

# **SCAFFOLDS AND SCAFFOLDING WORK**

## **Code of Practice**

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**FOREWORD**

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This Code of Practice for managing risks associated with scaffolds and scaffolding work is an approved code of practice under section 274 of the *Work Health and Safety Act* (the WHS Act).

An approved code of practice is a practical guide to achieving the standards of health, safety and welfare required under the WHS Act and the *Work Health and Safety Regulations* (the WHS Regulations).

A code of practice applies to anyone who has a duty of care in the circumstances described in the code. In most cases, following an approved code of practice would achieve compliance with the health and safety duties in the WHS Act, in relation to the subject matter of the code. Like regulations, codes of practice deal with particular issues and do not cover all hazards or risks which may arise. The health and safety duties require duty holders to consider all risks associated with work, not only those for which regulations and codes of practice exist.

Codes of practice are admissible in court proceedings under the WHS Act and Regulations. Courts may regard a code of practice as evidence of what is known about a hazard, risk or control and may rely on the code in determining what is reasonably practicable in the circumstances to which the code relates.

Compliance with the WHS Act and Regulations may be achieved by following another method, such as a technical or an industry standard, if it provides an equivalent or higher standard of work health and safety than the code.

An inspector may refer to an approved code of practice when issuing an improvement or prohibition notice.

This Code of Practice has been developed by Safe Work Australia as a model code of practice under the Council of Australian Governments' *Inter-Governmental Agreement for Regulatory and Operational Reform in Occupational Health and Safety* for adoption by the Commonwealth, state and territory governments.

A draft of this Code of Practice was released for public consultation on 2 April 2012 and was endorsed by the Select Council on Workplace Relations on [to be completed].

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**SCOPE AND APPLICATION**

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This Code provides practical guidance for persons conducting a business or undertaking about designing, erecting, using, altering and dismantling scaffolds safely in workplaces, including suspended, cantilevered, spur or hung scaffolds.

The *Code of Practice: Construction Work* provides further guidance for persons conducting a business or undertaking that involves construction work.

**How to use this code of practice**

In providing guidance, the word 'should' is used in this Code to indicate a recommended course of action, while 'may' is used to indicate an optional course of action.

This Code also includes various references to sections of the WHS Act and Regulations which set out the legal requirements. These references are not exhaustive. The words 'must', 'requires' or 'mandatory' indicate a legal requirement exists and must be complied with.

## 1. INTRODUCTION

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### 1.1 What is a scaffold and scaffolding work?

A **scaffold** is a temporary structure specifically erected to support access or working platforms. Scaffolds are commonly used in construction work so that workers have a safe, stable platform on which to work when work cannot be done at ground level or on a finished floor.

Scaffolds, once properly erected, are a control measure to minimise the risk of persons and objects falling when working at height.

**Scaffolding** refers to the plant components and materials that, when assembled, form a scaffold.

**Scaffolding work** means erecting, altering or dismantling a temporary structure erected to support a platform and from which a person or object could fall more than 4 metres from the platform or the structure.

Scaffolding work is classified as 'high risk work' under the WHS Regulations for which a licence is required.

**Minor scaffolding work** means the erecting, altering or dismantling a scaffold from which a person or object could fall 4 metres or less.

Other key terms used in this Code are defined in Appendix A.

### 1.2 Who has health and safety duties in relation to scaffolds and scaffolding work?

A **person conducting a business or undertaking** has the primary duty to ensure, so far as is reasonably practicable, workers and other people are not exposed to health and safety risks arising from the business or undertaking.

This duty requires the person to manage risks by eliminating health and safety risks so far as is reasonably practicable, and if it is not reasonably practicable to eliminate the risks, by minimising those risks so far as is reasonably practicable.

There are more specific requirements to manage risks under the WHS Regulations, including those associated with plant, construction work, falls, noise and hazardous manual tasks.

For clarity, the person conducting a business or undertaking who has management and control of the scaffolding work is sometimes referred to in this Code as the **scaffolding contractor**.

**Designers** of plant and structures must ensure, so far as is reasonably practicable, that the plant or structure is without risks to health and safety when used for a purpose for which it was designed. Designers must provide information to manufacturers so that plant can be manufactured to the design specifications. Prefabricated scaffolding requires design registration under the plant regulations.

**Manufacturers, importers and suppliers** must ensure, so far as is reasonably practicable, that plant or structures they manufacture, import or supply are without risks to health and safety. Each of these duty holders must provide information about plant to the next duty holder along the entire supply chain and ultimately to the buyer.

**Installers** must ensure, so far as is reasonably practicable, that the way the plant or structure is installed is without risks to the health and safety of persons who install, use, decommission or dismantle the plant or structure and others who are at or near the workplace.

**Officers**, such as company directors, have a duty to exercise due diligence to ensure the business or undertaking complies with the WHS Act and Regulations. This includes taking

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reasonable steps to ensure the business or undertaking has and uses appropriate resources and processes to eliminate or minimise risks from the construction work.

**Workers** have a duty to take reasonable care for their own health and safety and to not adversely affect other people's health and safety. Workers must co-operate with reasonable policies or procedures relating to health and safety at the workplace and comply, so far as they are reasonably able, with reasonable instructions. If personal protective equipment is provided by the business or undertaking, the worker must so far as they are reasonably able, use or wear it in accordance with the information, instruction and training provided.

**Other persons at the workplace**, like visitors, must take reasonable care for their own health and safety and must take reasonable care not to adversely affect other people's health and safety. They must comply, so far as they are reasonably able, with reasonable instructions given by the person conducting the business or undertaking to allow that person to comply with the WHS Act.

## 1.3 What is involved in managing risks associated with scaffolds and scaffolding work?

**R.297:** A person conducting a business or undertaking must manage risks associated with the carrying out of construction work.

**R.32-38:** To manage risk, a person conducting a business or undertaking must:

- identify reasonably foreseeable hazards that could give rise to risks to health and safety
- eliminate risks to health and safety so far as is reasonably practicable
- if it is not reasonably practicable to eliminate risks to health and safety—minimise those risks so far as is reasonably practicable by implementing risk control measures according to the hierarchy of control in regulation 36
- ensure the control measure is, and is maintained so that it remains, effective, and
- review and as necessary revise control measures implemented to maintain, so far as is reasonably practicable, a work environment that is without risks to health or safety.

This Code provides guidance on how to manage the risks associated with scaffolding following a systematic process which involves:

- identify hazards – find out what could cause harm
- assess risks if necessary – understand the nature of the harm that could be caused by the hazard, how serious the harm could be and the likelihood of it happening
- control risks – implement the most effective control measures that are reasonably practicable in the circumstances
- review control measures to ensure they are working as planned.

Further guidance on the risk management process generally is available in the *Code of Practice: How to Manage Work Health and Safety Risks*.

### Consulting your workers

**S.47:** The person conducting a business or undertaking must, so far as is reasonably practicable, consult with workers who carry out work for the business or undertaking who are, or are likely to be, directly affected by a matter relating to work health or safety.

**S.48:** If the workers are represented by a health and safety representative, the consultation must involve that representative.

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Consultation involves sharing information, giving workers a reasonable opportunity to express views and taking those views into account before making decisions on health and safety matters.

Consultation with workers and their health and safety representatives is required at each step of the risk management process. In many cases, decisions about construction work and projects are made before engaging workers, so it may not be possible to consult with workers in these early stages. However, it is important to consult with them as the scaffolding work progresses. By drawing on the experience, knowledge and ideas of your workers you are more likely to identify all hazards and choose effective control measures.

You should encourage your workers to report hazards and health and safety problems immediately so the risks can be managed before an incident occurs.

## Consulting, cooperating and coordinating activities with other duty holders

**S.46:** A person conducting a business or undertaking must consult, cooperate and coordinate activities with all other persons who have a work health or safety duty in relation to the same matter, so far as is reasonably practicable.

A construction workplace is often be shared by many persons conducting a business or undertaking, for example civil engineers, contractors and mobile plant operators. People with overlapping duties should share information about the risks associated with the scaffolding work including traffic and plant moving near the scaffolding work. They should work together in a cooperative and coordinated way so all risks are eliminated or minimised so far as is reasonably practicable.

Further guidance on consultation is available in the *Code of Practice: Work Health and Safety Consultation, Cooperation and Coordination*.

## 1.4 Information, training, instruction and supervision

**S.19:** A person conducting a business or undertaking must ensure, so far as is reasonably practicable, the provision of any information, training, instruction or supervision that is necessary to protect all persons from risks to their health and safety arising from work carried out as part of the conduct of the business or undertaking.

**R.39:** A person conducting a business or undertaking must ensure that information, training and instruction provided to a worker is suitable and adequate having regard to:

- the nature of the work carried out by the worker
- the nature of the risks associated with the work at the time of the information, training and instruction, and
- the control measures implemented.

The person must ensure, so far as is reasonably practicable, that the information, training and instruction provided under this regulation is provided in a way that is readily understandable by any person to whom it is provided.

**R.317:** A person conducting a business or undertaking must not direct or allow a worker to carry out construction work unless the worker has successfully completed general construction induction training and if the worker completed the training more than 2 years previously—the worker has carried out construction work in the preceding 2 years.

Training specific to the scaffold, scaffolding work and the workplace should be provided to workers. Workers that supervise scaffolding work or minor scaffolding work, for example a leading hand or foreman, should be experienced and trained in scaffolds and scaffolding work.

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An advanced scaffolding licence is required for scaffolding work involving cantilevered hoists, hung scaffolds, including scaffolds hung from tubes, wire ropes or chains, and suspended scaffolds, for example, swing stage scaffolds (see Schedule 3 of the WHS Regulations).

Further information on general construction induction training and other training is available in the *Code of Practice: Construction Work*.

### **High risk work licencing**

A person performing scaffolding work must hold the relevant scaffolding licence class if a person or thing may fall more than 4 metres from the scaffold. The licence is issued by the Regulator. See Appendix B for further information on licensing classes.

### **Competent persons where licence is not required**

A person is not required to hold a scaffolding licence to carry out minor scaffolding work where a person or thing may fall 4 metres or less.

However, any person carrying out scaffolding work should be competent and must be provided with relevant information, instruction, training and supervision for erecting, dismantling, maintaining and altering the scaffold safely.

## 2. THE RISK MANAGEMENT PROCESS

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### 2.1 Identifying hazards

The first step to manage risks is to identify the hazards associated with scaffolds and the scaffolding work. Examples of the hazards associated with work involving the erection, use, maintenance, alteration and dismantling of scaffolds include:

- scaffolding collapse—before, during and after placement of the scaffold
- work near overhead electric lines
- mobile plant and other workplace traffic
- mixing components from different scaffold systems, e.g. do not mix aluminium tubing with steel tubing
- corroding or deteriorating components
- work at heights
- falling objects
- manual tasks
- overloading platforms
- blocking access along platforms
- climbing the framework of the scaffold or using ladders to gain extra height
- placing electrical extension leads in direct contact with the scaffold.

### 2.2 Assessing the risks

A risk assessment involves considering what could happen if someone is exposed to a hazard and the likelihood of it happening.

Many hazards and their associated risks are well known and have well established and accepted control measures. In these situations, the second step to formally assess the risk is unnecessary. If, after identifying a hazard, you already know the risk and how to control it effectively, you may simply implement the controls.

When assessing risks associated with scaffolds you should consider:

- the type of scaffold to be used and its duty rating
- the height of the scaffold to be erected
- the scheduling of the scaffolding work
- the layout of the workplace, including proximity to public areas
- the surface on which the scaffold will be erected, i.e. ground conditions and the structural integrity of the surface to support the scaffold and its load
- the number of people involved
- plant and equipment that will be used on or near the scaffold
- the skill and competencies required to erect, use, maintain, alter and dismantle the scaffold
- what exposures might occur, e.g. noise or ultraviolet radiation
- local weather conditions, particularly wind forces.

It should then be possible to:

- select the most suitable type of scaffold for the work
- minimise the working heights for people erecting and dismantling scaffolds
- ensure that edge protection including guardrails, mid-rails, toeboards, containment sheeting or other control measures are able to be installed when working at height.

### 2.3 Controlling the risks

Some control measures are more effective than others. Control measures can be ranked from the highest level of protection and reliability to the lowest. This ranking is known as the *hierarchy of control*.

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## **Eliminating the risk**

This means removing the hazard or hazardous work practice from the workplace. This is the most effective control measure and must always be considered before anything else.

If eliminating the risk is not reasonably practicable, you must consider using substitution, isolation or engineering controls, or a combination of these control measures to minimise the risk.

## **Minimising the risk**

### *Substitution*

Minimise the risk by substituting or replacing a hazard or hazardous work practice with a safer one. Examples include:

- using mechanical aids like cranes, hoists, pallet jacks or trolleys to move equipment and materials wherever possible instead of manual lifting
- using plant, e.g. an elevating work platform, for short duration tasks
- using mobile or relocatable scaffolding that can be easily moved for multiple uses and minimise the scaffolding work required
- using scaffold systems which are made of lighter weight materials and use modern technologies, e.g. modular systems which have shorter standard lengths or systems that are made of aluminium or fibreglass rather than steel or timber

### *Isolation*

Minimise the risk by isolating or separating the hazard or hazardous work practice from people, for example use concrete barriers to separate pedestrians and powered mobile plant from scaffolds to reduce the risk of collision.

### *Engineering Controls*

Engineering controls are physical control measures to minimise risk, for example provide toe boards and containment sheeting or overhead protective structures to prevent objects falling and hitting workers or other people below the work area.

If a risk then remains, the duty holder must minimise the remaining risk, so far as is reasonably practicable, by using:

### *Administrative controls*

Administrative controls should only be considered when other higher order control measures are not reasonably practicable, or to increase protection from the hazard. These are work methods or procedures that are designed to minimise the exposure to a hazard, for example store scaffolding components as close as practical to the work area to minimise the distance over which loads are manually moved. Clear access ways should also be provided so that materials and equipment can be easily accessed.

Any remaining risk must be minimised, as far as is reasonably practicable, by providing and ensuring the use of:

### *Personal protective equipment*

Personal protective equipment (PPE) is the lowest order control measure in the hierarchy of controls. Personal protective equipment should only be considered when other higher order control measures are not reasonably practicable or to increase protection from the hazard. Examples of personal protective equipment include hard hats, protective hand and footwear and high visibility vests.

## **Combining control measures**

In most cases, a combination of the controls measures will provide the best solution to minimise the risk to the lowest level reasonably practicable. For example, protect workers from falls using

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fall protection devices such as guard rails (engineering), safe systems of work (administrative) and protect other workers from falling objects by establishing an exclusion zone for the work area (isolation) and providing hard hats (personal protective equipment). You should check your chosen control measures do not introduce new hazards.

### 2.4 Maintaining and reviewing control measures

**R.37:** A person conducting a business or undertaking must ensure control measures are maintained so that they remain effective, including by ensuring that the control measures are and remain:

- fit for purpose
- suitable for the nature and duration of the work, and
- installed, set up and used correctly.

**R.38:** A duty holder must review and as necessary revise control measures implemented to maintain, so far as is reasonably practicable, a work environment that is without risks to health or safety.

The control measures put in place to protect health and safety should be regularly reviewed to make sure they are effective, including when there is a change at the workplace.

Control measures can be reviewed in consultation with workers and their health and safety representatives. Workers are often able to quickly identify and propose solutions to problems when they occur.

Controls should be checked by using the same methods as the initial hazard identification and risk assessment. If a hazard is not eliminated or minimised by the chosen control measures, go back through the risk management steps, review the information and make further decisions about risk control.

When reviewing control measures, a safe work method statement must also be reviewed and revised where necessary.

