WorkCover TASMANIA

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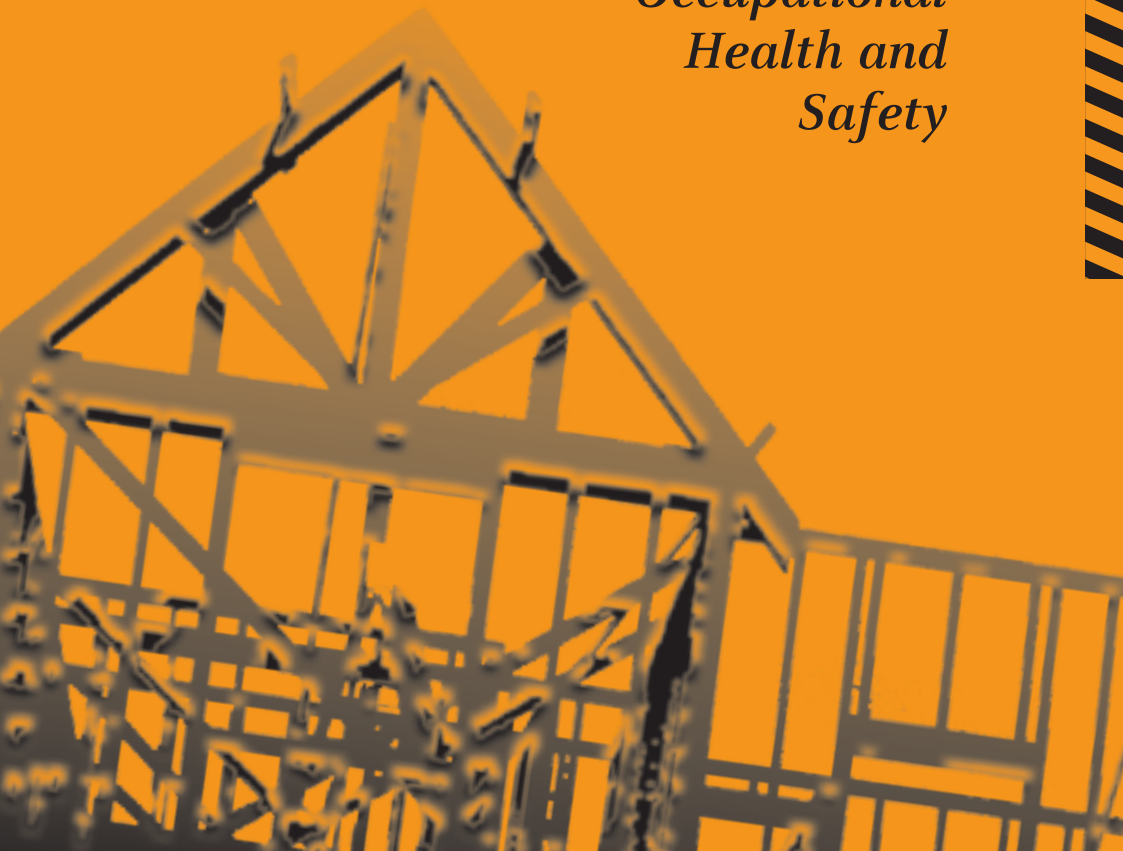
# CONSTRUCTION INDUSTRY:

## *A Guide to Occupational Health and Safety*



## PLEASE NOTE

This information is for guidance only and is not to be taken as an expression of the law. It should be read in conjunction with the *Workplace Health and Safety Act 1995*, the *Workplace Health and Safety Regulations 1998* and any other relevant legislation. Copies of the legislation can be purchased from Print Applied Technology: call (03) 6233 3289 or freecall 1800 030 940. It is also available on the Internet at www.thelaw.tas.gov.au

All standards listed in this guide are available at www.saiglobal.com/shop

This guide was produced by staff from WorkCover Tasmania and Workplace Standards Tasmania.

We welcome your feedback on this guide. Send to: wstinfo@justice.tas.gov.au


## ACKNOWLEDGMENTS

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# CONTENTS

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## INTRODUCTION

This guide provides information and guidance on workplace health and safety in the construction industry. This information will raise awareness for everyone working in the industry about their responsibilities under Tasmanian workplace health and safety legislation.

This guide refers to the more general work tasks and operations in the industry, and provides guidance on minimum health and safety standards that must be complied with.

Another valuable guide for this industry is the National Standard for Construction Work (available at www.safeworkaustralia.gov.au).

## WORKPLACE HEALTH AND SAFETY: RESPONSIBILITIES

See Sections 9 and 16 of the *Workplace Health and Safety Act 1995* (the Act).

**Employers**

Employers are responsible for ensuring, so far as reasonably practicable, that precautions are taken to ensure the health and safety of workers employed or engaged at the workplace. Employers must provide and maintain (so as far as is reasonably practicable):

- a safe working environment
- safe systems of work
- plant and substances in a safe condition.

Employers must provide facilities, as prescribed by the Regulations, for the welfare of workers at any workplace.

Employers must provide information, instruction, training and supervision that is reasonably necessary to ensure each worker is safe from injury and risks to health.

Employers are also responsible for ensuring that contractors, sub-contractors and their employees, visitors to the workplace and members of the public are safe from injury and risks to health as a result of work done at the workplace. To achieve this, the workplace and surrounding areas must be managed using the hazard management approach to remove (or at least reduce) safety risks.

