always be a scaffold 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' weight and manageability
- Fall protection during erection, dismantling and use
- Load-bearing capacity and stability
- Ergonomics at use, and
- The means of access' quality.

General recommendations: It is important to choose scaffolding which consists of components which are as light as possible.

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

The plan shall contain information on:

- The scaffolding or encapsulation construction to be used,
- How the scaffolding or encapsulation construction is to be erected, used and dismantled,
- How those who erect or dismantle the scaffolding or encapsulation construction will be protected against falls and musculoskeletal injuries, and
- How any other possible risks are to be prevented.

General recommendations: The plan's scope and level of detail depend on the complexity of the scaffolding structures concerned.

Plans for scaffolding that is erected, used and dismantled in a similar manner and in comparable environments can apply to several occasions of use.

The provisions on building and civil engineering work in the Swedish Work Environment Authority's Code of Statutes 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***

**Section 26** When planning for scaffolding or encapsulation constructions, 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 recommendations: 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.

## ***Layout of scaffolding and encapsulation constructions***

**Section 27** The layout of a scaffold is to be based on the plan for erection, use and dismantling as described in Section 25.

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

**Section 28** 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 principal guardrail, intermediate guardrail 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 stairway flights, either. In mobile access towers, toeboards are only needed on the working deck.

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

If an encapsulation construction roof need to be walked upon, it shall be equipped with technical devices to protect against falling to lower levels.

General recommendations: An example of a particular risk when a guardrail may be needed in the case of a lower fall height is when a scaffold is erected next to water or liquid-filled containers, tanks, etc.

A guardrail should be executed according to Swedish Standard SS-EN 12811-1:2004 or SS-EN 1004:2005 respectively, where an absolute minimum height of 950 mm is specified. However, a guardrail may need to be higher depending on the risks.

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

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



**Section 29** Scaffolding must have protection fans 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 recommendations: Examples of where protection fans may be necessary include areas adjacent to stairway towers, at other means of access, or at work positions directly adjacent to the scaffolding.

A protection fan which is designed pursuant to a proposal for Swedish standard FprEN 12811-4:2013 is usually sufficiently safe.

**Section 30** 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 1.00 m high, measured perpendicular from the working area surface.

General recommendations: The roof of a building is an example of an abutting structure.

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 the working surface of the abutting structure inclined at 0–10 °, at an inclination at 10–30 ° the rails need to be closer together, and at an inclination more than 30 ° a net or other device that serves the same purpose is usually needed.

**Section 31** In order to avoid 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 recommendations: It is important to carefully plan the scaffolding placement, particularly at curved or irregular façades or other surfaces.

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

## Access

**Section 32** There must be a sufficient number of suitable means of access to each working deck and each area of deck where work is to be carried out. There shall be sufficient numbers of these in respect of the work to be performed, and they shall be designed in a manner which is appropriate for the work. 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 must be ergonomically designed and should usually consist of stairways or ramps. Stairways and ramps shall be of adequate width and have an appropriate slope. Ramps shall be at least 0.60 metres wide.

This section does not apply to means of access in mobile access towers or room scaffolds.

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

In long scaffolding structures, where several means of access are needed, the distance between them should not exceed 25 metres.

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

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

Stipulations on means of access and communication routes are also available in the provisions on building and civil engineering work in the Swedish Work Environment Authority's Code of Statutes.

**Section 33** A mobile access tower must have a means of access in the form of an inclined ladder, a stairladder, or a stairway 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 covered with working deck components if the means of access consists of an inclined ladder.

General recommendations: Building and civil engineering work usually requires a stairway for a means of access in mobile access towers.

**Section 34** There must be a safe means of access to the roof of an encapsulation construction, if needed.

General recommendations: Access to the roof of encapsulation constructions may be needed for snow removal and repairs.

## **Working deck**

**Section 35** The levels and surfaces that need to be used for work or as means of access shall be fully covered with working deck components.

The working deck shall be installed in such a way that its parts are not inadvertently dislodged from their positions.

General recommendations: The second paragraph means that the working deck components usually need to be mechanically secured to the scaffolding. However, this is not usually the case for scaffold boards connected with planking cross bars other than in the end bays.

**Section 36** A working deck shall be as level as possible. The risk of tripping must be prevented if there are level differences.

General recommendations: 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 scaffold board ends if the scaffold boards overlap.

**Section 37** Both ends of overlapping scaffold boards shall extend beyond the frame far enough to minimise the risk of collapse.

