

Tower-frame scaffolds

August 2006

This document has been compiled from the most common questions WorkSafe is asked about tower-frame scaffolds.

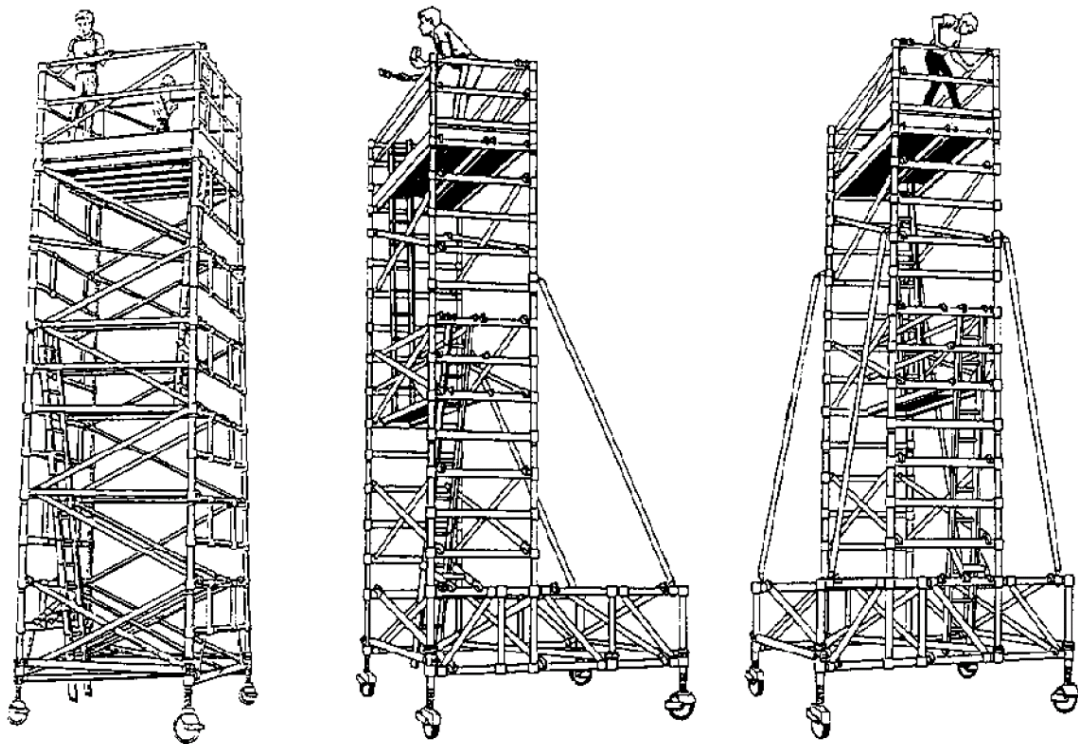
Its publication is intended to assist people by clarifying and explaining WorkSafe's position on these common questions.

1. What are tower-frame scaffolds?

Tower-frame scaffolds are a particular form of prefabricated scaffolding. They incorporate fabricated frame units constructed as single-bay towers.

Most tower-frame systems are aluminium, but steel systems are also available.

Mobile tower-frame scaffolds are mounted on castors for ease of relocation between uses.