For more information on this, call the Helpline on 1300 366 322 for your free copy of *Hazard Management: Play it SAFE (*GB081) or go to www.wst.tas.gov.au and search for GB081; or the *Serious about safe business?* kit (GB190), available at www.workcover.tas.gov.au by searching for GB190.

AS/NZS 4360:2004 *Risk management* and HB 211-2001 *Occupational health and safety management systems — a guide to AS 4801 for small business* may also be helpful. Go to wwwsaiglobal.com/shop for these.

**Principals**

Principals in charge of workplaces and/or those who engage contractors and sub-contractors have a responsibility for the health and safety of those workers they engage or have control over. They are also responsible for ensuring the safety of visitors to the workplace and members of the public.

They must ensure (as far as reasonably practicable) that contractors and their employees, and sub-contractors and their employees are aware of the health and safety requirements of the workplace, including the requirement to provide and maintain a safe working environment.

Principals have a duty to ensure that contractors and their employees, and sub-contractors and their employees do not work in a way that would place any person at risk.

**Workers**

Workers (including leading hands, supervisors and so on) must take reasonable care for their own health and safety. They must also take similar care for the health and safety of others, including anyone working under their direction or supervision who may be affected by their acts, omissions, failures, errors or oversights.

Workers must follow any direction given to them by their employer or responsible officer about health and safety.

# WORKPLACE HEALTH AND SAFETY: THINGS TO CHECK

## ASBESTOS

Asbestos removal work shall be done according to:

- Part 4, Division 9 of the Regulations
- Code of Practice for the Safe Removal of Asbestos (available at www.ascc.gov.au).

There are a number of forms you may be rquired to complete and submit to Workplace Standards Tasmania for asbestos removal work (series AR1–AR4). For more information go to www.wst.tas.gov.au and search for "asbestos removal".

## CHAIN SAWS

Using chain saws — including training operators and using personal protective equipment (PPE) — should be done according to:

- *The Safe Use of Chain Saws* (SB027). Call the Helpline on 1300 366 322 or go to www.wst.tas.gov.au and search for SB027 for your free copy.
- AS 2727—1997 *Chainsaws—Guide to safe working practices.*

## DEMOLITION WORK

Before starting any demolition work, a person competent in all aspects of demolition work should investigate the structure to be demolished, the site and the surrounds.

Demolishers may be required to be accredited under the *Building Act 2000.*

A demolition plan outlining a safe system of work should be devised and documented by the principal contractor, demolition contractor and (where necessary) a structural engineer. For assessment and planning purposes, they should consider the requirements of AS 2601—2001 *Demolition of structures.*

Work should not start until the demolition plan is completed.

The following issues could affect health and safety during the demolition and therefore should be considered:

- *asbestos*: does the building contain asbestos? If so, it must be removed according to Part 4, Division 9 of the Regulations
- *services*: have all services to the site been identified, disconnected, terminated and made safe? These could include water, power, gas and sewerage lines and septic tanks
- *fire services*: in the event of a fire, is there access to water?

- *demolition sequence*: this should be detailed in the demolition plan, with particular attention to unusual structures or those incorporating pre-stressed concrete
- *tools and equipment*: these must be in good condition and operated by workers who are competent in their use. Workers must wear personal protective equipment (PPE) appropriate to the tasks. Petrol, diesel or gas engines must not be used in poorly ventilated areas
- *height safety*: cover or barricade all floor or roof openings; provide properly constructed, heavy duty scaffolds; never allow workers to work unprotected at heights; if harnesses are used, then harnesses, safety lines and inertia reels must comply with relevant standards, and training must be provided. You must also ensure rescue facilities are available in the event of a fall into a safety harness
- *public safety*: protect the public from the demolition work by having safe distances and barricades, constructing covered walkways over footpaths where safe distances cannot be achieved, and managing traffic that enters and leaves the site
- *rigging*: ensure all rigging equipment is in a serviceable condition and is suitably rated for the loads. Ensure rigging work is done by workers holding an appropriate licence to perform high-risk work or certificate of competency
- *suspended floors*: a structural engineer should validate the load bearing capability of suspended floors before heavy equipment or rubble is placed on them. Regularly monitor the build-up of rubble and machinery loads to safeguard against overloading.

## ELECTRICAL SAFETY

The standard AS/NZS 3000: 2000 *Wiring Rules* is the mandatory standard for installing, maintaining and using electrical equipment on construction sites. Guidance can be found in other standards, including:

- AS/NZS 3012:2003 *Electrical installations—Construction and demolition sites*
- AS/NZS 3760:2003 *In-service safety inspection and testing of electrical equipment.*
- AS/NZS 4836:2001 *Safe Working on low-voltage electrical installations.*

This list is not exhaustive.

The following information outlines some of the standards' requirements.

**Temporary switchboards**

Minimum standards apply to construction site switchboards. This includes using the switchboard, mounted temporarily, to supply the construction activity with electricity.

Temporary switchboards:

- must be designed and constructed according to AS/NZS 3012
- must be securely mounted. This can be on a portable stand, provided it is robust and secured to prevent it from being knocked or blown over
- must have, at the bottom of the enclosure, free access for flexible cords to prevent mechanical damage. For example, openings in the cabinet structure shall be insulated to prevent cords being damaged through contact with sheet metal edges
- must include a way of preventing strain on cables and cords. For example, a tie bar that is insulated and prevented from causing mechanical damage
- must be readily accessible, and protected from mechanical damage and adverse environmental conditions
- should be located to suit the maximum extension cord lengths as set out in Table 1 (on page 9).