At the end supports, the possibility to walk on extending sections of scaffold boards, duckboards, or other working deck components is to be prevented if they cannot be walked on with sufficient safety.

General recommendations: Scaffold boards should extend at least 0.15 metres beyond the frame.

**Section 38** All individual scaffold boards shall be connected on a working deck made of scaffold boards on façade scaffolding.

General recommendations: There are specific planking cross bars for such purposes.

## Encapsulation constructions

**Section 39** There shall be space so that work can be carried out under encapsulation constructions without cases of ill-health and accidents. The clearance height where workers need to be shall normally not be less than 2.10 metres.

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

## ***Scaffolding and encapsulation construction design***

### **Scaffolding**

**Section 40** Before scaffolding erection begins, it must be designed 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 shall normally take into account are the working deck load and wind load. One shall 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 an equivalent level of safety.

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

*General recommendations:* 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 type configurations (for tube scaffolding).
3. Type examination certificate or type configurations and additional, simplified calculations for deviations from the designs indicated in the certificate or type configuration.
4. Specific calculations for the individual case.

SP Technical Research Institute of Sweden has developed type configurations for a number of tube scaffolding designs. They are presented in the report 'Tube scaffolding - Evaluation of type configurations (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 type configuration (for tube scaffolding). These data and instructions are usually a 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.

It is especially important to take wind load into account if scaffolding is to be sheeted.

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

**Section 41** Components from other prefabricated scaffolding systems that are to be used in a single scaffold must be specifically examined in order to demonstrate satisfactory safety. The examination must be documented in the specific design documents.

*General recommendations:* 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.

## Encapsulation constructions

**Section 42** Before erection of an encapsulation construction 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 encapsulation construction 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 shall be based on calculations and documented in writing in specific design documents.

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

Encapsulation constructions can be dimensioned according to applicable standards if the load requirements are met.

Typical wind load values should be chosen according to Swedish Standard SS-EN 12811-1:2004.

## Combinations

**Section 43** When encapsulation constructions and scaffolding are combined, they are to be dimensioned as a composite unit.

General recommendations: It is particularly important that the scaffolding is dimensioned for all of the supporting forces and moments that the encapsulation construction may entail.

## Design documents

**Section 44** Calculations and other documents referred to in Sections 40–42 must normally be in Swedish.

A design document should normally 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 the most unfavourable for the design.
5. Final assessment of the structure's safety.

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

The documents in Sections 40–42 and 44 may be inserted as an annex to the plan for erection, use, and dismantling that is required by Section 25.

Those who may need to consult the documents include employers, employees, and site building work environment coordinators for the execution phase, purchasers, inspectors, etc.

International calculation programmes are often used in the case of calculations in individual cases pursuant to alternative 4 in the General recommendations for Section 40. Printouts, etc. are often in other languages

and do not need to be in Swedish if the results are explained in the other documents.

## **Erection and dismantling of scaffolding and encapsulation constructions**

**Section 45** Sections 46–56 are directed at employers who erect, significantly modify, or dismantle scaffolding or encapsulation constructions.

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

Sections 55–56 are also directed at those who use scaffolding or encapsulation constructions.

Section 57 is directed at those who provide scaffolding or encapsulation constructions.

### ***Management***

**Section 46** The person who leads the work of erecting, making significant modifications, and dismantling scaffolding or encapsulation constructions 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.

The person who leads the work shall have access to the plan for erection, use and dismantling as required pursuant to Section 25, and ensure that the employees performing the work also have access to it.

### ***Knowledge and qualifications***

**Section 47** The employer shall ensure that those who erect, significantly modify or dismantle scaffolding or encapsulation constructions have the knowledge for that work.

Employees shall, at minimum, have received specific information or appropriate training as specified in Annex 3. Annex 3 also indicates the duties to which each training course applies.

Documentation shall exist, in accordance with Annex 3, which demonstrates that the person who erects, significantly modifies or dismantles scaffolding or encapsulation constructions has completed training with approved results. Special criteria are applicable to those who are undergoing apprenticeship training (see Annex 3).

Any employer failing to meet the requirements in the second and third paragraphs shall pay a sanction charge for every employee for whom documentation on training cannot be presented (see Section 75). The size of this

sanction charge is determined by which training is required for the task pursuant to the following list.

<b><u>Training</u></b>	<b><u>Sanction charge</u></b>
Specific information on mobile scaffolding	SEK 5 000
General training on scaffolding	SEK 10 000
Specific training on scaffolding	SEK 20 000
Supplementary training on encapsulation constructions	SEK 10 000
Supplementary training on specific scaffolding structures	SEK 10 000

If supplementary training is required for the task, general or specific training on scaffolds is also required. If no proof of training can be presented, the sanction charge shall be paid for both infringements.