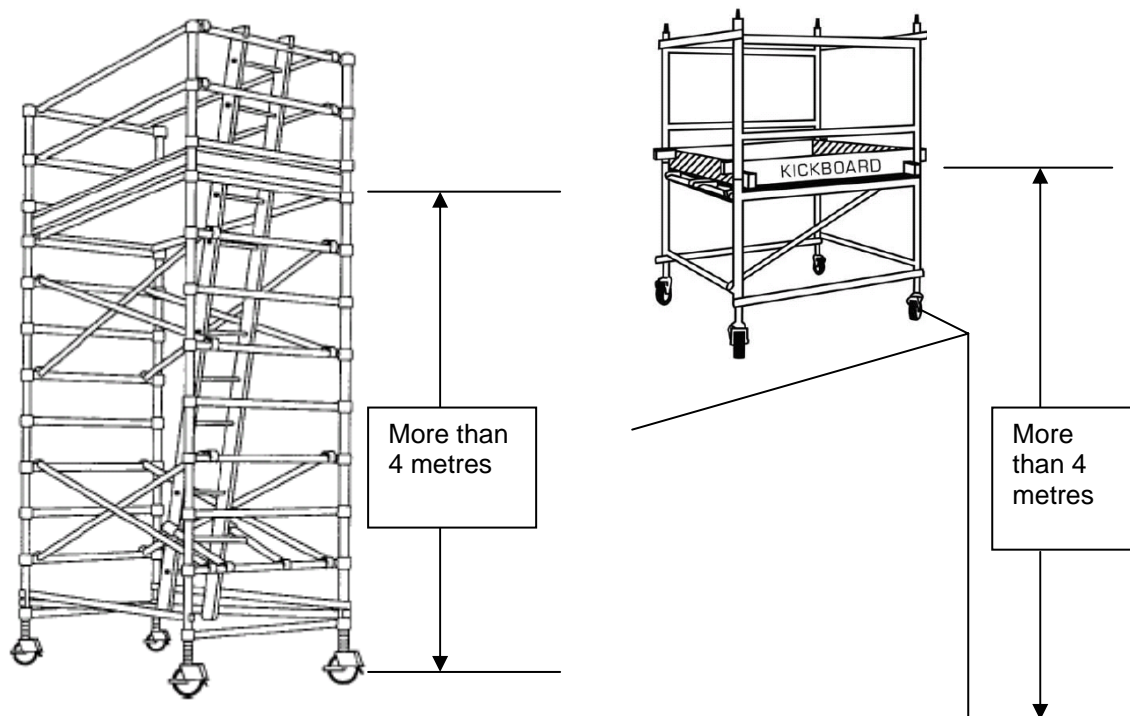
Typical mobile tower-frame scaffolds.

2. Who can erect and dismantle tower-frame scaffolds?

If the fall-height from the scaffold's top working platform will be **more than 4 metres**, anyone erecting, altering or dismantling the scaffold at a workplace must hold an appropriate scaffolding certificate of competency, or be a trainee under the direct supervision of a certificate holder.

The minimum nationally uniform certificate class required is **basic scaffolding** (class code SB).

A certificated scaffolder directly supervising a trainee must be specifically authorised by the employer to oversight the trainee.



Note: The fall-height is taken to be the vertical distance from the top working platform to the lowest point to which an object could fall. It takes no account of edge protection provided to the platform. As shown in the illustration on the right, a low-height scaffold located adjacent to the edge of an elevated floor can have a potential fall-height exceeding 4 metres, and would require certification to erect. **Also note:** Perimeter guard-railing on the suspended floor shown on the right has been omitted for clarity.

If the fall-height from the top platform will **not exceed 4 metres**, then a person who has been adequately trained and instructed in the erection and dismantling of that brand and model of scaffolding system may carry out the work.

3. What should the supplier's information include?

Suppliers of tower-frame scaffolding must have adequate information concerning:

- The purpose(s) for which that particular system was designed, and
- Any conditions necessary to ensure that scaffolds constructed from the system's components are safe and without risks to health if used for a purpose for which the system was designed.

This information must be given to each business or individual to whom tower-frame scaffolding components are supplied.