Where the temporary switchboard is fitted with a door or lid, this door or lid shall:

- need a tool to be removed
- be fitted with a way to be locked
- be fitted with a way of being held in the open position
- if the switchboard is provided with a socket-outlet, be provided with a clearly visible and legible sign on the external surface that states: KEEP CLOSED — RUN ALL LEADS THROUGH BOTTOM
- be kept closed at all times, except when access is required.

In multi-level buildings, sub-boards should be provided on each floor to eliminate the need to run extension cords between building levels (this does not apply to domestic construction work on class 1, 2 and 10 Buildings. See Appendix C of AS/NZS 3012).

These sub-boards should be positioned to suit the maximum extension cord lengths listed in Table 1 (this does not apply to domestic construction work on class 1, 2 and 10 Buildings. See Appendix B of AS/NZS 3012).

Sub-board isolation switches (located in the main switchboard) should have corresponding identification to that displayed on each sub-board.

## Extension cords

Maximum extension cord length depends on the conductor (wire) size; the larger the conductor size, the greater the distance can be from a switchboard (source) to an appliance (see Table 1 below).

*Table: 1 Maximum extension cord lengths*

| Extension cord rating in amps | Conductor area in $mm^2$ | Maximum length of extension cord in m |
|---|---|---|
| 10 | 1.0 | 25 |
| | 1.5 | 35 |
| | 2.5 | 60 |
| | 4.0 | 100 |
| 15/16 | 1.5 | 25 |
| | 2.5 | 40 |
| | 4.0 | 65 |
| 20 | 2.5 | 30 |
| | 4.0 | 50 |

## Power tools

Before using any power tool, a check should be made to ensure that:

- electrical connections are secure
- electrical supply to the power tool is through a residual current device (RCD)
- safety guards are in position
- the machine is switched off before activating the electricity supply.

Always wear the correct PPE according to the manufacturer's guidelines or acceptable industry standard when using power tools.

Extension cords and power tool leads must be tagged and tested in accordance with AS/NZS 3012:2003 *Electrical installations - Construction and demolition sites.*

## Electrical inverters

Due to a number of serious safety concerns and a fatality while using this equipment, Electricity Standards and Safety strongly recommends that inverters should not be used in the workplace unless they comply with AS/NZS 4763 (Int): 2006 *Safety of portable inverters.*

## FIRST AID

If a risk assessment of the workplace and work activities shows injury to be a possibility, the employer, principal or responsible officer is responsible (as far as reasonably practicable) for providing a suitable level of first aid equipment for the initial emergency treatment of an injured person.

Someone with appropriate training in administering first aid treatment should be on site to help with injury management. This includes keeping appropriate records of injuries.

Emergency response information should be displayed near any area set aside for treating injured workers. Any contact numbers should be relevant to the region where work is done.

Workplace Standards has produced *A guide to first aid in the workplace* (GB119) to help you determine the first aid facilities and services you need. For a free copy, call the Helpline on 1300 366 322 or go to www.wst.tas.gov.au and search for GB119.

## FORMWORK

Formwork should be adequately designed for its intended use. It should meet the requirements of AS 3610—1995 *Formwork for concrete* and/or the manufacturer's specifications.

Falls from height are one of the most significant risks to construction workers. A risk assessment on erecting formwork should consider the requirements of the codes of practice *Managing the Risk of Falling in Housing Construction* (COP003) and *Working at Height in Commercial Construction* (COP004).

Formwork systems should not be used as scaffolding: formwork systems do not provide adequate headroom for workers or suitable connection points for handrails, nor do they allow for the flush fitting of deck planks.

## INDUCTION

The *Code of Practice for Induction for Construction Work* recommends that those working in the construction industry to successfully complete the national training unit *Work Safely in the Construction Industry* (CPCCOHS1001A). This training (which must be delivered by a registered training organisation) has three parts:

- general induction (classroom training)
- site induction (on the job)
- task specific induction (on the job).

It provides workers with an understanding and awareness of:

- rights and responsibilities under health and safety laws
- common hazards and risks in the construction industry
- basic risk management principles
- the standard of behaviour expected of workers on construction sites.

Anyone who does construction work (including civil construction) should complete the training.

Those with less than five years of construction work experience will have 12 months from 19 August 2009 to complete the training.

Those with more than five years of construction work experience will have two years from 19 August 2009 to complete the training.

Upon successfully completing this training, workers will be issued with a white card by Workplace Standards Tasmania. This white card will have national portability and will be for life (except if a person in charge of the work site decides there is a need for re-training, which can be determined through supervision, incidents or risk management; or if a person re-enters the industry after an extended absence).

## LADDERS

Any ladder used in a workplace must have an industrial rating of not less than 120 kilograms and must comply with either:

- AS/NZS 1892.1:1996 *Portable ladders—Metal*

  or

- AS 1892.2—1992 *Portable ladders—Timber*.

Alterations to ladders and ladder systems that have not been designed by appropriately qualified persons, in consultation with the manufacturer, shall not be used.