## 3. PLANNING

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Scaffolding work should be carefully planned before work starts so that it can be carried out safely. Planning involves identifying the hazards, assessing the risks and determining appropriate control measures in consultation with all relevant people involved in the work, including the principal contractor, scaffolding contractor, designers and mobile plant operators.

Consultation should include discussions on the:

- ground condition and type
- working environment
- weather conditions
- nature of the work and other activities that may affect health and safety
- interaction with other trades
- entry and exit from the scaffold
- safe work method statement
- management of mobile plant and surrounding vehicular traffic
- public safety
- provision of adequate amenities.

### 3.1 Scaffolding plan

Planning is an important first step in managing risk. An effective scaffolding plan will help identify ways to protect people who are:

- erecting, using, maintaining, altering and dismantling the scaffold
- near the scaffolding work, e.g. other workers and members of the public.

Where a scaffolding plan is required, it should be prepared by a competent person on behalf of the person conducting the business or undertaking. In preparing a scaffolding plan, the person should consult with a range of other people relevant to the work and workplace, for example:

- The scaffold designer, for example to discuss the design loads and the capability of the structure to support extra loadings.
- The scaffolding contractor or builder—this may be the person conducting a business or undertaking or principal contractor—for example to assess where underground drains or pits and underground services are located. The work should be planned to avoid excavating service trenches under, through or adjacent to scaffolds.
- Workers, work health and safety committees and health and safety representatives regarding erecting, maintaining, altering and dismantling the scaffold
- Other competent persons familiar with such structures, for example an engineer or a person holding an intermediate or advanced scaffolder licence.
- The electricity supply authority if the scaffold is being erected near overhead electric lines.

The scaffolding plan should include a site layout plan and detail the elevations and sections of the scaffold. It should be kept at the workplace if practicable, or be readily accessible near the scaffold should it be required. The scaffolding plan should address the following issues:

- basis of design
- foundations, including ground conditions
- the weight bearing capacity of the surface where the scaffold is to be erected
- dead loads, e.g. resulting from the size and weight of the scaffold
- live and environmental loads, e.g. wind loads
- containment sheeting
- supporting structure
- entry and exit

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- tying and anchors—where anchors will be placed on the supporting structure and types of anchors to be used
- bracing
- type of scaffold
- edge protection.

## 3.2 Safe work method statements

In some situations scaffolding work or minor scaffolding work may involve activities that are defined as 'high risk construction work' under the WHS Regulations. High risk construction work includes work that:

- involves a risk of a person falling more than 2 metres
- involves structural alterations or repairs that require temporary support to prevent collapse
- is carried out on or near energised electrical installations or services
- is carried out in an area at a workplace in which there is any movement of powered mobile plant.

**R.299:** A person conducting a business or undertaking that includes the carrying out of high risk construction work must, before high risk construction work commences, ensure that a safe work method statement for the proposed work:

- is prepared, or
- has already been prepared by another person.

A safe work method statement must be prepared for high risk construction work before the work starts. The safe work method statement must:

- identify the work that is high risk construction work
- specify hazards relating to the high risk construction work and the health and safety risks associated with those hazards
- describe the measures to be implemented to control the risks
- describe how the control measures are to be implemented, monitored and reviewed.

A safe work method statement is required for example if the scaffold is erected near energised electrical lines or if there is a risk of a person falling more than 2 metres during the erection or dismantling process.

The safe work method statement must be developed in consultation with workers and their representatives who are carrying out the high risk construction work.

Further guidance on safe work method statements and an example safe work method statement template is available in the *Code of Practice: Construction Work*.

## 3.3 Designers

Anything that is constructed to support a load is a structure, including a scaffold. Scaffold designers may be involved in:

- the design of the scaffold structure, i.e. the finished scaffold, or
- the design of the plant i.e. the scaffolding components that will be manufactured.

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**S.22:** A person (**the designer**) who conducts a business or undertaking that designs plant or a structure that is to be used, or could reasonably be expected to be used, as, or at, a workplace must ensure, so far as is reasonably practicable, that the plant or structure is designed to be without risks to the health and safety of persons who:

- use the plant or structure at a workplace for a purpose for which it was designed
- store the plant
- construct the structure
- carry out any reasonably foreseeable activity at a workplace in relation to the manufacture, assembly or use of the plant or structure for a purpose for which it was designed, or the proper storage, decommissioning, dismantling or disposal of the plant or structure, or
- are at or in the vicinity of a workplace and who are exposed to the plant or structure at the workplace or whose health or safety may be affected by one of the above uses or activities.

The designer must:

- carry out, or arrange the carrying out of, any calculations, analysis, testing or examination that may be necessary to ensure, so far as is reasonably practicable, that the plant or structure is designed to be without risks to the health and safety of persons
- give adequate information to each person who is provided with the design for the purpose of giving effect to it
- on request, so far as is reasonably practicable, give current relevant information to a person using the plant or structure for a purpose for which it was designed or when carrying out a reasonably foreseeable activity using the plant.

The design process may be simple or complex depending on the size and complexity of the scaffold. However, a scaffold should be designed by a competent person, for example an engineer experienced in structural design, to ensure that it is capable of carrying the loads that will be applied to it.

An experienced scaffold designer should be consulted during the design of a scaffold to provide input on ways to minimise the risk of injury.

The term designer includes anyone who modifies the design. For example, if the capacity of the scaffold is to be increased by adding extra components, a designer will need to complete additional calculations to ensure the modified structure is capable of supporting the extra load. The person designing the addition has designer duties and, if they are not the original designer, should consult the original designer to ensure the new configuration does not compromise the existing design specifications or safety factors.

Further guidance on the safe design of structures can be found in the *Code of Practice: Safe Design of Structures*.

### **Designer's safety report for construction work**

**R.295:** The designer of a structure or any part of a structure that is to be constructed must give the person conducting a business or undertaking who commissioned the design a written report that specifies the hazards relating to the design of the structure that, so far as the designer is reasonably aware:

- create a risk to the health or safety of persons who are to carry out any construction work on the structure or part, and
- are associated only with the particular design and not with other designs of the same type of structure.

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Most scaffolding work is construction work. A safety report must be prepared for a specific or unusual scaffold design but not for common scaffold designs for which the risks are already known. For example, a design that specifies an unusual base structure that has to be erected to support the scaffold may introduce unique hazards.

A person commissioning the construction work must consult, so far as is reasonably practicable, with the designer of the whole or any part of the structure about eliminating and controlling risks. The general duty to provide information under the WHS Act may be met through the designer's safety report prepared under Chapter 6 of the WHS Regulations for construction work.

A written safety report may include proprietary documentation that sets out how to use the scaffolding components or component system safely, the type of scaffold, and health and safety risk control measures to be used.

If the person commissioning the construction work did not commission the design they must take all reasonable steps to obtain relevant designer's safety report.

Where there is a principal contractor, the person conducting a business or undertaking who commissioned the scaffold design must give a copy of relevant designer's safety report to the principal contractor.

### **Technical standards**

A designer may use technical standards or a combination of standards and engineering principles relevant to the design requirements as long as the outcome is a design that meets all regulatory requirements, including for work health and safety. Engineering principles would include, for example, mathematical or scientific procedures outlined in an engineering reference manual or standard.

Technical standards that set out relevant design parameters include the AS/NZS 1576 Series: *Scaffolding* and AS 4576: *Guidelines for scaffolding*. Scaffold designers may wish to consider other technical standards when developing a design and deciding on risk control measures. Design requirements will vary depending on whether the design is for prefabricated scaffolding components or for more complex scaffolding structures.

### **Plant design**

Designer duties also apply to a person conducting a business or undertaking who modifies the design during manufacture, or modifies existing plant, so that new measures for controlling risk are required.

An importer of prefabricated scaffolding who is unable to source the necessary information from the original designer assumes the designer's responsibility to demonstrate that the plant satisfies the relevant health and safety requirements. This can be achieved by having a competent person develop the information for the supplier.

Further information on safe design principles and registering plant is available in the Code of Practice: *Safe Design, Manufacture, Import and Supply of Plant*.

### **Plant design registration**

Prefabricated scaffolding components are subject to design registration requirements under Part 1 of Schedule 5 to the WHS Regulations. Prefabricated scaffolding is defined as 'an integrated system of prefabricated components manufactured in such a way that the geometry of assembled scaffolds is pre-determined'. Prefabricated scaffolding can include modular scaffold, tower scaffold, cantilever and hung scaffold and suspended scaffold (swing-stages).

The person with management or control of the prefabricated scaffolding must ensure the design registration number is kept where it is readily accessible.

If you are hiring prefabricated scaffolding, the supplier must provide the design registration number, usually on the supply docket or agreement. This design registration information must

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be kept where it is readily accessible, for example at the workplace where the prefabricated scaffolding will be used.

Further information on safe design principles and registering plant is available in the *Code of Practice: Safe Design, Manufacture, Import and Supply of Plant*.

## 3.4 Scaffold design

Scaffold designers should consider the work practices necessary to erect and dismantle the scaffold as designed and identify health and safety risks and control measures at the design stage. Designers should consider:

- the method and sequence of erecting and dismantling the scaffold and the related risks, e.g. manual handling
- providing safe entry to and exit from work areas on and around the scaffold
- minimising the working heights for people erecting and dismantling scaffold
- installing edge protection including guardrails, mid-rails and toeboards, containment sheeting, fall arrest systems such as horizontal life lines or other fall risk controls when working at height
- providing advice and information about using the scaffold, e.g. drawings, scope of work instructions and bills of quantity to the scaffolding contractor and the principal contractor
- minimising sloping surfaces on a scaffold that may cause slip hazards and ensure appropriate risk control measures are identified and included in the design.

The design of the scaffold should take into account:

- the strength, stability and rigidity of the supporting structure
- the intended use and application of the scaffold
- the safety of people who erect, maintain, alter and dismantle the scaffold
- the safety of people using the scaffold
- the safety of people near the scaffold.

### Foundations

Scaffold foundations should be designed and constructed to carry and distribute all the weight of the scaffold including dead and live loads, for example perimeter containment screens, placed on the scaffold.

Ground conditions, the effects of the weather—particularly wind and rain—and loadings should be considered when designing the scaffold foundation.

#### *Ground conditions*

The principal contractor for a construction project and scaffolding contractor should ensure ground conditions are stable and inform scaffolders of factors which may affect ground stability before the scaffold is erected.

When a scaffold is erected on a surface it is important the surface is sufficiently stable to bear the most adverse combination of dead, live and environmental loads that can reasonably be expected during the period that the scaffold is in use.

Water and nearby excavations may lead to soil subsidence and the collapse of a scaffold. Any likely watercourse, for example a recently filled trench, which has the potential to create a wash out under the scaffold base should be diverted away from the scaffold.

#### *Loading*

A scaffold should be designed for the most adverse combination of dead, live and environmental loads that can reasonably be expected during the period that the scaffold is in use.

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The specifications of the designer, manufacturer or supplier should be followed for the maximum loads of the scaffold. The dead, live and environmental loads should be calculated during the design stage to ensure the supporting structure and the lower standards are capable of supporting the loads.

Consider environmental loads, particularly the effects of wind and rain on the scaffold. For example, environmental loads imposed by wind and rain may be heightened if perimeter containment screens, shade cloth or signs are attached to the scaffold. Staggering the joints in standards may help control the risk of scaffold collapse from environmental loads.

Dead loads relate to the self-weight of the scaffold structure and components including working, catch or access platforms, stairways, ladders, screens, sheeting, platform brackets, suspension ropes, secondary ropes, traversing ropes, tie assemblies, scaffolding hoists or electrical cables.

Live loads include:

- the weight of people
- the weight of materials and debris
- the weight of tools and equipment
- impact forces.

Scaffolds should not be used to support formwork and plant, for example hoist towers and concrete pumping equipment, unless the scaffold is specifically designed for this purpose.

## **Supporting structures**

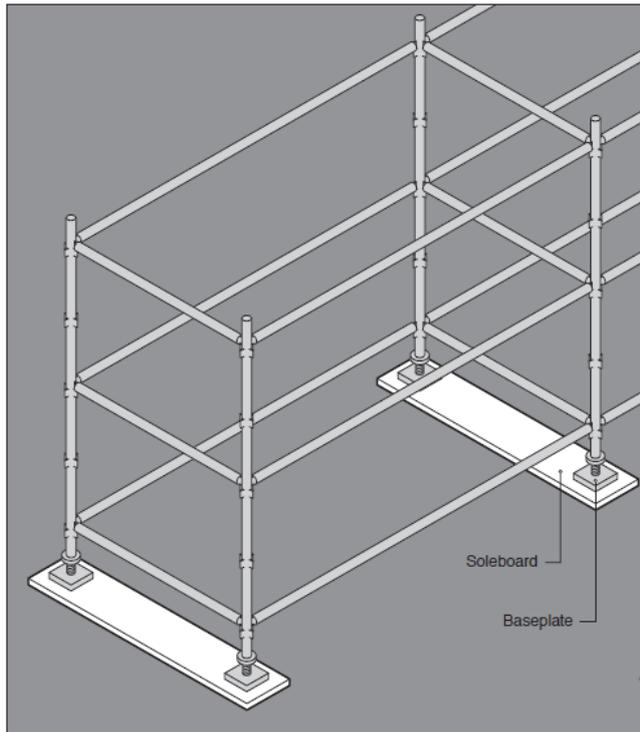
Consider the capability of the supporting structure to bear the most adverse combination of loads possible when using the scaffold. Obtain advice from a competent person before erecting scaffolds on verandas, suspended flooring systems, compacted soil, parapets and awnings.

Propping may be required where the supporting structure is not capable of bearing the most adverse combination of loads.

### *Soleboards and baseplates*

Soleboards and baseplates can be used to evenly distribute the load from the scaffold to the supporting surface (see Figure 1). Both soleboards and baseplates may be required for use on less stable surfaces, for example soil, gravel, fill or other product which creates a system of beams and flat slabs.

**Figure 1** Soleboards and baseplates



The size of the soleboard will vary depending on the supporting surface. Where necessary a competent person should determine the bearing capacity of the ground or other supporting structure.

Soleboards should be level and some digging may be required to obtain a level surface.

Adjustable bases can be used on uneven surfaces for modular scaffold systems. No part of the baseplate or adjustable base should protrude over the side of the soleboard to ensure the loads are imposed evenly on the soleboard.

Needles and spurs should be considered where ground conditions are very unstable.

## Stability

Scaffold stability may be achieved by:

- tying the scaffold to a supporting structure
- guying to a supporting structure
- increasing the dead load by securely attaching counterweights near the base
- adding bays to increase the base dimension.

## Tying and anchoring

Tie methods and spacing should be in accordance with the instructions of the manufacturer, designer or supplier.

Control measures for tying scaffold include the following:

- Consult with the scaffold designer, manufacturer, supplier or an engineer if it is not practical to position the ties in accordance with the instructions.
- More ties may be required if:
  - the scaffold is sheeted or netted due to increased wind loadings
  - it is used as a loading platform for materials or equipment
  - lifting appliances or rubbish chutes are attached.