*General recommendations:* The 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.

Employees should have received training from a certified training provider whose management system is certified by an accredited certification body.

## ***Delimitation***

**Section 48** When scaffolding or encapsulation constructions are to be erected, modified, or dismantled and are not ready for use, it must be clearly delimited as to prevent access to it.

Moreover, if it is hazardous to enter the area around the scaffolding or encapsulation constructions, 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 encapsulation constructions, corresponding delimitation and signage are to be made for these parts.

*General recommendations:* The Swedish Work Environment Authority has issued specific provisions on signs and signals.

**Section 49** When scaffolding or encapsulation constructions are 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 recommendations: Scaffolding located where there is traffic may need to be protected against impacts.

A special permit may sometimes be needed to have scaffolding on site. Special safeguards may be needed for blocking the area to put up scaffolding.

## ***Inspection of components***

**Section 50** Materials for scaffolding and encapsulation constructions shall be carefully examined before each erection. Materials and components with safety-related defects may not be used.

Such defects include:

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

General recommendations: It is especially important to check that the standards and working deck components are of sound condition.

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

**Section 51** Scaffolding and encapsulation constructions may only be erected if the supporting surface can take up the loads that may occur. If an encapsulation construction is installed on scaffolding, one must make sure that the scaffolding can safely and securely take the loads from the encapsulation construction.

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 recommendations: If there is uncertainty about the anchors' load-bearing capacity, the anchors 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***

**Section 52** When scaffolding or encapsulation constructions are erected or dismantled and the fall height is two metres or more, employees shall be protected against the risk of falling to a lower level.

**Section 53** First and foremost, it is necessary to ensure that the guardrail, as far as possible, 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 employee's use of personal protective equipment.

*General recommendations:* 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***

**Section 54** The employer must plan the work to ensure that those who erect or dismantle scaffolding or encapsulation constructions have the work equipment necessary for the work to be performed in an ergonomically correct manner.

As a minimum, the employer must ensure that:

- Materials and components are transported to and placed as close to the installation location as possible,
- Machinery is normally 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 encapsulation constructions, and
- There is sufficient space on the scaffolding during erection.

General recommendations: 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.

The higher the scaffolding, the more important machinery equipment for lifting is.

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.

For encapsulation constructions, it is often an advantage if it can be assembled on the ground as far as possible and then lifted up in sections. Therefore, it is important to have enough space for these work operations.

## ***Inspection***

**Section 55** When scaffolding or an encapsulation construction 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 an encapsulation construction is a different legal person than the entity that erected it, the user shall participate in the inspection, if possible.

General recommendations: The user has the same obligation as the erector to inspect the scaffolding or an encapsulation construction, in accordance with the provisions on the use of work equipment in the Swedish Work Environment Authority Code of Statutes. It is therefore advisable to coordinate the inspection.

**Section 56** The party that performs the inspection shall ensure that the scaffolding or the encapsulation construction's execution is consistent with the documents that form the basis for the design (see Sections 25, 40–42 and 44). The inspection is to be documented in a specific document.

General recommendations: It is advisable that the scaffolding or encapsulation construction 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 base jacked,

- the anchoring are complete 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 working deck and abutting structure is not too large,
- working deck components are correctly mounted and secured,
- the scaffolding can be accessed safely.

## ***Handover***

**Section 57** When the party that erected scaffolding or encapsulation construction hands them over, the following documents are also to be handed over:

1. the erection, use, and dismantling plan as per Section 25,
2. the design documents as per Sections 40–42 and 44,
3. the inspection documentation as per Sections 55–56,
4. information on snow removal, roof access, and fall protection from the encapsulation construction,
5. information on how the encapsulation construction is to be inspected,
6. specific instructions for the erection, use, dismantling, and maintenance of the encapsulation construction, if such is present, and
7. the instructions for the erection, use, dismantling, and maintenance according to Section 22, in case it is a prefabricated scaffolding.

General recommendations: 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 building work environment coordinator for the execution phase should keep them available.

## **Use of scaffolding and encapsulation constructions**

**Section 58** Sections 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 encapsulation constructions.

The last paragraphs of both Section 60 and Section 61 are also directed at the site building work environment coordinator for the execution phase of building and civil engineering work.