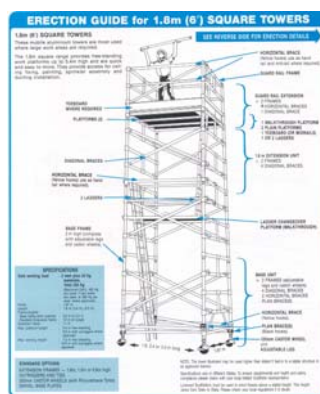
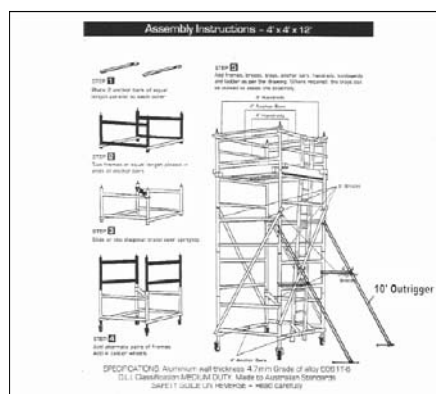
The information must also be given, upon request, to anyone using or about to use that particular system's components.

Suppliers' safe-use information usually takes the form of product brochures or data sheets. Some suppliers also publish this information on their internet websites.

As a minimum, the supplier's documented information for a particular make and model of a tower-frame scaffolding system should include:

- Instructions for erection, dismantling, transportation, storage and maintenance.
- A guide on safe working practices, including ensuring the stability of the erected scaffold.
- Guidance on the type of scaffolding coupler(s) to use when connecting ties and other accessories. [See Question 11 for further information on this issue.]
- Duty of scaffold, including maximum platform capacity. [See Question 10 for further information on this issue.]
- Maximum number of working platforms. [See Question 6 for further information on this issue.]
- Maximum height. [See Question 5 for further information on this issue.]

The supplier's documented information should be readily available to those erecting, using, inspecting or dismantling scaffolds, to those supervising or monitoring the work, and to workers' elected health & safety representatives.



Examples of suppliers' erection instructions

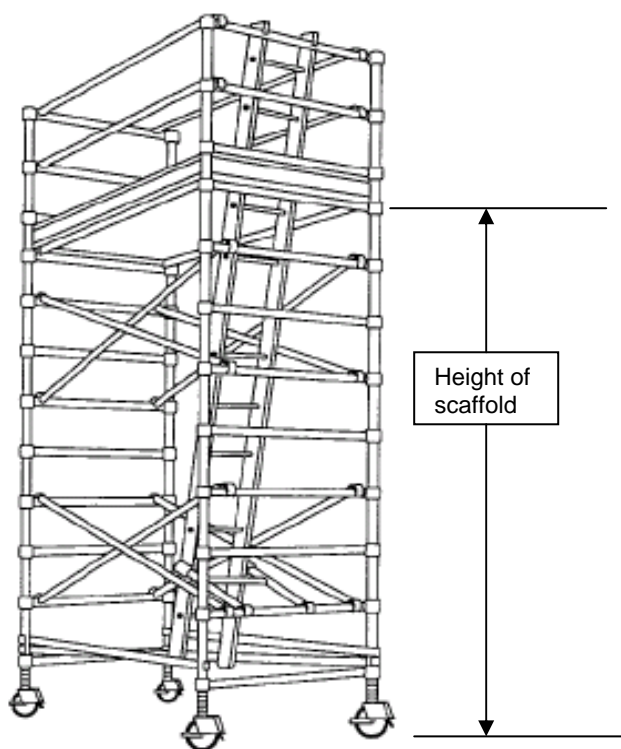
4. Can towers be linked together to form a safe run of scaffold?

Not unless both the following apply:

- It is possible to construct a full length, unobstructed working platform at any lift in the configuration, and
- The supplier's documented information specifies such a configuration.

5. How high can tower-frame scaffolds be safely erected?

The maximum height for which the particular tower-frame scaffolding system has been designed should be clearly stated in the supplier's documented safe-use information.



Note: The height of a scaffold is regarded as being the vertical distance from the supporting structure to the highest working platform of the scaffold.

The freestanding height of a light duty aluminium tower-frame scaffold with a base width of less than 1.2 m should not exceed twice the least base width (unless otherwise specifically stated in the supplier's documented information).

The height of any light-duty tower-frame scaffold should not exceed 9 m (unless otherwise specifically stated in the supplier's documented information).

6. How many working platforms can a tower-frame scaffold have?

The maximum number of working platforms the particular tower-frame scaffolding system has been designed to support should be clearly stated in the supplier's documented safe-use information.