# DRAFT

- The person conducting business or undertaking should have a competent person regularly inspect the existence and effectiveness of scaffold ties to ensure they are not modified or altered by unauthorised people, for example finishing trades who may loosen, relocate or remove ties to obtain access to walls and openings.
- Do not attach extra loads on the scaffold, for example signs and perimeter containment screens—without first consulting with a competent person, such as the scaffold design engineer or the supplier.
- Cast-in anchors or ‘through bolts’, that is pass through a wall, are preferred to drill-in expansion or chemical anchors for securing scaffold ties because of possible failure due to faulty tensioning or epoxies.
- Drill-in expansion anchors should be limited to the load (torque) controlled type. The working load limit should be limited to 65% of the ‘first slip load’ stated in the information provided by the supplier.
- Deformation-controlled anchors, including self-drilling anchors and drop-in (setting) impact anchors, should not be used.
- Where chemical anchors are used, all anchors should be tested and proof loaded to the working load multiplied by a factor of 1.25.
- All drill-in expansion anchors should be installed using a torque wrench set to the appropriate torque, unless the anchor has an in-built torque indicator. Documented verification should be kept on site, stating
- The anchor setting torque, install date and location and name of the competent person installing the anchors should be verified, recorded and kept on site.
- Drill-in expansion or chemical anchors should have a safety factor of 3 to 1 on their failure load. If any anchors fail, the remaining anchors on the same level should be tested.
- Ties should not obstruct access along the working and access platforms.
- Ties should interconnect with both the inner and outer scaffold standards unless otherwise specified by an engineer to increase the rigidity of the scaffold.
- Ties from scaffold to structure should be designed to be non-pivoting and fully secured to ensure they cannot be loosened.

## Working platforms

Working platforms, except suspended scaffolds, should have duty classifications and dimensions complying with the manufacturers’ information on loadings.

Each scaffold should be designed to carry the required number of working platforms and to support its live loads. Scaffold planks on working platforms should:

- have a slip-resistant surface
- not be cracked or split
- be of uniform thickness
- be secure, i.e. cannot be kicked off or susceptible to uplift or displacement during normal use
- be positioned so that no single gap between planks exceeds 10 mm
- not be lapped on straight runs of modular and tube and coupler scaffolding, but may be lapped on hanging bracket scaffolds where butting of planks at a pair of brackets cannot be achieved.

Lapped scaffold planks may sometimes be used to cover gaps around corners of scaffold bays (see Figure 2). These planks should be adequately secured. In some circumstances they may not need to be secured, provided the following are met:

- timber is lapped over metal planks
- planks are 1.2 metres long or greater
- plank overlap, past the edge of the plank underneath, is 300 mm or greater

## DRAFT

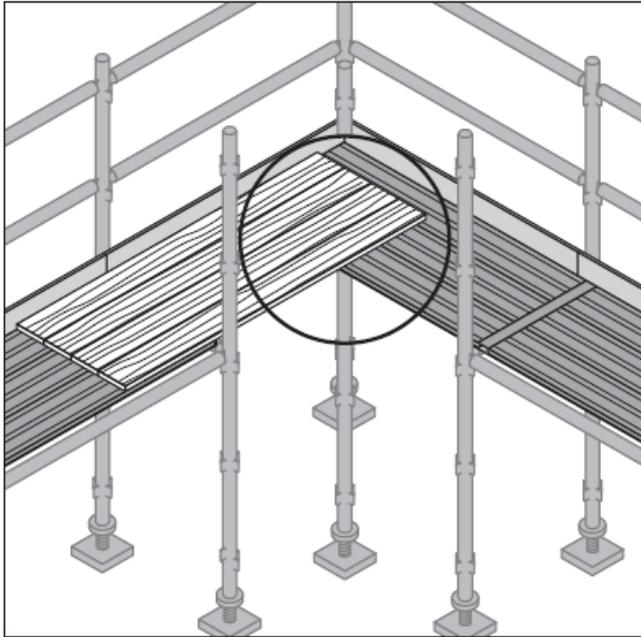
- standards prevent planks from moving sideways on the scaffold.

Wind forces should be taken into consideration when installing lapped planks. If the scaffold could be subjected to wind then the lapping planks should be secured.

If using plywood sheets to cover gaps between scaffold bays the plywood sheets should be:

- a minimum of 17 mm thick
- only used to cover gaps less than 500 mm wide unless approved by an engineer
- secured.

**Figure 2** Overlapping planks



Metal planks lapped on other metal planks should be secured using fixings, for example metal strapping. Tie wire or another system that is not structurally rated should not be used to secure planks on hop-up brackets.

More generally:

- planks should be secured
- all hop-up brackets should be provided with tie bars unless constructed with scaffold planks locked into position to stop brackets from spreading apart or causing planks to dislodge, unless otherwise specified by the scaffold designer
- the overhang of planks which are supported by putlogs should be greater than 150 mm but less than 250 mm—otherwise uplift might occur
- avoid nailing or screwing laminated planks into position, unless otherwise specified by the manufacturer. Moisture penetrating the planks can cause damage and may not be easily detected.

Scaffold working platforms are generally rated as light, medium or heavy duty:

- Light Duty – up to 225 kg per platform per bay. Examples include painting, electrical work, many carpentry tasks and other light tasks. Platforms should be at least two traditional scaffold planks wide (approximately 450 mm).
- Medium Duty – up to 450 kg per platform per bay. Examples include general trades work like tiling and light steel framing. Platforms should be at least four traditional scaffold planks wide (approximately 900 mm).

# DRAFT

- Heavy Duty – up to 675 kg per platform per bay. This is what is needed for concrete blocklaying, bricklaying, concreting, demolition work and most other work tasks involving heavy loads or heavy impact forces. Platforms should be at least 900 mm wide.
- Special Duty – has a designated allowable load as designed.

### 3.5 Adjacent buildings or structures

No part of the scaffolding activities should adversely affect the structural integrity of other building. Ensure risks are controlled to prevent injury to people or damage to adjacent buildings or structures from the:

- collapse of the scaffold onto the adjacent building or structure
- collapse of the adjacent building or structure, or a part of the building or structure.

### 3.6 Unauthorised access

**R.225(5):** The person with management or control of a scaffold at a workplace must ensure that unauthorised access to the scaffold is prevented while the scaffold is incomplete or unattended.

This applies to suspended, cantilevered, spur or hung scaffolds, as well as a scaffold from which a person or thing could fall more than 4 metres.

Entry to all scaffold areas should be restricted to those carrying out the scaffolding work while the scaffold is being erected, altered, repaired or dismantled. Control measures, for example barriers and warning signs, should be used to prevent unauthorised access when it is left unattended.

Additional duties apply to suspended, cantilevered, spur or hung scaffolds, as well as a scaffold from which a person or thing could fall more than 4 metres (see regulation 225 of the WHS Regulations).

### 3.7 Emergency plan

**R.43:** A person conducting a business or undertaking must ensure that an emergency plan is prepared and maintained so it remains effective for the workplace, and provides for the following:

- emergency procedures, including:
  - an effective response to an emergency
  - evacuation procedures
  - notifying emergency service organisations at the earliest opportunity
  - medical treatment and assistance
  - effective communication between the person authorised by the person conducting the business or undertaking to co-ordinate the emergency response and all persons at the workplace
- testing of the emergency procedures, including the frequency of testing
- information, training and instruction to relevant workers in relation to implementing the emergency procedures.

To ensure a co-ordinated approach to responding in an emergency, the scaffold contractor should consult with the principal contractor—for construction work—or the person with management or control of the workplace to ensure unexpected incidents, for example scaffold collapse or people falling from height, are included in the broader emergency plan for the workplace.

## DRAFT

The scaffold contractor has a duty to ensure emergency procedures are prepared and communicated to workers carrying out activities associated with the scaffold.

## 4. SCAFFOLDING WORK

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The following general requirements apply to scaffolds and Chapter 6 of this Code describes more specific inspection requirements.

- R.225:** The person with management or control of a scaffold at a workplace must ensure that:
- the scaffold is not used unless the person receives written confirmation from a competent person, who has inspected the scaffold, that construction of the scaffold has been completed
  - the scaffold and its supporting structure are inspected by a competent person:
    - before use of the scaffold is resumed after an incident occurs that may reasonably be expected to affect the stability of the scaffold
    - before use of the scaffold is resumed after repairs, and
    - at least every 30 days
  - if an inspection indicates that a scaffold at a workplace or its supporting structure creates a risk to health or safety, the person with management or control of the scaffold must ensure that:
    - any necessary repairs, alterations and additions are made or carried out, and
    - the scaffold and its supporting structure are inspected again by a competent person before use of the scaffold is resumed
  - unauthorised access to the scaffold is prevented while the scaffold is incomplete or unattended.

These requirements apply to suspended, cantilevered, spur or hung scaffolds, as well as any other scaffold from which a person or thing could fall more than 4 metres.

### 4.1 Erecting a scaffold safely

Planning how to erect a scaffold is the first step to ensure the work can be done safely. The following work method should be followed for erecting a scaffold:

- after enough components of the scaffold have been erected to support it, immediately install:
  - a platform at least 450 mm wide along the full length of the section of scaffold
  - edge protection across the space between the uprights forming the outer frame of the scaffold at the level the scaffold has reached
  - a way to enter the scaffold, e.g. temporary stairs or a ladder to the level the scaffold has reached.
- before the next level of the scaffold is erected, a platform should be installed below the level at a distance of not more than 2 metres
- a section of the platform may be left open to allow the passing of planks or other scaffolding components between levels
- a platform does not need to be installed on the bottom level of the scaffold
- a platform may be removed after work has started two levels above the level from which the platform is to be removed.

The following additional safe work practices should be followed when erecting a scaffold:

- Scaffold fittings and other connections should be securely tightened. Fittings should be fitted in accordance with the manufacturer's or designer's specifications and the scaffolding plan.
- All scaffolding components should be installed as the scaffold is erected, for example the installing:
  - all bracing and ties
  - guy ropes or buttresses.

## DRAFT

- Consider using specifically designed loading platforms or back propping to prevent overloading the building floor or the scaffold.
- Obtain certification from a competent person before erecting scaffold on awnings.
- Limit the number of workers on a scaffold at any one time.
- Develop and follow a methodical work sequence.
- Work from a full deck of planks whenever possible.
- Do not climb on guardrails to gain extra height.
- Implement measures to control the risk of a fall if the internal gap—the gap between the inner edge of the length of the platform and the face of the building or structure immediately beside the platform—on scaffolds, including hanging bracket scaffolds, is greater than 225 mm. For example, install:
  - edge protection
  - extra scaffold planks to minimise the size of the internal gap.
- When using a ladder to erect scaffolds, ensure the ladder is fixed to the scaffold structure to prevent movement and instability. For further information on ladders, see the *Code of Practice: Managing the Risk of Falls at Workplaces*.
- When installing or erecting scaffolds over or beside water, risk controls may include alternative erection methods, for example prefabrication away from the water and installation by crane.
- When working with scaffolding equipment the scaffolder should clearly mark defective equipment with paint or tags so that defective equipment is identified and removed.

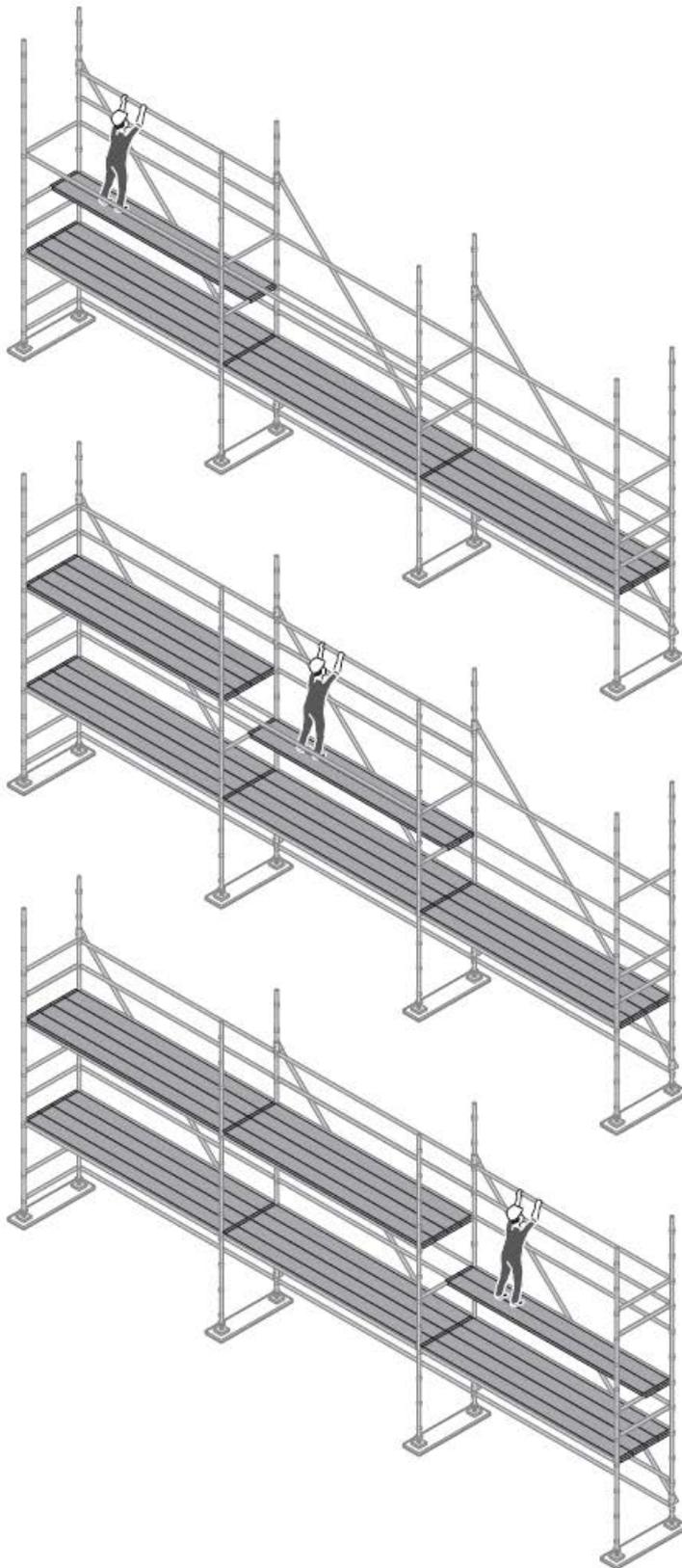
An example of scaffold erection is shown in Figure 3. In this example the scaffold is being erected against an existing building, so guardrails only needed on external face. Access ladders and toeboards have been omitted for clarity.

### 4.2 Dismantling a scaffold safely

- Edge protection and a way to enter the scaffold can be removed as the scaffold is dismantled, provided it is removed at the last possible stage.
- A platform of at least 450 mm wide at the level the dismantling has reached should be in place, where practicable.
- Ensure that when dismantling the scaffold, the platform immediately below the level the worker is standing on has a full set of planks across its width and is no lower than 2 meters.
- A section of the scaffold may be left open, for example no platform in place, to allow the lowering of planks or other scaffolding components between levels.

Scaffolding components should never be dropped in an uncontrolled way when dismantling scaffold.

**Figure 3** Erecting a scaffold



### 4.3 Altering a scaffold

Control measures to eliminate or minimise health and safety risks include:

# DRAFT

- consulting the scaffold designer before making alterations
- scaffold alterations are in accordance with the scaffolding plan
- alterations do not compromise the structural integrity of the scaffold
- systems are in place to identify unauthorised interference with the scaffold, e.g. regular inspections.

## 4.4 Falling objects and falls

**R.54:** A person conducting a business or undertaking at a workplace must manage risks to health and safety associated with an object falling on a person if the falling object is reasonably likely to injure the person.

Control measures to eliminate or minimise the risk of a falling object can include fall arrest platforms, catch platforms, overhead protective structures, perimeter screening and exclusions zones. Chin straps for hard hats and tool lanyards can be used by scaffolders to minimise the risk of equipment falling.

**R.78:** conducting a business or undertaking must manage risks to health and safety associated with a fall by a person from one level to another that is reasonably likely to cause injury to the person or any other person.