### Ladders: general principles for safe use

*Inspection* — Inspect ladders regularly for damage, paying particular attention to:

- timber stiles that are warped, splintered, cracked or bruised
- metal stiles that are twisted, bent, kinked, crushed or have cracked welds or damaged feet
- rungs, steps, treads or top plates that are missing, worn, loose or damaged
- tie rods, locking braces, ropes and brackets that are missing, worn, loose or broken

- timber members that are covered with an opaque paint or any other treatment that could disguise faults in the timber.

Remove damaged ladders from service immediately.

*Storage* — Do not stack materials on top of ladders.

*Base of ladders* — These must be supported on a firm, level, non-slip surface.

*Loading* — There should be no more than one person on the ladder at any one time. All work from a ladder must be performed while facing the ladder.

*Work involving restricted vision or hot work* (such as welding or oxy-cutting) — This should not be performed from a ladder.

*Reach* — Ladders must not be set up on a scaffold structure or elevating work platform to gain extra height.

*Electrical work* — Fibreglass ladders are acceptable. Metal ladders or timber ladders with wire-reinforced stiles must not be used near any electrical conductor or for working on live electrical equipment.

*Ladder orientation* — Ensure ladders are set up according to the manufacturer's labelling.

### Single and extension ladders

*Height above landing* — Where these are used to gain access to a working platform or roof, the top of the ladder must extend beyond the level of the working platform or roof by at least one metre.

*Top of ladder* — This shall be secured or restrained against possible movement.

*Workers using ladders* — Workers should have both hands free to go up and down the ladder. Any materials and tools that cannot be safely secured from a belt must be independently taken to the worksite.

### Trestle and step ladders

Trestle ladders shall be designed and manufactured according to either:

- AS/NZS 1892.1:1996 *Portable ladders—Metal*

  or

- AS 1892.2—1992 *Portable ladders—Timber.*

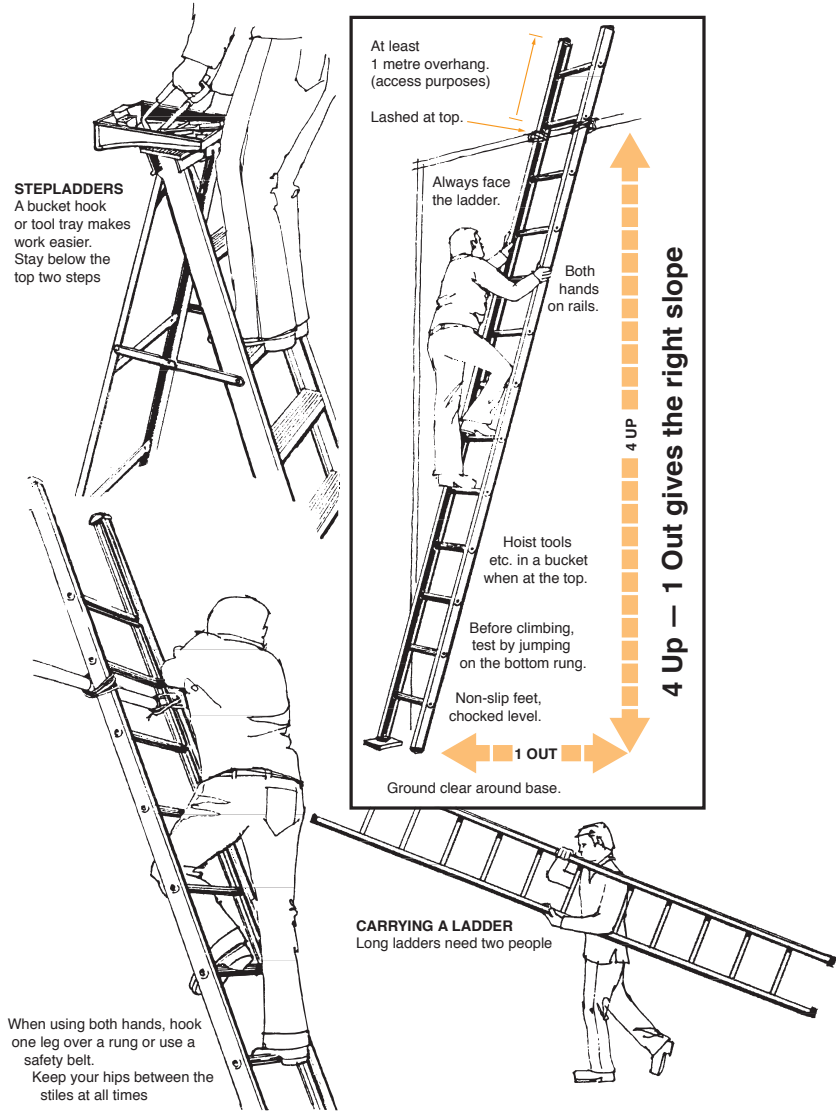
A trestle ladder should be set up on a hard level surface in the fully opened position.

Workers should not stand on the top step or any other step contrary to the manufacturer's specifications for trestle ladders.

Only industrial rated trestles and trestle-backed ladders should be used to support a platform (of not less than 450 mm wide) that someone has to work upon.

*Figure 1*

## USE THE RIGHT LADDER FOR THE JOB



## LASERS

Invisible direct or reflected laser beams can permanently damage unprotected eyes.