If this is not clearly stated, then only one working platform should be used.

Note: A working platform should be the full width of the scaffold frames. Most systems include prefabricated platform units (usually about 600 mm in width) which can be positioned side-by-side to form the platform. Some older steel systems are designed to be used with cleated timber scaffold planks.

Intermediate platforms are generally installed for access purposes only, not as working platforms.

7. What are the requirements for a ladder access provided to a tower-frame scaffold?

Generally, a ladder access to a platform supported by a tower-frame scaffold should be constructed within the framework with a hinged trapdoor in the working platform. (See illustration on the right.)

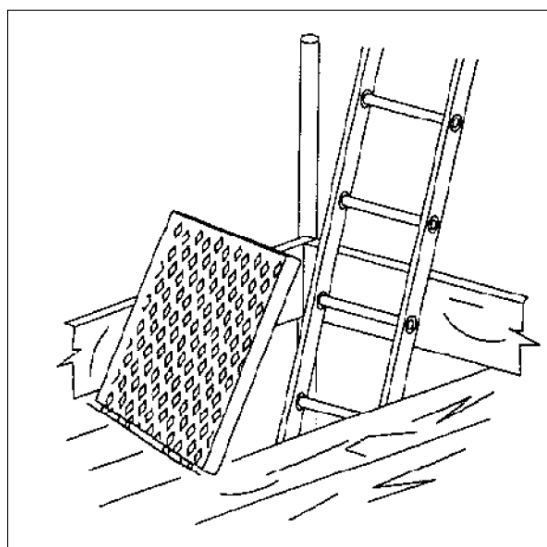
The ladders should be single, industrial-grade ladders.

They should:

- Be pitched at a slope of not less than 1:4 and not more than 1:6 (horizontally to vertically).
- Be secured against displacement.
- Be provided with landings at the head and base; except where the ladder rests on a fully covered supporting structure, the base landing may be omitted.
- Extend at least 900 mm above landings.

The height between ladder landings should not exceed 4 m.

Ladders on mobile scaffolds need to be clear of the supporting surface.



8. Are the access requirements the same for low-height tower-frame scaffolds?

WorkSafe's policy on this matter is as follows:

- Every scaffold working platform must have a safe and suitable means of access and egress.
- The suitability of forms of access and egress depend upon several factors, including the actual environment in which the scaffold is used and the platform's height above the supporting surface.
- Making people climb into the scaffold's framework in a crouching position in order to reach an internal ladder is a risk to their health or safety. (see *photograph 1*)
- Attaching angled external ladders to small and light aluminium tower-frame scaffolds is also not an acceptable form of access because of the potential instability of the scaffold to which this could give rise.
- **When the scaffold is set up on enclosed floors or similar areas where a person could not fall from the platform more than 2 metres, and where the height of the working platform above the supporting service does not exceed 2 metres, the means of gaining access to the working platform that presents the least overall risk of injury is to climb the scaffold's end-frames, but not the diagonal braces.** (see *photograph 2*)
- Where end-frame climbing is used for platforms of up to 2 metres in height, there should be no obstruction at the point of access, such as from a toeboard or a guardrail.



Photograph 1: Unacceptable



Photograph 2: Acceptable

9. At what height is edge protection required on tower-frame scaffolds?

Generally, wherever a person or object could fall a distance of 2 m or more from a platform, edge protection in the form of guardrails, midrails and toeboards is required to be fitted to all open sides and ends of the platform.

Situations where edge protection should be provided regardless of the height include:

- Where the type of work to be undertaken from the scaffold makes it difficult for the worker to be fully aware of the location of the platform edge.
- Where the work involves restricted vision such as welding and oxy-acetylene cutting.
- Where workers on scaffolds are adjacent to impalement hazards such as exposed reinforcement bars or star pickets.

10. What is the load limitation on a tower-frame scaffold?

Working platforms on scaffolds are generally rated as light, medium or heavy duty.