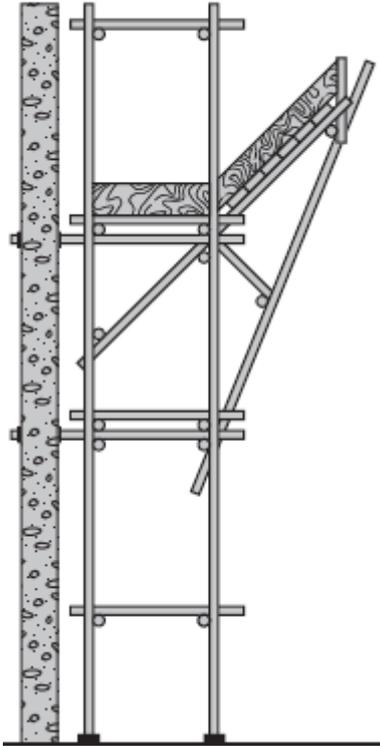
Hazards which may increase the risk of a fall while erecting, altering or dismantling scaffold include:

- poor environmental conditions, for example:
  - strong winds that may cause workers to lose balance
  - rain causing a slippery work surfaces
  - glare emitted from work surfaces or poor lighting affecting visibility
- materials, equipment or protruding objects below, or in adjoining work area, for example:
  - pallets of construction materials
  - vertical reinforcing steel
  - a rubbish skip
  - exposed starter bars
  - picket fences
- void areas not identified or protected, e.g. ladder access voids
- incomplete scaffolds or loose scaffolding components where work is being done, or is likely to be done
- inadequate training, instruction and supervision of scaffold workers.

### Catch platforms

A catch platform can be used as a risk control measure to minimise the distance a person could fall during work at height and to catch falling objects (see Figure 4). Guidance on how to use catch platforms for roof work is provided in section 5.10.

**Figure 4** Catch platform



## Edge protection

Edge protection may be used as a risk control measure to prevent the risk of death or injury from a fall during work at height.

Obtain written approval from a competent person before installing edge protection on a scaffold system which was not originally designed, supplied or manufactured with edge protection. Approval should include specifications on how to install and maintain edge protection.

A person conducting a business or undertaking must, so far as is reasonably practicable, identify all fall hazards associated with the installation and dismantling processes of edge protection and implement control measures. Edge protection should include controls for falling objects, for example toeboards.

## Entry and exit

The entries to and exits from the scaffolding must, so far as is reasonably practicable, be safe for workers when erecting, using and dismantling a scaffold. Common means of entry and exit include:

- temporary stairs or portable ladder access systems installed at the start of erection, progressed with the scaffold, and used by the scaffolder whenever possible
- permanently installed platforms or ramps
- personnel hoists—non-mechanical forms of exit, e.g. a ladder or stair tower should be provided in case of emergency
- using the existing floor level of a building, if entry from here is safe.

Stairs should be secured to the scaffold bay. If stairs cannot be self-secured to the scaffold, they should be lashed as unsecured stairs can be affected by wind and may be dislodged. If not secured, the designer or supplier should provide documentation illustrating the maximum amount of clearance allowed between the transom and the top and bottom of the stair module.

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Ensure the gap between the end of a stair module and a transom is as small as practicable. Large gaps can lead to stairs dislodging and falling when a load is placed onto it.

### Ladders

Fixed industrial single ladders, not extension ladders, should be used for entry to or exit from a scaffold. Ladders should not be used as a work platform or to gain extra height to undertake work from a scaffold.

The following safe work practices should be followed when working with ladders:

- Ladders may be used where entry to the working platform is needed by only a few people and where tools and equipment can be delivered separately to the working platform, for example by materials hoist, crane or a rope and gin wheel.
- Ladders should be within a separate ladder access bay of the scaffold, wherever space permits.
- If the access bay is part of the working platform a trap door should be provided. Where possible ladder entry should be far enough away from the working platform to prevent people falling through openings. Strict controls should be implemented to ensure the trap door remains closed while working from the platform, for example a person passing through the trap door should not need to hold it open. Gates should be self-closing and not open away from the platform.
- Ladders should be set up on a firm, level surface, be securely fixed and not used on scaffold bays to gain extra height above the scaffold structure.

More detailed guidance on ladders is included in the *Code of Practice: Managing the Risk of Falls at Workplaces*.

### Perimeter containment screening

Perimeter containment screening may be used to protect people from falling objects. Perimeter containment screens can be made of mesh, a good quality shade cloth, timber, plywood, metal sheeting or other material suitable for the purpose. Before using perimeter containment screening, consideration should be given to other risks like conductivity of electricity and loads.

Perimeter containment screens should be located inside the standards on working platforms or in accordance with the manufacturer's specifications. Where used, the lining should be attached to the inside of the mesh. The lining can be attached using non-structural locating product which keeps the lining in place while minimising damage to the lining. However, the extra wind loading represented by using linings should be considered when selecting an appropriate lining material.

Perimeter containment screens can act as a 'sail area' leading to increased wind loads on the scaffold. The framework supporting a screen should be able to support loads resulting from the screen.

The scaffold design, and its ties, fitted with containment sheeting should be approved by a competent person such as an engineer with experience in structural design.

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## Fall arrest systems

Fall arrest systems can be used as a risk control measure to arrest a person's fall when working on a scaffold. However, fall arrest systems are not usually appropriate for erecting a scaffold because:

- workers are likely to hit a component of the scaffold before the fall is arrested
- obtaining suitable anchorage points that can support a load of 15kN may be difficult
- continuously hooking on and off the scaffold may be inconvenient
- fall arrest lines may become trip hazards.

Fall arrest systems should only be used during the following scaffold activities:

- Erecting or dismantling 'drop' or 'hung' scaffold where the scaffold is constructed from top to bottom—this allows for a clear fall zone in the event of a fall.
- The fixing and removal of trolley tracks on suspension rigs.
- Erecting or dismantling cantilevered needles and decking between the needles. Fall arrest systems could also be used when the first lift of scaffold is erected where workers are standing on the deck between the needles.
- Erecting and dismantling the first lift of a cantilevered scaffold including the first platform.
- The attachment and removal of spurs projecting from the supporting structure.

Further information on fall arrest systems is available in the *Code of Practice: Managing the Risk of Falls at Workplaces*.

## 4.5 Working near electric lines

Electrical power sources, whether overhead or underground, can be a major hazard. Construction work that is carried out on or near energised electrical installations or services is high risk construction work and a safe work method statement must be prepared before this work starts.

**R.166:** A person conducting a business or undertaking at a workplace must ensure, so far as is reasonably practicable, that no person, plant or thing at the workplace comes within an unsafe distance of an overhead or underground electric line.

If this is not reasonably practicable to ensure the safe distance, the person must ensure that a risk assessment is conducted for the proposed work and control measures implemented are consistent with the risk assessment and the requirements of an electricity supply authority where it is responsible for the electric line.

Electric lines pose significant risks, including electrocution, arcing, explosion or fire causing burns, unpredictable cable whiplash and other objects being electrified such as signs, poles, trees or branches. Construction work carried out on or near energised electrical installations or services is high risk construction work and a safe work method statement must be prepared before this work starts.

The following should be considered when working near electric lines:

- Are workers, plant, tools or the scaffold likely to go near electric lines? If so, how close are they allowed to be?
- Has the relevant electrical authority been contacted for information about specific requirements when working near electric lines, including the qualifications required for those people working near electric lines?

## DRAFT

- Is there a safety observer in place to watch plant when it is moving and is likely to come close to electric lines?
- Are unauthorised person zones, authorised person zones and exclusion zones in the work area set up?
- Are emergency rescue procedures in place, including calling the electrical supply authority to isolate the electricity supply before trying to rescue a person receiving an electric shock?

Most risks can be addressed by observing safe working distances for people working near electric lines. Safe working distances will depend on the type of work being carried out and the voltage of the electric lines. You should contact the relevant electricity supply authority to determine the type of control measure needed. This may include isolating the line.

More detailed guidance on managing risks associated with electricity is available in the:

- *Code of Practice: Managing Electrical Risks at the Workplace*
- *Code of Practice: Working in the Vicinity of Overhead and Underground Electric Lines.*

### 4.6 Powered mobile plant and traffic

Powered mobile plant and vehicular traffic are hazards which can potentially affect worker safety and the safe use and structural integrity of a scaffold.

Control measures that can be used to prevent or minimise exposure to the risk of death or injury from moving plant and traffic include:

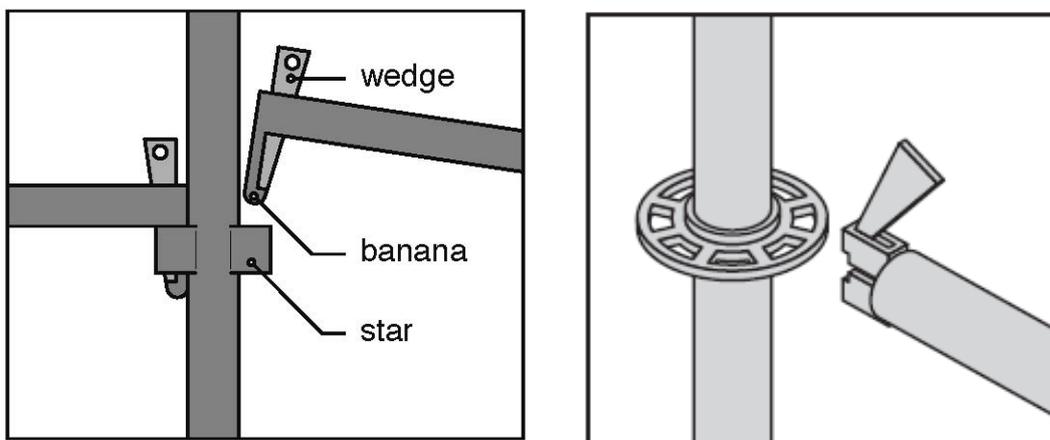
- Re-route vehicles and mobile plant away from where the scaffold is located, for example by using traffic controllers to redirect traffic.
- Use barricades, signs, posts, buffer rails, guards or concrete or timber kerbs to prevent mobile plant and traffic from coming into contact with a scaffold.
- Ensure the scaffold does not have unnecessary protrusions, for example over-length transoms, putlogs, tie tubes or over-height standards.

### 4.7 Mixing components from different scaffold systems

Components from different manufacturers or suppliers, while looking compatible, are often of different dimensions and tolerances (see Figure 5).

Often connection points, for example those known as the 'star' and 'banana' or round connectors are of a different shape and tolerance and are not compatible.

**Figure 5** Do not mix different modular systems



## DRAFT

Mixing incompatible scaffolding components can significantly affect the structural integrity of the scaffold and could lead to the possible collapse of the scaffold. Mixing incompatible components can also lead to increased wear on the components and difficulties in disassembly, which in turn may increase the risk of musculoskeletal injury to workers.

The following controls can be used to prevent or minimise the risk of injury and scaffold collapse due to the incorrect mixing of components:

- Do not mix scaffolding components from different manufacturers, unless a competent person, for example an engineer approves that the:
  - components are of compatible size and strength
  - components have compatible deflection characteristics
  - fixing devices are compatible
  - mixing does not lessen the strength, stability, rigidity or suitability of the scaffold.
- Do not mix scaffolding couplers and tubing of different outer diameters and strengths unless designed specifically for the task by a competent person or the coupler manufacturer has designed the couplers for this purpose. For example, do not mix aluminium and steel components as steel clamps may cause aluminium tubing to be crushed, reducing the strength of the tube.
- 'Beam clamps' or 'flange clamps' should be provided with information about safe use, including tightening torque required. If no information is provided contact the supplier, manufacturer or designer of the scaffold.

# DRAFT

## 5. CONTROLLING RISKS: SPECIFIC TYPES OF SCAFFOLDS

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The design, shape and location of the building or other structure should be considered when selecting the type of scaffold to be used. Choose a scaffold system that is most adaptable to the contour of the building or other structure, particularly if a modular scaffold is being considered. Also consider the purpose for which the scaffold is to be used, for example bricklaying, plastering or demolition.

Scaffolds should be erected in accordance with the designer's instructions, manufacturer's specifications and the relevant scaffolding plan.

### 5.1 Birdcage scaffold

A birdcage scaffold is an independent scaffold that consists of more than two rows of standards in both directions and is connected by ledgers and transoms. It is mainly used for work that is to be carried out on a single level, for example ceilings.

See the designer's specifications when erecting and dismantling birdcage scaffolds made from modular scaffolding.

The following risk control measures should be implemented for birdcage scaffolds made from tube and coupler scaffolding:

- Only use birdcage scaffold to support formwork if it has been specifically designed for this purpose.
- Provide longitudinal bracing or a tied face at every third longitudinal row of standards.
- Brace the outside row of standards on each face and each third row internally with longitudinal bracing.
- Provide transverse bracing at every fourth bay on the ends of the scaffold.
- Consider using scissor lifts to assist with erecting or dismantling birdcage scaffolds.

A fall arrest system is generally not an appropriate risk control measure for the erection or dismantling of perimeter and birdcage scaffolds. See Section 4.4 for further information on fall arrest systems.

### 5.2 Tower scaffold

A tower scaffold is an independent scaffold consisting of four vertical standards connected longitudinally and transversely, or two frames in plan connected transversely, to create a scaffold of one bay.

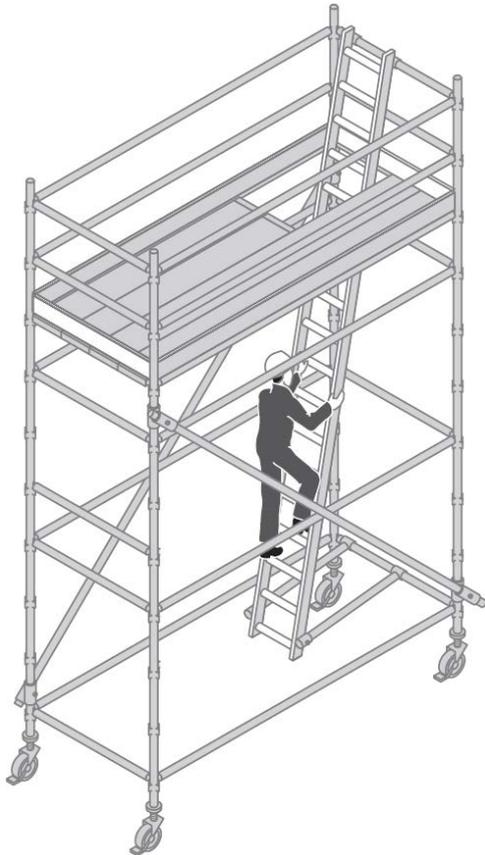
The following control measures should be implemented for tower scaffolds:

- Construct the tower with modular, frame or tube and coupler scaffolding
- ensure the tower is resting on firm level ground with the wheels or feet properly supported. Do not use bricks or building blocks to take the weight of any part of the tower.
- Ensure the height of a tower scaffold, from the bottom of the scaffold to the working surface, is no greater than the multiple of the minimum base dimension as specified in the manufacturer, supplier or designer information.
- Reduce the height to base ratios or provide extra support if the scaffold is:
  - sheeted or likely to be exposed to strong winds
  - loaded with heavy equipment or materials
  - used to hoist heavy materials or support rubbish chutes
  - used for operations involving heavy or awkward equipment, e.g. grit blasting or water-jetting
  - supporting a ladder.

## 5.3 Mobile scaffold

A mobile scaffold is a tower scaffold that is mounted on castors (see Figure 6).