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

**Section 59** Prior to starting work on scaffolding or beneath encapsulation constructions, the employer shall check the worksite conditions and assess the specific risks there.

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

**Section 60** The employer shall make sure that the scaffolding or encapsulation construction documentation under Section 57 is available. An employer who has received documentation pursuant to Section 57 must ensure that the documents pursuant to Section 57(1) and (3)-(7) are available at the worksite.

The employer shall ensure, if necessary, that information on the scaffolding or encapsulation construction also reaches employees with cognitive disabilities.

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

General recommendations: The design documents under Section 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 building work environment coordinator once, i.e. before the scaffolding or encapsulation construction is put into use for the first time.

## ***Inspection***

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

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

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

- base jacking,
- anchoring,
- guardrails,
- securing of components, especially working deck components,
- means of access, and
- the encapsulation construction roof, including its fastening and the need for snow removal

The documents specified in Section 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***

**Section 62** When scaffolding or encapsulation constructions are used, they must meet the requirements of Sections 24–44, 49, 51 and 55–57.

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

Any access hatches through the working deck must always be kept closed except when they are being used for access.

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

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

**Section 65** The employer must provide the following information to those who work on scaffolding or beneath encapsulation constructions:

- permissible load on the various parts of the scaffolding, and
- the designed snow load and person load for the encapsulation construction.

General recommendations: 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 encapsulation constructions, they should be informed of the permissible load with an unambiguous notice.

**Section 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 recommendations: The assumptions that form the basis for type examination certificates (for prefabricated scaffolding) and type configurations (for tube scaffolding) only apply to work on one level at a time.

**Section 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***

**Section 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 recommendations: 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 1.8 m, W12 at least 1.2 m, and so on.

## ***Material loading and stacking***

**Section 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 recommendations: It is particularly important that loading bays are designed for the loads for which they are intended.

**Section 70** Material loading and stacking with machinery shall preferably be done by vertically lowering the material onto the scaffolding. Materials must always be set down gently in order to avoid subjecting the scaffolding to dynamic loads.

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

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

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

## ***Specific requirements for use of mobile access towers***

**Section 71** Mobile access towers are normally only to be used for short jobs where the scaffolding needs to be moved frequently, and where conditions on the worksite so permit.

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

General recommendations: 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 access towers are unsuitable for major façade work, such as façade painting.

When painting the façades of single-family houses (detached, semi-detached and terraced houses), mobile access towers can be used if the employer's site survey and risk assessment so permit. It is then important to ensure that:



- the base allows the mobile access tower to be moved easily,
- work from the mobile access tower can essentially be performed from the first working deck level (a maximum of approximately 2.5 m above ground), and
- the means of access are safe and appropriate.

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

**Section 72** The wheels of mobile access towers must be locked when the scaffold is in use.

**Section 73** When a mobile access tower is moved, no persons or materials that can fall may be on it, irrespective of the height at which the working deck is located.

If a mobile access tower has stabilisers, they may not be removed during movement.

General recommendations: It is important that a mobile access tower is moved carefully so that it does not become unstable. When moving mobile access towers with stabilisers, the stabilisers may need to be lifted slightly.

### ***Specific requirements for use of room scaffolds***

**Section 74** Room scaffolding may normally only be used for light jobs where the scaffolding needs to be moved frequently. They may only be used on flat and paved or reinforced surfaces and only on horizontal surfaces if the legs cannot be adjusted for height.

Room scaffolds may only be used by one person at a time. The wheels must be locked when they are in use, irrespective of the height at which the working deck is located.

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

General recommendations: A room scaffold is usually designed for a horizontal load of 100 N.

## Provisions on sanction charges

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

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

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1. This statute enters into force on 1 January 2016 in respect of 11 Section and in respect of training requirements for encapsulation constructions in Section 47, and otherwise on 1 July 2014.
  2. This statute simultaneously abrogates the Swedish Board of Occupational Safety and Health's Scaffolding provisions (AFS 1990:12).
  3. Type examinations for prefabricated scaffolding, prefabricated scaffolding components, and couplers under the Swedish Work Environment Authority's scaffolding provisions (AFS 1990:12) are also valid as type examinations pursuant to Section 10 of these provisions. The requirements in Sections 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 provisions (AFS 1990:12) or under older provisions 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 'Temporary works equipment - 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 provision, with the following clarifications:

- Clearance headroom between working decks: The headroom class shall be H2 according to Chapter 4 in (a) and Chapter 5.3 in (b).
- Access to the working deck: The vertical access class shall be ST or LS according to Chapter 4 in (a).
- Load class: The load class shall be at least class 2 according to Chapter 6 in (b).
- Building height for load class: Minimum building 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 access towers and independent components for prefabricated access towers***

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

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

- Clear height between working decks: The height class shall be H2 according to Chapter 7.2.
- Access to the working deck: There shall 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 the supporting surface to be greater than 0.2.