Lasers and their use should comply with AS 2397—1993 *Safe use of lasers in the building and construction industry.*

## MANUAL TASKS

The majority of accidents that occur in the construction industry result from poor manual handling techniques. Manual tasks are any activity where a person lifts, lowers, pushes, pulls, carries, moves, holds or restrains an object. It also includes twisting and reaching, repetitive tasks, and awkward work postures.

Under the Regulations, employers are legally required to:

- protect workers from the risk of body strain injuries that might be caused by hazardous manual tasks
- follow the National Code of Practice for Manual Tasks (available at www.ascc.gov.au).

The National Code for the Prevention of Musculoskeletal Disorders Caused From Performing Manual Tasks at Work (avaiable at www.ascc.gov.au) is also useful guidance.

The *Body Strain Prevention Kit* (GB114) and *Body Strain Prevention for Workers* (GB124) can help employers and workers identify manual handling risks and reduce the risk of a body strain injury. For a free copy, call the Helpline on 1300 366 322 or go to www.workcover.tas.gov.au and search for GB114 and GB124.

## MOBILE EQUIPMENT

Operators must be adequately trained and assessed in safely using mobile equipment to ensure their competency. Operators of some mobile equipment — for example, mobile cranes, boom-type elevating work platforms and concrete placing boom pumps — must hold an appropriately endorsed licence to perform high-risk work or certificate of competency. See National Standard for Persons Performing High Risk Work (available at www.ascc.gov.au).

The standards of operation for all mobile equipment should comply with the manufacturer's operating instructions and the following guides, as appropriate:

- *A Guide to Working Safely Near Overhead Power Lines* (call the Helpline 1300 366 322 or go to www.workcover.tas.gov.au and search for GB137)
- AS 2359.2—1985 *Industrial trucks—Operation*
- AS 2550.1—2002 *Cranes, hoists and winches—Safe use—General requirements*
- AS 2550.5—2002 *Cranes, hoists and winches—Safe use—Mobile cranes*
- AS 2550.10—1994 *Cranes—Safe use—Mobile elevating work platforms*
- AS 2550.15—1994 *Cranes—Safe use—Concrete placing equipment.*

## NAIL GUNS

Always follow the manufacturers' instructions for the correct and safe use of nail guns.

## NOTIFICATIONS

The Act and Regulations require that you notify Workplace Standards before some work activities are started and in the case of certain incidents and accidents. Notification times for construction work depend on the type of work being done.

### Accidents and incidents

Under section 47 of the Act, if

- a person is killed or suffers serious bodily injury or illness

  or

- a dangerous incident occurs which could have resulted in a person being killed or suffering serious bodily injury or illness

then the person who controls or manages the workplace must notify a Workplace Standards Tasmania inspector with the details of the death, injury, illness or incident by the quickest available means (ie by calling the Helpline on 1300 366 322).

Under section 72 of the *Electricity Industry Safety and Administration Act 1997*, Electricity Standards and Safety (part of Workplace Standards Tasmania) must be notified in the case of a serious electrical accident. This includes electrocution, electric shock, and burns caused by electricity requiring medical attention.

To comply with both Acts, call 1300 366 322.

### Asbestos removal

Anyone intending to remove material containing asbestos (apart from exempt removal work; see *Definitions* on page 27) from a building or structure must notify Workplace Standards Tasmania before starting the removal work.

Removal work must comply with the Code of Practice for the Safe Removal of Asbestos (available at www.ascc.gov.au).

There are a number of forms you may be rquired to complete and submit to Workplace Standards Tasmania for asbestos removal work (series AR1–AR4). For more information go to www.wst.tas.gov.au and search for “asbestos removal”.

### Construction notification

If your project (as notified to council) is valued at more than **$200,000**, you must appoint a responsible officer. Fourteen days before the construction starts, the responsible officer must notify Workplace Standards in writing of:

- the location of the construction work
- details of the construction work being performed
- a declaration (signed by them) stating that there is a system in place to ensure that everyone on site will work in a manner that meets the requirements of the Act.

When a council issues a permit for construction work and the value of the work (as notified to the council) is greater than **$2 million** the accountable person of the construction company must:

- submit a written safety management plan to the Director of Industry Safety for approval before work starts
- receive the Director's approval of this plan before any work starts.

### Diving work

Anyone who engages or instructs a person to carry out diving work (that is, working in water using compressed gases to breathe) must ensure that person is qualified for this work. The work must comply with any requirements specified by the Director of Industry Safety or any relevant approved code of practice.

Anyone wishing to dive – or direct another person to dive – to a depth greater than 50 metres, must have written approval from the Director of Industry Safety.

Anyone intending to do diving work or direct another person to do this must notify Workplace Standards Tasmania at least 48 hours before starting work.

### Safety helmets

Safety helmets complying with AS/NZS 1801:1997 *Occupational protective helmets* must be worn on construction sites where:

- there is a risk of being struck on the head by falling or protruding objects
- work is done at various levels of a construction site
- access into work areas is directly below any work being done.

If site signs indicate that helmets must be worn, everyone on the site must comply. Employers and principals must enforce this requirement, especially where the above risks exist. During any period where these risks do not exist and employers or principals do not require helmets to be worn, then the signs should be removed or covered.

### Safety footwear

Work footwear complying with the set of standards AS/NZS 2210 (1994–2000) *Occupation protective footwear* should be selected, taking into account the type of hazards workers are exposed to. These hazards will vary from time to time and no single type of footwear will protect against them all.