**Figure 6** Mobile scaffold



Manufacturers and suppliers must provide information about how to use and erect mobile scaffolds safely. If a scaffold is to be altered, contact the manufacturer or supplier for guidance. All prefabricated mobile scaffolds should be erected in accordance with manufacturer's specifications.

The following control measures should be implemented for mobile scaffolds:

- The height of a mobile scaffold, from the bottom of the scaffold to the working surface, should be no greater the multiple of the minimum base dimension as specified in the manufacturer, supplier or designer information.<sup>1</sup>
- Where adjustable castors are used, the slope of the surface should not exceed 5 degrees.
- Use a secure internal ladder with a protected opening, e.g. a hinged trap door for entry and exit to and from the scaffold.
- Select the appropriate size and capacity castors to support the total mass of the dead and live loads of the scaffold.
- Use castors that have the working load limit clearly marked.
- Castors fitted to standards should be locked before erection continues.
- Castors with adjustable legs should be used and adjusted to keep the platform level when the supporting structure is at different heights.
- Incorporate plan bracing at the base of mobile scaffolds to provide greater stability.

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<sup>1</sup> Note Some mobile scaffolds, for example aluminium, may not be stable at a 3 to 1 height ratio. AS 1576 *Scaffolding* specifies a side load test for verifying the stability of scaffolding. Documentation verifying that the mobile scaffold complies with this test is required.

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- Before moving mobile scaffolds check that:
  - there are no power lines or other overhead obstructions
  - the ground is firm and level
  - no person is on the scaffold
  - no equipment and material can be dislodged from the platform
  - the supporting surface is free of obstructions—a small obstruction may cause a mobile scaffold to overturn
  - electrical equipment and leads cannot be tangled.
- Brakes on castors should be locked at all times unless moving the scaffold.
- Never move the scaffold in windy conditions.
- Push or pull the mobile scaffold from the base—never use powered vehicles to move the scaffold.
- If lifting a mobile scaffold by crane, sling the scaffold at the point most likely to maintain stability and prevent dislodgment of scaffolding components. A crane should not be used to lift aluminium mobile scaffolds because the scaffolding components may fail. When craning scaffold, a lifting plan should be put in place outlining suitable lifting points and all loose components, for example base jacks, should be secured. The load should be slung by a licensed dogger or rigger and manoeuvred in a way that ensures the load remains stable.
- Ensure guardrails, midrails and toeboards are installed on all working platforms.
- Working from a mobile scaffold should not take place on balcony ledges, live edges and work on balconies unless the scaffolding is fixed to the structure, for example with screw jacks firmly secured to soffit.

### 5.4 Tube and coupler scaffold

Tube and coupler scaffolds are built from tubing connected by coupling devices. They are frequently used on structures with unusual design, shape or function. The versatility of tube and coupler scaffolds enables them to be assembled in a variety of different configurations. However, this characteristic also means the design and erecting tube and coupler scaffold can be complex when compared to prefabricated modular scaffolds.

When using tube and coupler scaffolding consideration should be given to the diameter and strength of the tube and components being used to form the scaffold. Steel tubes and aluminium tubes should not be mixed in the one scaffold.

For a scaffold incorporating plain steel tube, the analysis and design should consider the most adverse combination of tubes by wall thickness, strength of the tube material, or both.

Tubes of different wall thicknesses should not be interconnected by spigots or internal-type end-to-end couplers, unless extra measures are taken to positively secure the joint, for example by fixing a short tube with swivel couplers over and parallel to the joint (scarfing), or by fixing a bridle with right-angle couplers to the adjacent members.

Metal tube and coupler components should be regularly inspected for damage and particular attention given to crushing, deformation, cracks, corrosion and splitting.

### 5.5 Frame scaffold

Frame scaffold is a scaffold assembled from prefabricated frames, braces and accessories. Frame scaffolds, for example 'A' and 'H' frame trestle scaffolds, are commonly used by bricklayers, plasterers and painters and for general fit-out and finishing work. Frame scaffolds are often minor scaffolds and do not require a licensed scaffolder to erect or dismantle.

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Frame scaffolds should be erected and dismantled by a competent person in a progressive way to ensure both the installers safety and the stability of the overall structure. Braces should be attached to the frames in accordance with the manufacturer's or supplier's instructions. As the height of frames increase, there is a greater need to provide lateral stability to the frames.

A frame scaffold should be stable and erected on a suitable foundation to ensure it can adequately carry and distribute loads like materials and workers evenly to each frame. Measures to control instability and stop possible toppling can include using ties to a permanent structure or using outriggers.

Frame scaffold should:

- Have barriers or edge protection installed where the potential fall would result in injury to people using the scaffold or the fall area contains hazards, for example sharp objects like steel reinforcing bars.
- Support the relevant live load or duty rating—not exceeding load limit. Note the full width of a frame trestle should be fully planked, irrespective of the duty rating.
- Have scaffold planks that are uniform and in good condition—no splits, cracks, knots, bends, etc. overhang their end supports between 150–250 mm and are secured against uplift.
- Establish a horizontal work platform. On sloping or uneven ground use a frame trestle that incorporates height adjustment. Bricks or blocks should not be used as soleplates.
- Have a safe means of entry and exit for example, by secured ladders or from the building if approximately level with the platform.  
Have a safe means to load material onto the working platform, for example, use mechanical means or, if this is not practicable, pass—do not throw—material up to the working platform.
- Control the movements of multiple people in restricted work areas, for example on 450 mm (2 plank) platforms.

Most bracing systems for tubular frame scaffolds are manufactured from light materials and are easily damaged by misuse or abuse, so care should be taken during installation and dismantling. Under no circumstances should anyone climb the braces or frames.

Cross-braces on frame scaffolding do not satisfy the requirements for edge protection.

## 5.6 Hung scaffold

A hung scaffold is an independent scaffold that hangs from another structure, but is not capable of being raised or lowered when in use.

The following control measures should be implemented for a hung scaffold:

- the hung scaffold should be designed by a competent person and verification obtained that the structure that is to support the hung scaffold is capable of bearing the load
- the scaffolding plan should include information about the position of the check couplers
- if a cantilevered suspension rig is to be used, information should be included on how the rig is to be constructed and secured
- standards on a hung scaffold should be tension spliced or bolted with rated spigot connection as per the manufacturer's specifications
- all vertical hanging tubes should be provided with check couplers at the suspension points and underneath the platform or according to the manufacturer's specifications.

## 5.7 Single pole scaffold

A single pole scaffold consists of a single row of standards connected by ledgers. Putlogs are fixed to the ledgers and built into the wall of the building or structure.

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A single pole scaffold is dependent upon the structure against which it is placed for support. It is important that no components of this type of scaffold are removed until the scaffold is being dismantled.

## 5.8 Suspended (swing-stage) scaffold

A suspended scaffold incorporates a suspended platform that is capable of being raised or lowered when in use. An example of a suspended scaffold is a swing-stage scaffold.

A suspended scaffold should be designed by a competent person and must be erected by a person holding an advanced scaffolding licence or by an advanced rigger.

The following risk control measures should be implemented for a suspended scaffold:

- ensure safe entry to and exit from the cradle
- consult with and provide specific training and instruction for workers on the correct procedures for using and working on suspended scaffolds. Include instructions on all safety features including:
  - the emergency stop, load limiting device and rope lock device
  - rescue or emergency evacuation devices or equipment
  - raising and lowering operations, particularly in the event of an emergency, e.g. a power failure
- ensure a rescue and retrieval procedure is developed before starting work and that necessary equipment has been obtained and is in place
- suspended scaffolding components should be inspected for damage, wear and cracks before use and at pre-determined intervals. Non-destructive testing for cracks in high stress areas, e.g. dye penetration testing, may be needed to identify cracks not easily visible.

Further information about using swing-stage scaffolds safely is in Appendix C. Relevant component manufacturers' requirements and engineer requirements for each installation should also be followed.

### Design issues

Control measures for each component of a suspended scaffold include the following:

- suspended scaffolds should be designed by a competent person
- the suspension system and the cradle should be designed to withstand 1.25 times the stalling load applied by all scaffold hoists in use. This feature prevents failure in the event of the cradle snagging on an obstruction. A hoist with separate hoist rope and backup rope. Alternatively, twin rope hoist ropes should be used.

### Method of fixing needles

The method of fixing the suspension needles should be clearly shown on a detailed drawing that has been certified by a competent person. The following options apply for fixing the inboard length of the needles to the structure:

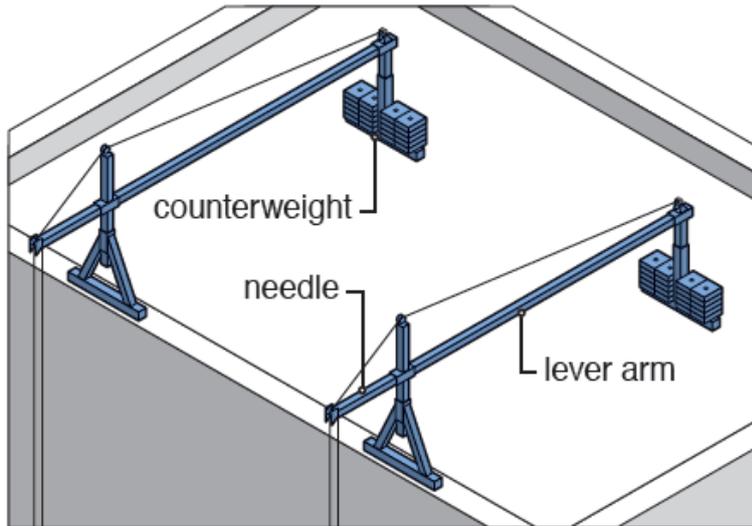
- Where the needle is fixed to the floor the fixing should be positively restrained—chemical and friction type anchors are not to be used in tension in anchorage systems, for example a u-bolt fitted over the needle and through the concrete floor slab could be used.
- Scaffold couplers should not be used to secure the counterweight or other anchorage to the rear of the needle (see Figure 7). A positive connection, which does not rely on friction should be used. One example is a bolted or pinned connection where the bolt or pin passes through the structural members and is prevented from accidental removal with a nut or other locking system, for example, split pin or 'R' clip.
- If the needle is attached to an anchorage point or existing structure on the building, the anchorage system and method of attaching the needle should be determined by a

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competent person. Restrain the back of the needle to an anchorage point determined by a competent person.

- Where props are used these should be installed to the top of the needle and to the underside of the floor above. Ensure the props are fixed to prevent dislodgement. The floors should be determined by a competent person to be able to safely withstand the point loading applied by the props.
- Where counterweights are used they should be adequately secured by keyed lock and preferably on top of the needle.

**Figure 7** Suspended (swing-stage) scaffold – Suspension mounting



## **Suspension systems**

- Ensure the suspension system is designed and constructed in accordance with the designer's specifications.
- Inspect the suspension system before use and after relocation to ensure all components are secure and in working order.
- Ensure people who use suspended scaffolds are competent and receive training and instruction on how to use the system safely, including information on hoist operation and emergency procedures.
- Obtain competent person certification that the suspension needles, parapets, roof structure or other parts of the structure can support the 'parapet clamps' or outriggers. An example of an unsuitable support system would be timber or single skin brick parapets.
- Entry to the suspension system should be restricted to people involved in the work. Entry can be restricted by:
  - erecting signs and barricading, e.g. warning tape, barrier mesh or parawebbing, or temporary fencing around the suspension rig
  - using permit-to-work systems in the restricted area
  - locking off doors and hatches to the roof, balcony or other area where the suspension system is located.

The person with management or control of the suspension system area should check the restriction is in place.

- Ensure counterweights are secured to prevent unauthorised removal.
- Suspension ropes should be inspected for damage like kinks, wear, corroded or broken wires, and replaced if necessary.

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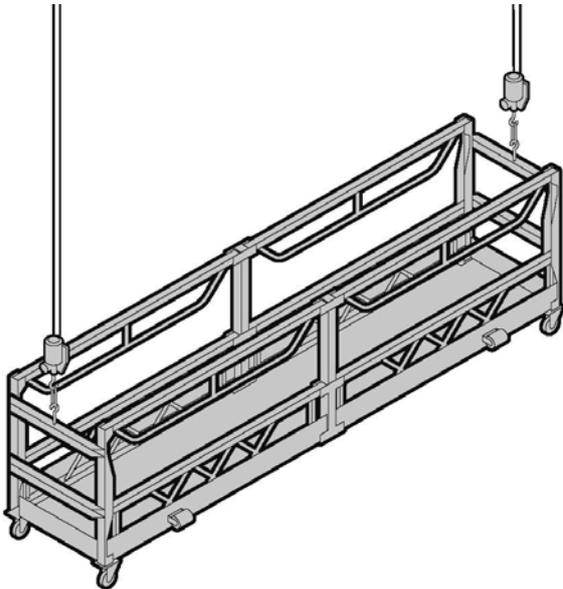
## Scaffold hoists

- Ensure scaffold hoists comply with the manufacturer's specifications. Only suspension ropes noted in the specifications—compliance plate attached to the hoist—should be used.
- After each use, a competent person should inspect and check scaffold hoists, in accordance with the manufacturer's instructions.
- Electric scaffold hoists should have a device to limit the lifting capacity of the hoist to a maximum of 1.25 times the rating of the hoist. The scaffold hoist limiting devices should be tested to the manufacturer's instructions before use.

## Cradles

- Cradles should be constructed in accordance with the manufacturer's specifications.
- Inspect all connection fixings before use to check they are secure.
- Evenly distribute materials in the cradle.
- Cradles should be clearly marked with the working load limit (WLL). The length and type of material used to construct the cradle will influence the WLL of the cradle. Verify the WLL with the manufacturer or supplier where there are no clear markings on the cradle.
- If the cradle varies from the original manufacturer's specifications, a suitably qualified and experienced engineer should verify the modification before use.
- Restrict the lateral movement of the cradle, for example using suction caps or tying off the cradle with rope.
- Work should cease and the cradle lowered to the ground during bad weather such as windy conditions.

**Figure 8** Suspended (swing-stage) scaffold – Cradle (suspended) end



## Trolleys

To prevent a trolley from falling off the beam, use lower keeper plates or a strap that wraps around the top of the beam. Trolleys that are not fitted with such a system should be removed from service. Obtain guidance from manufacturers and designers on effective systems to use.

## Fall arrest and travel restraint harness systems

People in a swing-stage cradle should wear fall arrest harnesses attached to a properly designed anchorage system. However, the harnesses may be used in a travel restraint application, attached to a static line in the cradle, where a fall out of the cradle is unlikely. A

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thorough assessment should be carried out to ensure appropriate control measures are in place.

Where the guardrail or other edge protection is not provided for scaffolders erecting the suspension system, fall arrest systems should be used. This includes, erecting or dismantling swing-stage scaffolding components, or when doing preparatory or quoting activities where other positive fall prevention, for example staying on the safe side of a 900 mm parapet, is not used.

If independently anchored safety lines are used, then a high level of training and rescue procedures should be in place. Wherever fall arrest systems are used, a rescue procedure must be developed and should be practised regularly. The rescue procedure should not place others at risk of injury.

Further information on fall arrest systems is available in the *Code of Practice: Managing the Risk of Falls at Workplaces*.

## 5.9 Special scaffolds

### Cantilever scaffold

A cantilever scaffold is a scaffold that is supported by cantilevered load-bearing members.

The following risk control measures should be implemented for a cantilevered scaffold:

- design and position cantilever beams in accordance with the engineer's requirements and the scaffolding plan
- ensure a competent person certifies that the supporting structure can support the cantilevered scaffold
- use the following preferred methods for fixing the inboard length of the cantilevered beam to the structure:
  - fix the beam to the floor below using a positive fixing, e.g. a u-bolt fitted over the beam and through the concrete floor slab
  - use counterweights on the beam
  - install props to the top of the beam and to the underside of the floor above. Ensure the props are fixed to prevent dislodgement.