The duty rating for a particular scaffold should be established from the supplier's information.

The load limits for these duty ratings are as follows:

- **Light duty** – up to 225 kg per full-width platform per bay. This is usually suitable for plastering, painting, electrical work, and other light tasks.
- **Medium duty** – up to 450 kg per full-width platform per bay. This is usually suitable for general trades work.
- **Heavy duty** – up to 675 kg per full-width platform per bay. This is what is generally needed for bricklaying, concreting, demolition work and most other work tasks involving heavy loads or heavy impact forces.

These safe load limits include the weight of people (which is taken to be a nominal 80 kg per person), plus the weight of any materials, tools and debris on the platform.

Therefore, a properly constructed scaffold with a light duty working platform can safely support 1 worker and 145 kg of tools and material, or 2 workers and 65 kg of tools and materials.

Note: The current review of the Australian Standards for scaffolding may result in the nominal weight of a person being increased to 100 kg.

11. What couplers can be used to tie tower-frame scaffolds to the supporting structure?

Where a tower-frame scaffold is to be erected higher than its maximum allowable freestanding height, one way of stabilizing it is to tie it to the adjacent structure using scaffold tubes and couplers.

Normal plain scaffold tube has a nominal outside diameter of 48 mm, and most scaffold couplers are designed for tube of this diameter.

However, some light duty aluminium tower-frame systems use prefabricated components with outside diameters that are different from scaffold tube. For example, some systems use components with an outside diameter of 50 mm, and have specifically designed couplers to accommodate the wider diameter. When tying this type of scaffold make sure that the couplers:

- Are compatible with the components,
- Will not distort the components,
- Will embrace the components over their full bearing surface, without distortion of the coupler, and
- Can also be properly fixed to normal scaffold tube.

12. What are the basic rules for using mobile scaffolds safely?

When a tower-frame scaffold is mounted on castors for use as a mobile scaffold, the following rules should be strictly observed:

- Only use the scaffold on a hard, flat surface. (On soil, use steel channels or similar to provide a hard, flat surface.)
- For castors with no height-adjustment, the surface must also be level.
- For castors with adjustable legs, do not use the scaffold on surface gradients greater than 5 degrees, unless provision is made to take the load off the castors during the use of the scaffold.
- Keep the scaffold well clear of live electrical powerlines. The minimum safe clearance distances are 4.6 m horizontally and 5.0 m vertically. The 5.0 m clearance is from the top of the guardrail on the scaffold.
- Do not position the scaffold closer than 1 m to any slab edge, penetration or step-down unless a positive means to prevent it crossing the edge is in place, such as a fixed fence, rail or suitably high upturn.
- Never access the scaffold until all its castors are locked to prevent movement.
- Never relocate the scaffold while anyone is on it.
- Do not cover the scaffold with containment sheeting such as shade cloth, unless it has been specifically designed for the purpose and it is only used in an enclosed, wind-protected environment.

13. Where can further information about tower-frame scaffolds be obtained?

For product information about particular brands and models of tower-frame scaffolding systems, visit the suppliers' internet web sites.

The following is indicative only, and is not an exhaustive list of suppliers.

Advance Access	www.advancescaffold.com.au
All Systems	www.allsystems.com.au
Aluminium Scaffolds	www.aluminiumscaffolds.com
Boral Formwork & Scaffolding	www.boral.com.au
Easy Towers	www.easytowers.com.au
G James:	www.gjames.com.au
Instant Access	www.instaccess.com.au
No Bolt Scaffolding	www.nobolt.com.au
Oldfields Access	www.oldfieldsaccess.com.au
Waco Kwikform	www.wacokwikform.com.au
Western Scaffold	www.westernscaffold.com.au

Other useful construction safety information is available on WorkSafe's Construction and Utilities webpage at:

www.workcover.vic.gov.au/construction

You can contact the WorkSafe Advisory Service by phoning 1800 136 089.

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Frequently Asked Questions:

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