Due to the ever-present risk of falling objects on construction sites, all workers should be required to wear steel-capped safety footwear. Uneven surfaces are common to construction sites, and they can cause ankle injuries. Wearing high-leg lace-up boots (in preference to elastic-sided slip-on boots) can reduce the risk of ankle injuries.

Work in water or wet conditions requires gumboots. Where there is also the risk of objects falling or being dropped, these should be steel-capped gumboots. In contrast, roofing work is best suited to flexible, jogger-style footwear with good grip.

### Hearing protection

Hearing protection that meets or exceeds the requirements of AS/NZS 1270:2002 *Acoustics—Hearing protectors* must be provided and worn when there is a risk of noise impairing a worker's hearing. This includes working with or near noisy machinery such as:

- electric saws or planers
- explosive power tools and hammer drills
- jack hammers
- compressors
- generator sets.

Any person required to wear hearing protection must undergo audiometric testing within three months of starting work and at two year intervals.

### Eye protection

Many activities on construction sites create eye injury hazards. In particular, using power tools and nail guns and even hand nailing presents a risk of flying objects entering the eye with enough force to create permanent and irreparable damage.

If the risks from these hazards cannot be eliminated, safety eyewear must be worn. Eye protection must meet or exceed the requirements of AS/NZS 1337:1992 *Eye protectors for industrial applications*.

Eye protection must protect against the particular hazard. In some cases goggles are required rather than glasses: for example, safety glasses cannot adequately protect against the risk of a chemical splash during decanting.

Where glare from the sun is an issue or outdoor workers prefer to wear sunglasses, they should also meet AS/NZS 1337. Most safety eyewear manufacturers have tinted lenses for their safety glasses that meet this standard and provide 100% UV protection as well.

### Respiratory protection

Respiratory protection that meets or exceeds AS/NZS 1715:1994 *Selection, use and maintenance of respiratory protective devices* must be worn where a worker may inhale harmful substances and the risk cannot be eliminated by other means. Refer to the manufacturer's material safety data sheet (MSDS) when selecting suitable respiratory protection.

Before working with solvents, paints, adhesives or other similar products, always check the manufacturer's recommendations or information for what respiratory protection is required.

Concentrations of hazardous substances, dusts and fumes will often be significantly higher indoors than in well-ventilated areas. This should be considered when assessing the level of risk from such hazards.

### Other

For information about sun protection, go to the Cancer Council Australia's website at www.cancer.org.au

Workers handling sharp objects and hazardous substances must be provided with and must use suitable protective gloves, as defined in the manufacturer's MSDS.

## PORTABLE GENERATORS

Portable generators should comply with AS 2790—1989 *Electricity generating sets—Transportable (up to 25 kW)*.

Portable RCDs must be used in conjunction with all portable generators.

## ROOF WORK

The associated hazards and levels of risk must be assessed before starting any roofing work. This assessment and subsequent work methods must comply with:

- the code of practice *Managing the Risk of Falling in Housing Construction* (COP003)
- the code of practice *Working at Height in Commercial Construction* (COP004)
- regulations 17, 18, 19 and 21.

The codes of practice provide practical guidance on achieving a safe working environment and safe systems of work. Employers or principals may be required to demonstrate to a Workplace Standards Tasmania inspector how they are meeting the intent of the codes. If the inspector finds that work is being done without regard for these requirements, they have the authority to stop work until adequate standards are established.

## SANITATION FACILITIES

As a minimum on any construction site, employers or principals should (as far as reasonably practicable) ensure that a toilet is available and kept clean. Workers should be able to wash their hands in clean and fresh water before and after using these facilities.

It is totally unacceptable for workers to have to use the natural surroundings for these purposes.

Water suitable for drinking must be available on site at all times.

Larger construction sites are expected to provide clean eating and changing facilities as well.

## SCAFFOLDING

Scaffolding is a temporary structure for supporting access platforms or working platforms.

Where a worker or object could fall four metres or more from the working platform, the scaffold must be erected by:

- someone holding a licence to perform high-risk work or certificate of competency for the class of scaffolding being erected

  or

- someone working under the direct supervision of a person holding a licence to perform high-risk work or certificate of competency for that class.

Where a scaffold does not exceed four metres, it must be erected properly and the person erecting the scaffold must have the necessary skills to erect the scaffold.

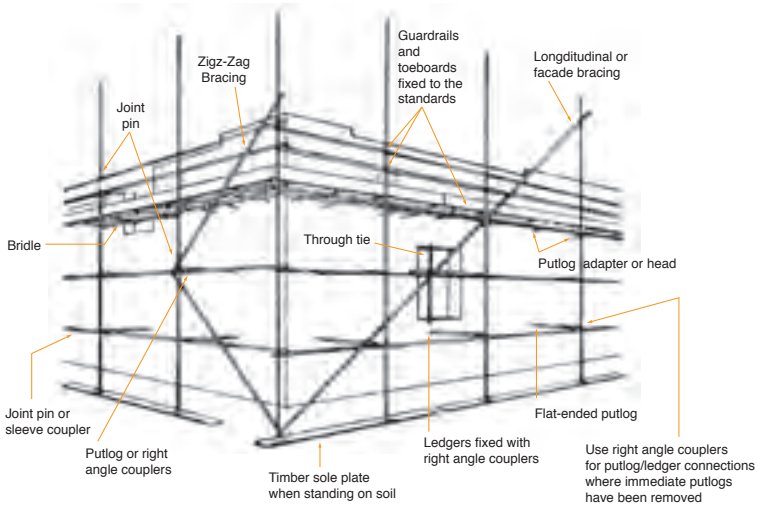
All scaffolding must comply with AS/NZS 4576:1995 *Guidelines for scaffolding.*

### General requirements

Provide an industrial rated ladder for access to and from the working platform. Extend the ladder past the platform step-off point by at least one metre, and tie it off in a secure manner to prevent possible movement.