### Hanging bracket scaffold

Hanging bracket scaffolds are systems supported by frames on buildings or other structures. Hanging brackets are sometimes in the shape of an upside down 'L', one arm of which is fixed to a vertical surface, the other projecting horizontally to support scaffold planks.

Other hanging bracket scaffold systems may include horizontal members that are supported by floors of buildings or other structures.

The following risk control measures should be implemented for hanging bracket scaffolds:

- provide a safe way for people installing hanging brackets to enter
- use connectors where differential deflection<sup>2</sup> becomes a tripping hazard
- use an engineer to design hanging bracket scaffolds and their means of support—engineering verification may be provided by calculation or load testing.
- the supporting structure should be able to support dead and live loads applied by the hanging brackets
- where hanging bracket scaffold is to be used as a fall arrest platform (see information above) the spacing of brackets should not exceed the maximum plank spans specified by the manufacturer

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<sup>2</sup> Differential deflection occurs when two scaffold planks sag unevenly.

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- planks may overlap planks on straight runs on hanging bracket scaffolds—where butting of planks at a pair of brackets cannot be achieved—provided the overlap is at least 300 mm.

Note This does not refer to overlap of planks on putlogs.

## Spur scaffold

A spur scaffold is a scaffold that is supported by inclined load-bearing members.

The following control measures should be implemented for a spur scaffold:

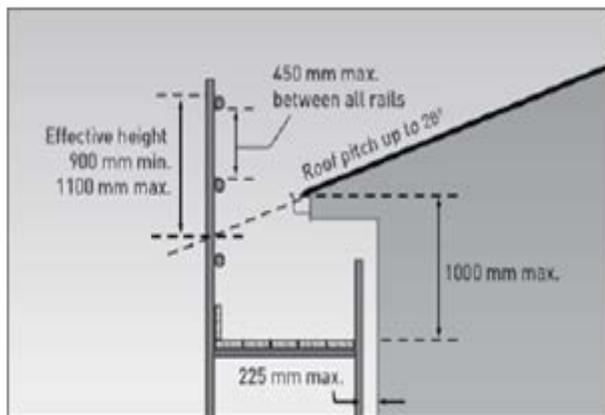
- fix propping systems between the floor and ceiling at intervals to suit the spacing of the standards within the scaffold
- provide suitable headstocks at the top of each propping system to distribute the loads imposed
- ensure all propping systems are securely tied together and braced
- brace spurs exceeding 1.8 metres in length in both directions at the centre, unless designed otherwise.

## 5.10 Roof work and catch platforms

If the slope of the surface where work is being done is:

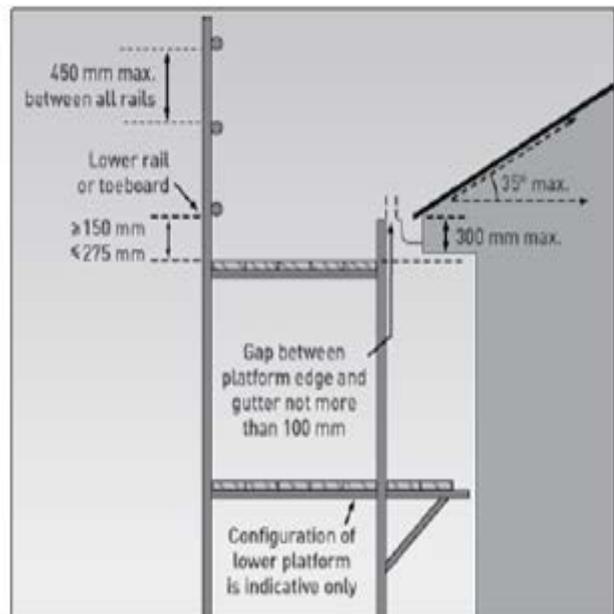
- less than or equal to  $26^\circ$ —install the platform no more than 1 metre lower than the surface (see Figure 9a), or
- over  $26^\circ$ —install the platform no more than 300 mm lower than the surface (see Figure 9b).

**Figure 9a** Catch platform  $\leq 26^\circ$



(a) Roof pitch up to  $26^\circ$

**Figure 9b** Catch platform  $> 26^\circ$



(b) Roof pitch greater than  $26^\circ$  with a maximum  $35^\circ$  slope

The catch platform should:

- be unobstructed and at least 675 mm wide for the length of the platform
- not be used to enter or exit the roof when the fall arrest platform is more than 300 mm below the roof edge
- be able to withstand the impact of a fall onto it

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- have edge protection erected:
  - along the outer edge of the length of the platform
  - along the edges of each end of the fall arresting platform.

If the internal gap—the gap between the inner edge of the length of the platform and the face of the building or structure immediately beside the platform—exceeds 225 mm, then implement a control measure to control the risk of a fall.

### 5.11 Scaffold for demolition work

At a minimum, heavy or special duty scaffold should be used during demolition work to contain dislodged materials or to provide a safe working platform and edge protection for workers.

Factors which affect the stability of a scaffold for demolition work include:

- the load imposed by demolished material dislodged onto the scaffold
- wind forces acting on containment sheeting on the scaffold face
- water retention in containment sheeting by capillary attraction
- progressive removal of building elements affecting the lateral stability of the upper portion of the scaffold
- progressive removal of ties and dismantling of scaffold.

The following risk control measures should be implemented:

- the vertical spacing of scaffold ties may have to be reduced to facilitate the demolition cycle
- containment sheeting on the internal face of the scaffold should be installed to deflect material into the building. This reduces the potential for overloading the scaffold
- ensure the scaffold is dismantled progressively and in line with the demolition work
- scaffold planks should be secured to prevent dislodgement from falling debris
- scaffold should be maintained and inspected on regularly.

For further information on demolition work, see the *Code of Practice: Demolition Work*.

## **6. INSPECTING AND MAINTAINING**

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Procedures should be developed for inspecting and maintaining the scaffold and scaffolding components to ensure that the scaffold is safe to use and remains in a safe condition. Inspecting scaffolds and scaffolding components at a workplace is particularly important when the scaffold is in place for a long period of time. An example of a scaffold inspection checklist is included at Appendix D.

The following requirements apply to suspended, cantilevered, spur or hung scaffolds, as well as any scaffold from which a person or thing could fall more than 4 metres.

### **6.1 Handover inspections**

**R.225:** The person with management or control of a scaffold at a workplace must ensure that the scaffold is not used unless the person receives written confirmation from a competent person, who has inspected the scaffold, that construction of the scaffold has been completed.

The person responsible for erecting the scaffold from which a person or object could fall more than four metres or erecting a suspended, cantilevered, spur or hung scaffold must provide the principal contractor with written confirmation from a competent person, who has inspected the scaffold, that the construction of the scaffold has been completed. This inspection is often referred to as the 'handover' inspection.

The written confirmation may take the form of a handover certificate (see example in Appendix E) and should be kept at the workplace until the scaffold has been dismantled.

A person with management or control of a scaffold should be aware that if, for example, a three metre scaffold is located next to a stairwell or excavation over one metre deep and a person or thing can fall more than four metres into that stairwell or excavation, written confirmation from a competent person that the scaffold has been completed must be obtained.

### **6.2 Post-handover inspections**

**R.225(3):** The person with management or control of a scaffold at a workplace must ensure that the scaffold and its supporting structure are inspected by a competent person:

- before use of the scaffold is resumed after an incident occurs that may reasonably be expected to affect the stability of the scaffold
- before use of the scaffold is resumed after repairs, and
- at least every 30 days.

The frequency of post-handover inspections may vary depending on weather and workplace conditions, the type and size of the scaffold and the risks associated with scaffold collapse. As a minimum, scaffold inspections must be completed every 30 days.

Regular maintenance should include inspections of scaffold components that are stored as well as those in use. Scaffolding components stored in areas exposed to the weather can become corroded. All scaffolding components should be inspected before being incorporated into a scaffold assembly. The designer or supplier of the scaffold should also be consulted on the appropriate intervals for inspection when the scaffold is first installed.

Inspection records should be kept at the workplace if practicable, or readily accessible near the scaffold should they be required. Inspection records should include the location, comments, date and time of inspections, relevant design or specification reference and the person who conducted the inspection.

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## 6.3 Scaffolds and scaffolding components

**R.225(4):** If an inspection indicates that a scaffold at a workplace or its supporting structure creates a risk to health or safety, the person with management or control of the scaffold must ensure that:

- any necessary repairs, alterations and additions are made or carried out; and
- the scaffold and its supporting structure are inspected again by a competent person before use of the scaffold is resumed.

Suppliers and owners of plant must ensure, so far as is reasonably practicable, that the plant is without risk to health and safety when properly used. Procedures for regularly inspecting new and re-used scaffolding components should be developed and implemented to ensure scaffold defects are detected and affected components are identified, repaired or disposed of and replaced as appropriate.

Scaffolding components should meet the requirements set out in the manufacturer's or designer's specifications or relevant technical standards, for example the strength of component material. All components should be maintained regularly to ensure the continued structural integrity of an erected scaffold.

The scaffold must, so far as is reasonably practicable, be safe to use, including being structurally sound. Where issues are identified and repairs, alterations or additions are made, the scaffold must be reinspected and confirmed as safe to use.

**APPENDIX A – DEFINITIONS**

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<b>Access platform</b>	A platform that is only used or intended to be used to provide access for people, or for people and materials going to or from places of work, but does not include a working platform.
<b>Baseplate</b>	A plate to distribute the load from a load-bearing member to the supporting structure.
<b>Bay</b>	The space enclosed by four adjacent standards, or the equivalent space in a single pole scaffold.
<b>Brace</b>	A member, usually a diagonal, which resists lateral loads or movements of a structure.
<b>Castor</b>	A swivelling wheel attached to the lower end of a standard for the purpose of supporting and moving a scaffold.
<b>Catch platform</b>	A temporary platform located below a work area to catch a worker in the event of a fall and/or to contain debris falling from a work area/platform.
<b>Chute</b>	An inclined or vertical trough or tube through which articles are passed from a higher to a lower level.
<b>Competent person</b>	A person who has acquired through training, qualification or experience the knowledge and skills to carry out the task.
<b>Counterweight</b>	A weight or series of weights that counterbalance a scaffold from overturning.
<b>Cradle</b>	The portion of a suspended scaffold that incorporates a suspended platform.
<b>Dead Load</b>	A permanent inert load on a building or other structure due to the weight of its structural members and the fixed loads they carry, which impose definite stresses and strains upon the structure.
<b>Edge protection</b>	A barrier to prevent a person or thing falling from the edge of: <ul style="list-style-type: none"><li>• a building or other structure</li><li>• an opening in a surface of a building or other structure</li><li>• a fall arresting platform, or</li><li>• the surface from which work is to be done, e.g. a scaffold.</li></ul>
<b>Fall arrest platform</b>	See 'catch platform'.
<b>Frame scaffold</b>	A scaffold assembled from prefabricated frames, braces and accessories.
<b>Guardrail</b>	A fixed structural member to prevent people from falling from a height, for example a roof, work platform, walkway, stairway or landing.
<b>Guy rope</b>	A rope used to help stabilise a vertical member

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<b>Access platform</b>	A platform that is only used or intended to be used to provide access for people, or for people and materials going to or from places of work, but does not include a working platform.
<b>Hazard</b>	A situation or thing that has the potential to harm a person.
<b>Landing</b>	A level area used to provide access to a stairway or ladder, or located at an intermediate level in a system of stairways or ladders.
<b>Ledger</b>	A horizontal structural member of a scaffold, connecting adjacent standards, normally in the direction of the larger dimension of a bay.
<b>Lift</b>	The vertical distance from the supporting surface to the lowest ledger or level at which a platform can be constructed, or the vertical distance between adjacent ledgers or levels at which platforms can be constructed.
<b>Loading bay</b>	A platform on a scaffold for the storage of materials and equipment.
<b>Member</b>	Anything that forms part of the scaffold assembly.
<b>Minor scaffold</b>	A scaffold from which a person or object could fall 4 metres or less.
<b>Needle</b>	A cantilevered structural member that forms part of the scaffold assembly.
<b>Outrigger</b>	Component or components that increase the effectiveness of base dimensions of a scaffold to increase its stability.
<b>Parapet</b>	A vertical element usually located at the edge of a balcony, roof, bridge or similar structure.
<b>Perimeter containment screening</b>	A screen: <ul style="list-style-type: none"><li>• designed to stop objects falling on people from a level of a building</li><li>• to redirect a falling object onto a catch platform.</li></ul>
<b>Platform</b>	A surface on a scaffold to support people, materials or both.
<b>Platform bracket</b>	A bracket attached to the scaffold to enable a platform to be placed between the scaffold and the building or structure.
<b>Prefabricated scaffolding</b>	An integrated system of prefabricated components manufactured in such a way that the geometry of assembled scaffolds is pre-determined.
<b>Putlog</b>	A horizontal structural member spanning between ledgers or a ledger and an adjacent wall, and intended to support a platform.
<b>Scaffold plank</b>	A decking component, other than a prefabricated platform, that is used or intended to be used when constructing a platform supported by a scaffold.
<b>Soleboard</b>	A board that is able to distribute the load from a load-bearing member to a supporting surface and is intended for use underneath baseplates.

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<b>Access platform</b>	A platform that is only used or intended to be used to provide access for people, or for people and materials going to or from places of work, but does not include a working platform.
<b>Spur</b>	An inclined load-bearing member that transmits a load to the supporting structure.
<b>Standard</b>	A vertical structural member that transmits a load to the supporting structure.
<b>Strut</b>	A scaffold member subject to a compressive force.
<b>Supporting structure</b>	Any structure, structural member or foundation that supports a scaffold.
<b>Suspension rig</b>	A supporting structure, including the trolley rack, from which a cradle is suspended.
<b>Suspension rope</b>	A rope carrying the weight of a cradle and supporting an imposed load.
<b>Tie</b>	A member or assembly of members used to tie a scaffold to a supporting structure.
<b>Transom</b>	A horizontal structural member of a scaffold that is used to connect adjacent standards, normally in the direction of the smaller dimension of a bay.
<b>Travel restraint system</b>	A system that: <ul style="list-style-type: none"><li>• consists of a harness or belt, attached to one or more lanyards, each of which is attached to a static line or anchorage point; and</li><li>• is designed to restrict the travelling range of a person wearing the harness or belt so that the person cannot get into a position where the person could fall off an edge of a surface or through a surface.</li></ul>
<b>Tube and coupler</b>	Scaffolding that consists of steel tubing (tube) and joining or fixing components (couplers) that are fixed together to form a required scaffold design.
<b>Working load limit (WLL)</b>	The maximum working load that may be applied to any component or system.
<b>Working platform</b>	A platform from which people perform work and may also be used to support materials and equipment.

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### APPENDIX B – HIGH RISK WORK LICENCE CLASSES - SCAFFOLDING

The following scaffolding licence classes are set out in Schedule 3 to the WHS Regulations.