## ***Prefabricated room scaffolds***

Room 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', or by the load-bearing capacity otherwise being capable of being regarded as satisfactory.
- All wheels shall be lockable.
- Stability should be adequate with a safety margin against turning over of at least 1.20 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 placed 0.100 m from the side of the working deck.
  - The above loads are to be placed in the most unfavourable way.
  - The scaffolding should be whole, but normally without guard-rail, and the components and any wheels must be placed in the most unfavourable positions.
- All primary components for prefabricated room scaffolds are to be marked to indicate to which product the component belongs, the manufacturer, and the year of manufacture.

It shall be possible to get up to and down from the scaffold's working deck in a safe manner.

## ***Couplers***

Couplers shall meet the requirements of the following Swedish Standards:

- (c) SS-EN 74-1:2005 '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 '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 '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 provision, with the following clarifications:

- Couplers - mode of operation: All couplers shall 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).
- Sleeve couplers: Couplers for axial tube joints shall be of type SF according to Chapter 4.1 in (c); neither loose spigots according to Ch. 3 in (e) nor expanding spigots.

## ***Alternative layout***

Deviations from the requirements in the standards are possible if it can be demonstrated that the product is equally as safe as if it has been designed pursuant to the standards.

## 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 or components.
- Summarised information about the components' materials.
- Marking.
- Reference to instructions for erection, use, dismantling, and maintenance.
- Information on how the annual inspection under Section 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 or the specific requirements applicable to the scaffolding where the components can be used.
- Permissible loads or equivalent for the component.
- Bearing pressure that the component can transfer to the scaffolding (if applicable).

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 recommendations: Information and instructions under the last paragraph usually consist of an indication of the permitted standard load.

## Annex 3 – Training

### *Summary of training levels*

Workers shall have received training at the level needed for their work. The following table describes the training levels in general terms and also indicates criteria and restrictions for them.

Name of training	Certificate of training	Intended for
<b>BASIC TRAINING:</b>		
Special information on room scaffolds	Not required	For anyone who works to a limited extent with scaffolds with no more than 2 m to a working deck and where the layout is indicated by a general assembly instruction.
Special information on mobile access towers	Required	For anyone who works to a limited extent with room scaffolds and mobile scaffolds with no more than 5 m to a working deck and where the layout is indicated by a general assembly instruction.
General training on scaffolds	Required	For anyone who works with scaffolds with no more than 9 m (four platform levels) to a working deck and where the layout is indicated by a general assembly instruction.
Special training on scaffolds	Required	For anyone who works with scaffolds where the final height is in excess of 9 m or where the scaffolds are more complex than those referred to above.
<b>SUPPLEMENTARY TRAINING</b>		
Supplementary training on encapsulation constructions	Required	For anyone who works with encapsulation constructions irrespective of its height and bearing method.  'Special training on scaffolds' is required as a basis for this supplementary training.
Supplementary training on special scaffolding structures	Required	For anyone who works with special scaffolding structures which are not covered by 'Special training on scaffolds'.  'General training on scaffolds' is required as a basis for this supplementary 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 on room scaffolding shall include:

- Information on of which scaffolding stipulations apply in Sweden.
- Review of type examination certificates and installation instructions for scaffolding which are planned to be used.

In addition to Point 1, specific information on mobile access towers shall include:

- Review of stipulations for room scaffolds and mobile access towers and information on stipulations for other scaffolds which are applicable in Sweden.
- Review of type examination certificates and installation instructions for the scaffolding that is planned to be used.

In addition to Point 1, general training shall include:

- Review of scaffolding stipulations in Sweden.
- Review of different types of prefabricated scaffolding and couplers
- Information on type configurations for tube and coupler scaffolds.



- Methods to protect oneself from falls during the erection and dismantling of scaffolding.
- Methods for up-and-down transports and lifting scaffolding equipment.
- Bottoming, stabilising and anchoring of scaffolds.

In addition to Point 1, specific training shall include:

- A thorough review of scaffolding stipulations in Sweden.
- General principles for the erection of tube and coupler scaffolding.
- Review of different types and makes of prefabricated scaffolding and couplers.
- 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 materials.
- Anchoring of scaffolding.
- Sheeting of scaffolding.
- Scaffolding design.
- Information on special scaffolding structures.