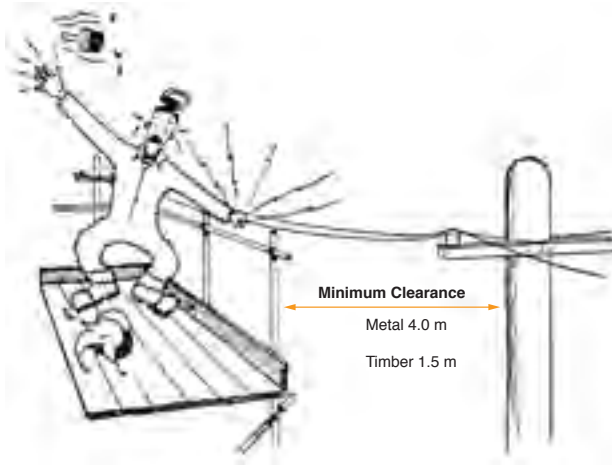
Install edge protection — in the form of a top rail, mid rail and toe-board, or mesh screens incorporating kick plates — on any unguarded edge of a platform where a worker could fall two metres or more (see Figure 2).

*Figure 2*




- Deck all working platforms to their full width using approved scaffold planks or platforms.
- Ensure workers do not ride on a mobile scaffold while it is being moved.
- Lock all castors or wheels on mobile scaffolds before use.
- Where light aluminium-type free-standing scaffolding is used, the minimum base width to working height ratio should not exceed 2:1. Increased scaffold height can be achieved by increasing the minimum base width by the use of outriggers.
- Do not use timber pallets to support working platforms, to place material on, or for workers to work from.
- Consult the power supply company before erecting any scaffold closer than four metres to electrical conductors.

*Figure 3*




**Stud bracket scaffolds**

This type of scaffolding is commonly used to provide a working platform when completing facia and gutter installation. Stud bracket systems are acceptable for platform heights up to four metres from the ground, but where a worker could fall more than two metres from the work platform, the stud bracket system must incorporate handrails (including a top rail) with a height between 900 mm and 1100 mm and a mid rail.

A minimum platform width of 450 mm (two planks wide) is required. The maximum spacing of stud brackets along the building wall is determined by the maximum allowable span of the scaffold planks (see Table 2).

Further information on stud bracket scaffolding can be found in the code of practice *Managing the Risk of Falling in Housing Construction* (COP003).

*Table 2: Maximum span of solid timber scaffold planks complying with AS 1577—1993* Scaffold planks

| Nominal thickness of plank in mm | Maximum span between supports in m |
|---|---|
| 32 (hardwood only) | 1.0 |
| 38 | 1.5 |
| 50 | 2.0 |
| 63 | 2.5 |

*Note:* for laminated timber and aluminium planks, refer to the manufacturer's specifications for maximum span capability.

### Trestle scaffolds

Trestle scaffolds must be designed according to AS/NZS 4576:1995 *Guidelines for scaffolding.*

A trestle scaffold must be set up on a firm level surface and according to manufacturer's specifications. Trestle scaffolds must not be piggy-backed (that is, one set atop another) to gain extra height.

Trestle scaffolding must not be set up or used:

- at the edges of open floors
- adjacent to penetrations
- in any other location where a worker or object could fall more than two metres from the work platform

— unless guard railing is provided to the edge of the work platform.

Where packing is required, a trestle scaffold must be levelled using solid timber or other suitable solid packing material.

For height fixing adjustment, use only the purpose-designed pins — not nails, pieces of reinforcing bars or bolts.

### Ladder bracket scaffold

Ladder bracket scaffolds are used for very light work tasks only (such as sign writing) where alternatives are sometimes not practical. They are not suitable for general construction work because they are not capable of safely sustaining even light loading. Generally, they are capable of supporting only a single plank.

Ladder brackets should be designed and manufactured by competent persons. By design, they are hung from the underside of the ladder when in position (not on the top side).

The height of the working platform should never expose the worker to a fall of more than two metres. The maximum horizontal spacing between any two supporting ladders is 2.4 metres. Each ladder should be secured against movement before use, especially sideways movement.

No more than one person is to be supported by a ladder bracket scaffold at any one time.

## SIGNS AND BARRICADES

One way to alert people to the many hazards on a construction site is to strategically place safety signs and barricades around the site. Access to the work area should be restricted to workers who are familiar with the site conditions; others should be directed, by signs, to a safe area where they can meet site personnel before being escorted into the work area.

Signs should indicate:

- areas that are off limits
- where PPE must be worn
- where hazardous substances are stored
- where particular hazards may be present; for example, nail guns or explosive power tools that are in use
- incomplete scaffolds that are unsuitable for use
- areas for materials to be delivered to the construction site.