Scaffolding Licence Class	Description of work activity for licence class
Basic scaffolding	Scaffolding work involving: <ul style="list-style-type: none"> <li>• modular or prefabricated scaffolds</li> <li>• cantilevered materials hoists with a maximum working load of 500 kilograms</li> <li>• ropes</li> <li>• gin wheels</li> <li>• fall arrest systems, including safety nets and static lines</li> <li>• bracket scaffolds (tank and formwork)</li> </ul>
Intermediate scaffolding	Scaffolding work included in the class of Basic scaffolding.  Scaffolding work involving: <ul style="list-style-type: none"> <li>• cantilevered crane loading platforms</li> <li>• cantilevered scaffolds</li> <li>• spur scaffolds</li> <li>• barrow ramps and sloping platforms</li> <li>• scaffolding associated with perimeter safety screens and shutters</li> <li>• mast climbing work platforms</li> <li>• tube and coupler scaffolds, including tube and coupler covered ways and gantries</li> </ul>
Advanced scaffolding	Scaffolding work included in the class of Intermediate scaffolding.  Scaffolding work involving: <ul style="list-style-type: none"> <li>• cantilevered hoists</li> <li>• hung scaffolds, including scaffolds hung from tubes, wire ropes or chains</li> <li>• suspended scaffolds</li> </ul>

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### APPENDIX C – USING A SUSPENDED (SWING-STAGE) SCAFFOLD SAFELY

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There have been a number of fatalities involving swing stage scaffolds where poor design and lack of verification has been a major contributor. To prevent such incidents, it is important that designers, installers and users of swing stage scaffolds pay particular attention to the following.

#### 1. Designing and engineering

All components of the suspension rig should be designed and documented by a competent person, for example a person who holds a tertiary qualification in a relevant engineering discipline.

All areas of design for a suspended scaffold system should receive a formal sign-off from a competent person. The formal sign-off for the swing-stage system should include the needle suspension system, cradle and hoist. Different parties may certify different components.

Before being set up, a competent person must verify the structural adequacy of the suspension system and the cradle. The manufacturer of the cradle and hoist should provide the structural verification and information on the maximum working load limit (WLL). The suspension and supporting structures must be inspected and verified by a competent person.

#### 2. Loading

The working load limit (WLL) should be clearly marked on the cradle of the suspended scaffold. The WLL of a cradle will depend on factors such as its length, type of construction and material type. Materials loaded into the cradle should be evenly distributed and not be concentrated in one area.

To prevent overloading, swing-stage operators should verify the mass of the load to be included in the cradle. Note that on many long swing stages, the load capacity will be severely reduced and only minimal tools and equipment may be able to be carried.

#### 3. Load-limiting devices

AS 1576 Part 4 - *Suspended scaffolding* specifies electric scaffold hoists shall have a device to limit the lifting capacity of the hoist to a maximum of 1.25 times the rating of the hoist. Whatever the hoist stall capacity is, the suspension system and the cradle should be designed to withstand the stalling load applied by all scaffold hoists in use. This feature prevents failure in the event of the cradle snagging on an obstruction.

#### 4. Installing

When installing a swing-stage scaffold system, a competent person must verify the swing-stage scaffold system has been installed safely. Persons holding an advanced rigger or advanced scaffolder licence must install a suspended scaffold.

After moving and reinstalling the swing-stage scaffold system on a project, the reinstallation must be reinspected and verified by a competent person. If the reinstallation is different to that which was originally verified by the engineer, other than a smaller outboard, smaller cradle or larger inboard, a competent person must approve the new installation.

#### 5. Inspecting

Inspections to provide verification should be carried out as outlined in previous sections. In addition, swing-stage components should be inspected for damage, wear and cracks before use and at pre-determined intervals. Some cracks may not normally be visible to the eye. Non-destructive testing should be performed to check for cracks in high stress areas.

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## 6. Fall arrest systems

People located in swing-stage cradles should wear fall arrest harnesses attached to a properly designed anchorage system. A travel restraint system, where a fall is not possible, attached to a static line in the cradle may be used. A thorough assessment should be carried out to ensure appropriate control measures are in place to eliminate or minimise secondary risks, so far as is reasonably practicable.

Information on fall arrest systems is also provided in the *Code of Practice: Managing the Risk of Falls at Workplaces* and Part 4.4 of the WHS Regulations.

## 7. Protecting the public

Where work is carried out above or near pedestrian or vehicle entries and exits, adequate protection, for example, hoarding and other falling object restriction devices, should be provided to eliminate or minimise the risk to the public.

## 8. Training and competence

A person should be competent and provided with specific training in how to operate or work with the swing-stage scaffold safely before that person begins using the swing-stage.

## GIVING INFORMATION ABOUT A SWING STAGE

### Supplying equipment

Suppliers should get and keep written confirmation that:

- The suspended scaffold system has been designed in accordance with AS/NZS 1576.1 and AS 1576.4.
- Couplers supplied for use with suspended scaffold have been designed, tested and marked in accordance with AS 1576.2.
- Scaffold hoists have been designed, manufactured and tested in accordance with AS 1418.2.

Suppliers should ensure that:

- The design of the powered scaffolding hoists being supplied should be a twin rope type. A hoist with separate hoist rope and backup rope. Alternatively, twin rope hoist ropes should be used.
- All scaffold hoists and secondary protective devices should have legible data plates bearing the following information:
  - type model identification
  - serial number
  - details of steel wire rope used with the hoist—nominal size, grade i.e. quality, construction and maximum length, where applicable
  - rated capacity hoisting
  - name or identification mark of the manufacturer of the hoist
  - reeving requirements, where applicable
  - power supply requirements, where applicable.
- The residual current device (RCD) for the cradle, should have a legible data label bearing the following information:
  - rating load in Amps
  - residual tripping current—not more than 30 mA
  - power supply in Volts.
- All hoisting controls should be labelled and, unless the function is obvious, the operational functions displayed. All switches should be of the spring loaded or “deadman” type that returns to safe operation. Labels should include:
  - operation instructions
  - emergency stop switch

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- up and down control.
- The control box should be compatible how the specific type and model of hoist operates and, if multiple hoists are used, each hoist should have the same operating specifications.
- The control box should be removable, unless an alternative method is used to isolate power to the cradle, for safety and security when the suspended scaffold is not in service.
- Before each site delivery, each scaffold hoist, secondary protective device and load-limiting device should have been inspected and subjected to an operational test in accordance with the recommendations given in AS/NZS 4576.
- Inspection and testing information is provided.
- Electrically powered scaffold hoist should be fitted with a load-limiting device that will prevent the hoist from lifting more than 125% of its rated load
- A secondary protective device should be capable of stopping the cradle from falling if the hoist fails.
- Between each hiring of scaffold equipment the supplier must ensure, so far as is reasonably practicable, all scaffolding components are inspected and maintained.
- The supplier of the suspended scaffold must give, to the users of the equipment, written operating and safe use instructions and warning tags. Daily safety checklists may also be provided.

### **Scaffold environment**

Scaffolders and operators should take into consideration the areas around the suspended scaffold during design, erection and operation. The following particular areas of concern should be considered and addressed before work starts erecting or operating the scaffold:

- Where the scaffold is erected adjacent to or over public spaces or adjoining property, there may be the need to provide specific controls, for example, hoardings, catch platforms or barricades.
- Where the possibility exists for other workers to enter the area below the suspended scaffold, specific controls may need to be provided, for example, catch platforms, barricades or signs.
- Overhead electric lines are a major hazard and no part of the suspended scaffold, including suspension and secondary ropes which should be anchored, should be closer than 4 metres to an overhead electric line.
- All electric lines should be considered live unless there is written confirmation from the local distribution company that the electric lines are not live at the specific time that work is being carried out. Further information on erecting scaffold near overhead electric lines is in the *Code of Practice: Work in the Vicinity of Overhead Electric Lines and Underground Electrical Services*.
- Uncontrolled vehicle movement near a suspended scaffold before a collision and trailing power cable or hoisting cables before being entangled may lead to structural collapse, uncontrolled movement of the platform or mechanical damage. Protective measures may need to be provided to control the movement of vehicles near scaffolds.
- Where cranes operate near a suspended scaffold, there is a risk of the load snagging the scaffold or endangering people on the platform. Specific site procedures may need to be developed to minimise the risk.
- Where corrosive substances are to be used on the scaffold or in its vicinity, it may be necessary to develop specific procedures to minimise the risk of damage to critical scaffolding components.
- Using certain types of equipment in some areas may place people at high risk. The dangers presented by hazardous areas should be assessed before selecting equipment, for example, electric hoists should not be used where dust can form an explosive atmosphere.

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## Installation design

The scaffold configuration should be suitable where the equipment is located and how it is intended to be used. The scaffold designer should consider the following to manage risks:

- The building or structure to which the suspended scaffold is to be mounted should be capable of supporting the scaffold and all intended loads including dead, live and environmental loads. The supporting structure should be assessed by an engineer and a statement of assessment provided.
- A detailed design plan should be prepared for erecting each suspended scaffold that takes into account the design specifications of the scaffold, the limitations of the support structure and maximum operational wind speed or lateral forces it may be exposed to during erection or operation.
- Where structural alterations to the suspended scaffold are made, the changes should be recorded on an amended design plan. The designer or another competent person should review and approve the changes before the scaffold is used for the first time.
- Damage can be caused to the cradle or hoisting systems if certain activities are carried out without adequate protective measures being in place, for example welding, water or pressure blasting or demolition activities.
- To operate correctly, an adequate power supply should be available for electrically powered hoist— ensure that the voltage drop is considered.
- Lateral restraints should be used to prevent instability of the platform which may result from the work procedures or wind, and may include:
  - lanyards
  - tensioned wire ropes
  - removable ties
  - fan units
  - suction units
- Ensure all restraints are removed when no longer required.

## Erecting the scaffold

The scaffolder should ensure that the way the suspended scaffold is erected does not present a risk to the health and safety of workers or others.

- The person carrying out or directly supervising the erection, dismantling or modification work on a suspended scaffold must have either an Advanced Certificate in Scaffolding or Rigging.
- The person supervising the work should have a copy of the design plan which specifies the rigging requirements including the number, size and positioning of the counterweights, before erecting or modifying the suspended scaffold.
- Ensure that fall protection is in position at the building edge or the scaffolders are using safety harnesses with adequate anchorage points if working near an exposed edge.
- To prevent injury to workers the area around the support rig should be restricted to only those workers engaged in assembling the scaffold.
- To prevent injury to people from dropped cables, rigging components or tools, a sufficiently large area below the scaffold should be barricaded to prevent entry.
- During erection, where there is no physical barrier at an edge to prevent objects falling off the supporting structure or when work is occurring over the edge, a safety observer should be positioned, if necessary, to prevent people entering the barricaded area below the scaffold.
- Any counterweight should be manufactured for that purpose, labelled with its mass in kilograms, be placed directly on the needle or innermost support in the designed location and secured by a keyed lock.
- When used, traversing tracks should be fitted with through-bolted stops at the ends to prevent a trolley from running off, and each trolley should have a rated working load of a least 1000 kg.
- The outboard end of a needle should never be lower than the inboard end.

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- The suspension rig should form a structure that is rigid and stable under working conditions.
- Only the wire rope recommended by the manufacturer for the hoist should be used—details of the wire rope construction can be located on the hoist data plate. Using the wrong construction of wire rope in a scaffold hoist can result in sudden failure, with the rope severing in the hoist.
- A secondary protective device should be provided for each scaffold hoist to operate on a secondary wire rope. This device provides an emergency brake to hold the cradle if the hoist or wire rope within the hoist fails. Some types may also prevent an over-speed decent.
- It is essential that the secondary protective device's internal mechanism is adjusted for the size of wire rope fitted, as some devices are capable of using different sizes of wire rope.
- The secondary wire rope for a scaffold hoist should be attached to the suspension rigging, at a point that is independent of the main suspension rope attachment.
- All cradle components should be inspected, on site, before assembly and checked to ensure all locating pins and clips are fitted and in position.
- A sign, clearly displaying the safe working load limit, in kilograms, should be fixed to the inside of each cradle.
- The cradle should have guardrails, mid-rails and toeboards fitted and the working deck should be fixed, of a non-slip type with adequate drainage holes. None of these components should have visible signs of mechanical damage, for example cracked or split welds, missing or broken decking or cut or bent guardrails.
- The finished suspended scaffold should conform to the design plan. Alterations due to installation conditions should be included on an amended plan. The designer or another competent person must review these variations and approve the modified plan before the scaffold is first used.
- A competent person or the certificate holder responsible for erecting or altering the scaffold should supply a written statement that the scaffold is complete and safe for use before the scaffold is used for the first time and after every alteration.

### Electrical installation

An adequate power supply is essential to be able to operate the suspended scaffold hoists safely. The principal, electrical and scaffolding contractors should co-ordinate the planning of the electrical installation to ensure appropriate voltage levels are provided. This may include locating the power-board close to the scaffold, dedicated power circuits, larger sub-mains and alternative methods of positioning the power-board.

- To limit voltage drop the suspended flexible cord should:
  - not be of excessive length, or
  - if extra length is required, have larger size conductors to compensate.
- The power supply for the suspended scaffold may need to be close to the scaffold, to limit the length of the flexible cord needed to descend to the platform—this will assist in limiting voltage drop.
- The construction power-board should be designed so the removal of the suspension flexible cord from the socket-outlet requires a person to complete a deliberate act.
- The suspended flexible cord should be supported in a way that protects the cable from mechanical damage and prevents the cable from bending at a radius less than the manufacturer's minimum. If manufacturer's information is not available, AS/NZS 3000 gives the minimum internal radius as six times the cable diameter.
- Any suspended flexible cord should be the heavy-duty double insulated type and be able to support its own weight over the length of the drop. Electrical cable should be fitted with thimble and eye for suspension to stop damage to cable.

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- The flexible cord should be supported in such a way to prevent the cradle from fouling or causing mechanical damage to the cable. The cable should be installed so that it is not pulled across the structure of the cradle.
- The flexible cord should be long enough to allow the cradle to descend to the ground or a lower structure for exit in an emergency.
- When in use the control box should preferably be attached to the guardrail of the cradle on the side away from the working face.
- The electrical cables installed in the cradle should not be excessive in length, to prevent mechanical damage occurring to the cables and to limit voltage drop.
- Electrical cables from the control box to the hoists should be enclosed for protection from mechanical damage and securely attached to the cradle. Extra mechanical protection may be required and is dependent on the work carried out, for example demolition, grinding or abrasive blasting.
- There should be a system that allows the suspended scaffold to be effectively isolated from the power supply when not in use to prevent unauthorised operation—this may be located within a locked power-board or by using a readily removable control panel on the cradle.

### Operating the scaffold

A person conducting a business or undertaking engaging workers operating in suspended scaffolds must, so far as is reasonably practicable, have procedures and safe systems of work in place before the equipment is operated to ensure the equipment is safe to use and people are not exposed to risks to their health and safety.

- A written statement that the scaffold is complete and safe for use must be supplied by a competent person responsible for erecting or altering the scaffold, before operating the scaffold.
- The supplier of the suspended scaffold must provide written operating and safe use instructions. Daily safety checklists may also be provided.
- The workers suspended on the platform must, so far as is reasonably practicable, have a method of safe entry and exit. Procedures must also be in place for the rapid retrieval of the suspended people in the event of an emergency. It is not sufficient to rely on the local fire and rescue service.
- The risk of debris from higher work falling onto workers in the cradle should be eliminated or minimised so far as is reasonably practicable.
- Workers must, so far as is reasonably practicable, be provided with training in the safe work practices for suspended scaffolds, including carrying out daily inspections and emergency procedures. Workers should be able to demonstrate these safe work practices before working in the suspended scaffold.
- Effective communication should be in place between the cradle or chair and other workers to alert others on site in case of an emergency. It may include people in the workplace being in sight of the cradle or chair at all times to observe hand signals, hear whistles, bells or in radio or telephone communication.
- Where entry and exit is not from the ground or a protected landing, safety harnesses and lanyards should be provided and used when entering or leaving the cradle. During this procedure, safety harnesses should be attached to suitable anchorage points, for example a static line or horizontal rail within the swing stage. The cradle should also be effectively secured to prevent movement.
- If the scaffold is subjected to movement due to wind forces or the work carried out, lateral restraints are required.
- The cradle platform should be in a tidy condition with unobstructed access along the entire length.
- Avoid exceeding the safe working load limit of the suspended scaffold, taking into account the total load of all people, materials and equipment.