Supplementary training on encapsulation constructions shall include:

- A thorough review of encapsulation constructions stipulations in Sweden.
- General principles for the erection of encapsulation constructions.
- Review of various types of encapsulation constructions.
- How encapsulation constructions and scaffolding can be combined.

Supplementary training on special scaffolding structures shall include:

- Review of stipulations for the scaffolding structure in question.
- Various types and makes of the scaffolding structure in question
- Methods for erecting, significantly modifying and dismantling the scaffolding structure in question.
- Methods to protect oneself from falls during the erection and dismantling of the scaffolding structure in question.
- Other important features which affect erection, significant modification and dismantling.

## ***Apprentice training***

Apprentices (who alternate theoretical training with practice) are permitted to take part in work on erecting, significantly modifying and dismantling scaffolds, on the following conditions:

- Every apprentice is under the supervision of a scaffolder with a professional qualification or certificate of professional competence,
- Every scaffolder pursuant to the above solely looks after one apprentice,
- Every apprentice has an apprenticeship record or other documentation,
- The apprentices continue to receive training, and the training element is planned,
- Apprentices who come directly from upper secondary schools have the general training level from the outset, and
- Other apprentices achieve the general training level within 6 months of starting apprentice training.

General recommendations: It is appropriate to apply the following times for each training course:

- 2-4 hours for special information on room scaffolds,
- 8 hours for special information on room scaffolds and mobile scaffolds,
- 16 hours for general training,
- 80 hours for special training on scaffolds,
- 32 hours for supplementary training on encapsulation constructions, and
- A sufficient number of hours for supplementary training on special scaffolding structures (depending on the scaffolding structure in question).

It is important for a sufficiently large element of the training to be led by a tutor, particularly as regards the shorter training courses. The tutor-led part of each training course should be adapted to students' prerequisites and should exceed half of the total time.

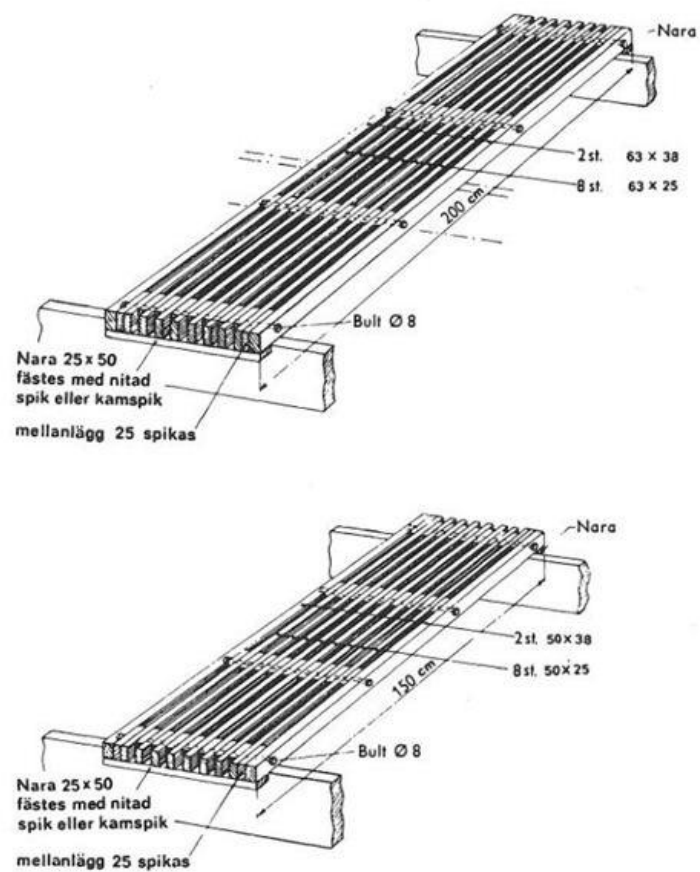
As parts of the training aim to convey knowledge of the stipulations on scaffolds which are applicable in Sweden, this means that workers with training from other countries usually need to supplement this in order to meet the requirements in these stipulations.

Apprentice training is intended to allow students to alternate training with working under supervision. It is normal for apprentices to be employed by scaffolding contractors.

## Annex 4 – Duckboard design

Duckboards designed as shown below<sup>3</sup> do not need to undergo type examination.

Timber must be selected pursuant to Section 9.



<sup>3</sup> The terms in the figure are not translated.