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- During work breaks, the platform should be secured to the structure to prevent damage due to wind. The power should be disconnected from the scaffold hoists, supply point or control board.
- Overnight or longer periods require the platform to be parked in its storage position and secured to the structure to prevent movement or damage due to wind:
  - Where not on a secured site, it should be parked in an inaccessible position.
  - All trailing ropes and cables should be securely stored, protective devices locked onto ropes, power cables disconnected from supply and if air operated air-lines disconnected and pressure released.
- Each day, before starting work from the scaffold, the operator should carry out a safety inspection and complete the daily log-in sheet, in line with the requirements of the supplier.
- A competent person must inspect the cradle and suspension system at least every 30 days, if the scaffold has been onsite and not altered during that time.
- All portable electrical equipment including scaffold hoists and cabling should be inspected and tested every three months, while the RCD protection devices should be time and current tested monthly.

### **Operating a boatswain's chair**

When boatswain's chairs are used, the following issues should also be addressed:

- Unless a large enough exclusion zone is set up under the chair to protect other people, measures should be in place to prevent tools or equipment falling from the chair, for example lanyards for hand tools or heavy equipment suspended from another rope.
- The operator must be able to activate all controls including the emergency descent system from the seated position.
- If the chair is subjected to movement due to wind forces or the work carried out, lateral restraints are required.

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## CHECKLISTS

### Swing stage scaffold supplier checklist

SCAFFOLD SUPPLIERS - PRE-DELIVERY OF EQUIPMENT	YES / NO / N/A
Are the powered scaffold hoists twin rope type?	
Do scaffold hoists and the secondary protective devices have legible data plates bearing the necessary information?	
Does the RCD in the cradle have a legible data label bearing the necessary information?	
Do the controls have all necessary labels and operational functions displayed?	
Are the hoists and the central control box compatible?	
Is the control box designed to be removed from the platform when not in use?	
Has the correct type, size and length of flexible power cord been provided?	
Is the correct size and type of wire rope provided?	
If required, has the secondary protective device been adjusted for the size of wire rope to be used?	
Has each hoist and secondary protective device undergone inspection and load testing before being installed onsite?	
Have all scaffold components been inspected before being sent to the site?	
Are the counterweights specifically manufactured for the purpose and correctly labelled?	
Are the supplied components compatible with the design plan?	
Have all relevant safe use instructions and checklists been provided to the user?	

Unless **YES** or **N/A** is recorded the scaffold should not be used until rectification occurs.

### Swing stage scaffold contractor/principal contractor checklist

SCAFFOLD DESIGN ENGINEER	YES / NO / N/A
Has the supporting structure been assessed by an engineer?	
Has a statement of assessment for the supporting structure been provided to the site?	
Has a detailed design plan been prepared for erecting the scaffold?	
Have alterations or changes to the scaffold been amended to the design plan?	
Have the tasks which are to be carried out from the scaffold been taken into consideration when selecting and designing the scaffold?	
Has the protection of the public been addressed?	
Has the protection of other workers been addressed?	
Has the protection of workers, who have to erect the scaffold been addressed?	
Has the issue of the proximity to overhead power lines been addressed?	
Has the issue of vehicle traffic around the scaffold been addressed?	
Has the voltage drop (electrical power) limitations of the installation been taken into consideration?	
Have measures to restrict lateral movement of the scaffold during operation been addressed?	
Have issues relating to safe entry and exit of the workers who are to use the platform been addressed?	
Has the storage and security of the scaffold, when not in use, been addressed?	

Unless **YES** or **N/A** is recorded the scaffold should not be used until rectification occurs.

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## Swing stage scaffold erection and installation checklist

ERECTING AND INSTALLING SCAFFOLD	YES / NO / N/A
Is the erection, alteration or dismantling of the scaffold carried out or directly supervised by the appropriate certificate holder?	
Has the supporting structure been assessed by a competent person?	
Has a statement of assessment for the supporting structure been provided to the site?	
Does the scaffolder have a copy of the scaffold design plan, before erection?	
Do the scaffolders erecting the scaffold have adequate fall protection?	
Has the protection of the public been addressed?	
Has the protection of other workers been addressed?	
Has the issue of the proximity to overhead power-lines been addressed?	
During the erection, <b>if needed</b> , are the areas around the support rigging, underneath and adjacent to the cradle barricaded off?	
During erection, <b>if needed</b> , is a safety observer positioned to prevent entry to the area below the scaffold?	
Are the supplied counterweights labelled with their weight in Kg and have they been manufactured for the purpose?	
Are the counterweights correctly and securely attached to the suspended scaffold support rigging?	
If used, are traversing tracks fitted with stops at each end of the rails?	
If used, are traversing trolleys rated at least to the WLL of the system?	
Are the outboard ends of the needles higher than the inboard ends?	
Is the suspension rig stable?	
Is the wire rope used of the correct size and type for the hoist?	
Is each hoist fitted with a secondary protective device?	
Has the secondary protective device been adjusted for the size of wire rope fitted?	
Are all wire ropes independently attached to the rigging?	
Has the suspended cradle been assembled correctly?	
Is the safe working load limit displayed in the cradle?	
Is the cradle in good mechanical condition?	
Has the scaffold been erected as per the design plan?	
Has safe entries and exits been provided for workers coming into and out of the cradle?	
Has the scaffold been erected as per the design plan, with modifications or changes approved and recorded on an amended plan?	

Unless **YES** or **N/A** is recorded the scaffold should not be used, until rectification occurs.

## Swing stage scaffold electrical installation checklist

ELECTRICAL INSTALLATION	YES / NO / N/A
Has an adequate power supply been provided for the suspended scaffold?	
Has the voltage drop requirements for suspended flexible cable been taken into consideration?	
Is the construction power-board situated near the support rigging of the suspended scaffold?	
Can the suspended flexible cable be accidentally removed from power-board?	
Has the suspended flexible cable been correctly secured to the support rigging and the cradle?	
Is the suspended flexible cord the correct type?	
Has the suspended cable adequate running clearance?	
Is the suspended cable of sufficient length?	
Is the control box attached to the outside guardrail?	
Are the electrical cables from the control box to each hoist, correctly installed?	

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ELECTRICAL INSTALLATION	YES / NO / N/A
Are the cables from the control box to each hoist adequately protected from mechanical damage?	

Unless **YES** or **N/A** is recorded the scaffold should not be used, until rectification occurs.

### Swing stage scaffold handover checklist

HANDOVER OF SCAFFOLD	YES / NO / N/A
Has the completed or altered scaffold been inspected before being used for the first time?	
Has a written statement of completion been supplied?	
Has the user of the scaffold been supplied with all safe use information?	

Unless **YES** or **N/A** is recorded the scaffold should not be used, until rectification occurs.

### Swing stage scaffold and boatswain's chair operation checklist

OPERATING	YES / NO / N/A
Has the supporting structure been assessed by a competent person and a statement of assessment for the supporting structure been provided to the site?	
Has the completed or altered scaffold been inspected before being used for the first time and a written statement of completion been supplied?	
Has the scaffold been erected as per the design plan?	
Are emergency rescue procedures in place to remove trapped workers?	
Has sufficient protection been provided for the public?	
Has sufficient protection been provided for other workers?	
Are measures in place to protect the workers on the suspended scaffold from falling debris?	
Has the supplier provided a copy of the operator's manual and copies of the daily checklist?	
Are the operators authorised by their employer to operate the scaffold hoist?	
Have the operators received instruction on how to operate the equipment?	
Have all people working in the suspended scaffold received instruction in the safe systems of work and the emergency procedures for the equipment?	
Have the dangers of overhead electric powerlines been addressed?	
Are the supplied counterweights adequate for the purpose, of the correct number and are securely attached to the suspension support rigging?	
Is the suspension rigging stable?	
Is the wire rope used of the correct construction and size for the hoist?	
Is each hoist fitted with a secondary protective device?	
Has the secondary protective device been adjusted for the size of wire rope fitted?	
Are all wire ropes independently attached to the support rigging?	
Has the cradle or chair been assembled correctly?	
Does the cradle or chair appear to be in good mechanical condition?	
Is a sign with the working load limit in Kg fixed inside the cradle or to the chair?	
Is the load on the platform within its safe working load?	
Are safe entries and exits provided for workers coming into and out of the cradle?	
If required, are lateral restraints being used?	
Is there safe access along the entire work platform of the cradle?	
Is there sufficient control over the movement of vehicles in the area of the scaffold?	
Is there sufficient control of cranes working in the vicinity?	
Are there sufficient controls over the storage, handling, and using hazardous substances on the cradle?	
Is the selection of the type of scaffold hoist appropriate for the location?	
Is there an effective method of communication between the occupants of the work platform and the ground?	
Has the correct type and size of suspended flexible electrical power cord been provided?	
Is the suspended flexible electrical cable of sufficient length?	

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OPERATING	YES / NO / N/A
Is the suspended flexible cable installed so that it cannot be accidentally removed from power-board?	
Has the suspended flexible cable been correctly secured to the support rigging and the cradle?	
Has the suspended flexible cable adequate running clearance?	
Is the control box attached to the outside guardrail?	
Are the electrical cables from the control box to each hoist, correctly installed and are the cables protected from mechanical damage?	

Unless **YES** or **N/A** is recorded the scaffold should not be used, until rectification occurs.

### Unattended swing stage scaffold checklist

UNATTENDED SCAFFOLDS	YES / NO / N/A
When the scaffold is unattended for short periods, are appropriate safety measures observed?	
When left unattended for longer periods, are appropriate safety measures observed?	

Unless **YES** or **N/A** is recorded the scaffold should not be used, until rectification occurs.

### Inspection, servicing & maintenance checklist

INSPECTING, SERVICING & MAINTAINING	YES / NO / N/A
Have the operators before using the scaffold, been completing the daily checklist?	
Has the scaffold undergone the monthly inspection?	
Have all the electrical leads, components, and electrical protection devices been inspected and tested, as in the Industry Standard for Electrical Installations on Construction Sites?	

Unless **YES** or **N/A** is recorded the scaffold should not be used, until rectification occurs.

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## APPENDIX D – SCAFFOLD INSPECTION CHECKLIST

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### 1. Scaffold vicinity

- Has public protection been provided?
- Have sufficient safeguards against overhead electric lines been provided?
- Is there sufficient control over vehicle movement?
- Is there sufficient control over crane operation?
- Are there sufficient controls for the storage, handling and using hazardous substances?
- Are scaffolds erected a safe distance away from trenches or excavations?

### 2. Supporting structure

- Is the supporting structure in good condition?
- Does the supporting structure have adequate strength?
- Are there sufficient controls to prevent deterioration of the supporting structure?
- Are all measures to strengthen the supporting structure adequate?
- Is the risk of the supporting structure being overloaded from other sources adequately controlled?
- Is the scaffold built on solid ground? If built on soft ground, are soleboards used to properly distribute the load?

### 3. Soleboards and baseplates

- Are there sufficient soleboards?
- Are the soleboards of suitable material and in a serviceable condition?
- Are the soleboards secure?
- Are there sufficient baseplates?
- Are the baseplates of the appropriate type?
- Are the baseplates serviceable and of suitable dimensions?
- Are the baseplates secure?

### 4. Scaffold structure

- Are the standards bearing firmly?
- Are the standards plumb or as designed?
- Are the longitudinal standard spacings correct?
- Are the transverse standard spacings correct?
- Are the joints in standards correctly positioned?
- Are the joints in standards correctly secured (special duty or hung scaffold)?
- Are the ledgers level or as designed?
- Are the ledgers continuous or as designed?
- Are the lift heights correct?
- Are the horizontal ledger spacings correct?
- Are the ledgers correctly secured?
- Are ledger joints correctly positioned (tube and coupler scaffold)?
- Are the joints in ledgers correctly secured (tube and coupler scaffold)?
- Are there sufficient transoms or putlogs?
- Are the transoms or putlogs correctly positioned and secured?
- Is the bracing adequate?
- Is the scaffold sufficiently stable?
- Are the ties correctly positioned and correctly fixed?
- Has mixing of components been approved in writing by a competent person?

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## 5. Platforms

- Does the scaffold have the required number of working platforms?
- Are the working platforms at the required locations?
- Are catch platforms correctly positioned?
- Are the platforms and supporting scaffold constructed for the appropriate duty live loads?
- Are the platform dimensions suitable for the intended work?
- Is there adequate edge protection?
- Are the platforms correctly constructed?
- Are planks secured against wind?

## 6. Entry and exit

- Is there safe entry and exit to every scaffold platform?
- Are temporary stairways correctly installed?
- Are portable ladders of an industrial grade, serviceable and correctly installed?
- Are entries, exits and access platforms correctly installed?

## 7. Containment sheeting

- Has the scaffold been designed for wind loading on containment sheeting?
- Has the retention of rainwater and its effect on increasing weight been considered?
- Are the fixing ties secure?
- Are there rips or tears?
- Are the overlap joints satisfactory?

## 8. General fitness for purpose

- Is there adequate provision for material handling?
- Are the clearances between the scaffold and adjacent structures correct?
- Is there adequate protection from falling debris?
- Has the scaffold been adequately designed to support all attachments?
- Are all approaches and platforms effectively lit?

## 9. Mobile scaffolds

- Is the supporting surface hard and flat?
- Is the area of operation free of powerlines and other hazards?
- Are all floor penetrations covered?
- Are the castor wheel locks in working order? They should be locked at all times, except during movement of the scaffold.

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## APPENDIX E – SCAFFOLD HANDOVER OR INSPECTION CERTIFICATE

A person with management or control of a suspended, cantilevered, spur, hung or other scaffold from which a person or thing could fall more than 4 metres, must receive written confirmation from a competent person that the scaffold has been inspected, completed and is safe for use. This example handover or inspection certificate may also be used for minor scaffolds.

Scaffold supplier/erector		Client	
Certificate No:		Client Name:	
Company Name:			
Address:		Address:	
		Site Address:	
Contact Phone:		Contact Phone:	
Fax:		Fax:	
Project Details			
Project/Reference Number:			
Description of area handed over:			
Drawings attached:			
Intended use of scaffold:			
Duty Classification:			
Number of working decks:			
Top working platform height:			
3 m Bays:	2.4 m Bays:	1.8 m Bays:	
1.3 m Bays:	0.8 m Bays:	Access Bays:	
Plant Design Registration Number:	Additional Details:		
Handover Inspection of Scaffold			
<p>The scaffold detailed above has been erected in accordance with the attached drawings and the WHS Regulations and <i>Code of Practice: Scaffolds and Scaffolding Work</i>; is informed by relevant technical standards and is suitable for its intended purpose.</p> <p><u>Note</u> A completed scaffold inspection checklist should be provided and attached to this handover certificate, stating all aspects of the inspected scaffold which meet the required standards. All subsequent inspections should be recorded on an inspection checklist and provided to the relevant person.</p>			
Name:		Signature:	
High risk work licence No:			
Time:		Date:	
Acceptance – on behalf of the client			
Name:		Signature:	
		Date:	
<p>Arrange for scaffold to be inspected at intervals not exceeding 30 days or immediately following an incident which may affect the adequacy of the scaffold. Design registration number for prefabricated scaffolding must be kept readily accessible, for example near the scaffold at all times.</p>			