Barricades should be used:

- around excavations or trenches that are left open after work hours
- where there is a risk of workers accidentally slipping or falling into open excavations or trenches
- where workers need to be kept clear of the work area to protect them from trip hazards, falling objects or operating machinery.

Where work encroaches onto a public walkway or footpath, employers or principals should obtain authority from the relevant council. A combination of temporary signs and barricades should be used to create a safe pathway around the works. This should protect the public from the hazards of the construction site.

## TRENCHING AND EXCAVATION WORK

### Before starting work

A risk assessment should be made of any trench or excavation work before starting the work. The following factors should be considered:

- the type of ground conditions to be excavated
- the likely weather conditions on the day and during the work
- traffic control near the trench or excavation
- other work tasks being done in the area, such as using earthmoving equipment close to the excavation for lowering pipes and shoring systems into the excavation.

### General requirements

Safe access with ladders must be provided into and out of trenches or excavation to ensure workers can leave quickly. Ladders should be positioned no more than nine metres apart.

Workers working in a trench or excavation must wear an approved safety helmet.

Trenches or excavations must have barricades erected when left unattended to prevent workers from entering them.

The general rule for working in an excavation more than 1.5 metres deep is that there should be a one metre limit on the height of the vertical unsupported bank in the vicinity of the work area. To achieve this, the excavation can be benched or battered, as shown in Figures 4 and 5 (see page 26).

A competent person should make daily inspections of the trench or excavation before any workers enter. This person should check the ground conditions, soil and shoring.

**Danger signs**

- Development of new fissures or cracks, especially running parallel to the sides of the trench.
- A slump in the surface near the excavation. This indicates the wall is subsiding behind the ground support system.
- Sudden separation of soil from banks. For example, sand beginning to trickle down, even minor amounts.
- Ground swelling up at the bottom of the trench. This is usually associated with subsidence alongside the trench.
- Bowing or creaking support timbers.

Should any of these signs appear, all workers must *leave the trench or excavation immediately* and necessary steps must be taken to ensure trench safety before re-entering.

**Accidents and their causes**

Some common accidents and their causes that can happen in trenches or excavations include:

- collapse of earthwork — due to inadequate or weak shoring
- workers falling into excavations — due to inadequate barriers
- asphyxiation — due to gases such as carbon dioxide. These can collect in excavations when air stagnates because of a lack of ventilation, especially on damp foggy days. Physical signs of asphyxiation are dizziness, pounding in the ears and shortness of breath
- collapse of sides — due to soil from the excavation being placed too close to the sides, that then become overloaded
- collapse of edges — due to vehicles or plant being parked or placed too close to the edge
- vehicles being driven into the excavation — due to driving errors, inadequate barriers or the absence of stop blocks.

Other factors that can cause accidents include:

- failure to maintain shoring, particularly after inclement weather
- water seepage
- soil, materials or tools falling into the excavation
- excavating machinery or a suspended load (such as the bucket of an excavator or pipes) being lowered into the trench and striking a worker
- striking buried services such as electricity cables, communication cables and gas pipes
- changing weather conditions such as sudden rain storms.

*Figure 4: Battering the sides of the trenches*
*Example 2.5 metres deep in stiff clay*

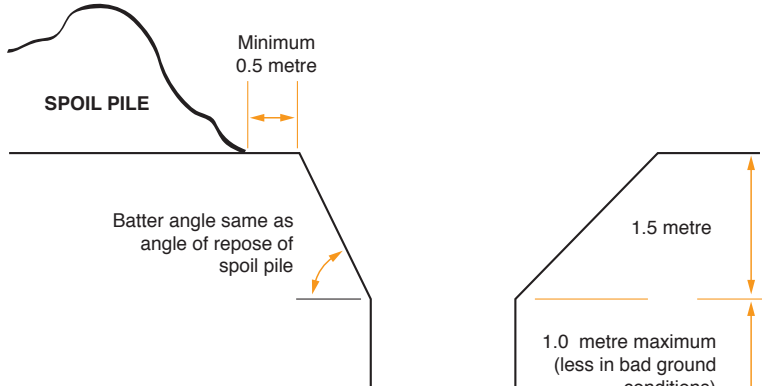
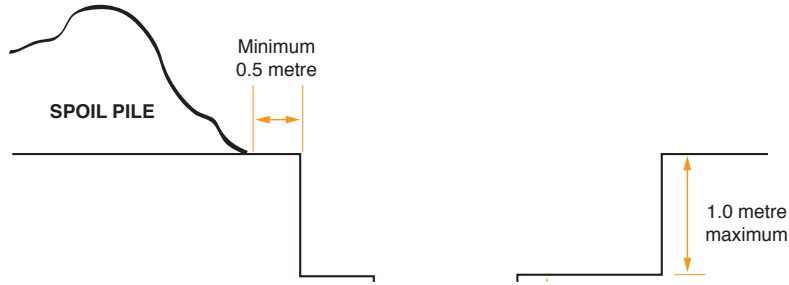



*Figure 5: Steep battering vertical sided trenches*
*Example 2.0 metres deep in stiff clay*



## DEFINITIONS

**AS** are Australian Standards and AS/NZS are joint Australian–New Zealand Standards. Go to www.saiglobal.com/shop for information.

**Exempt removal work** is the removal of:

- asbestos cement or other similar non-friable products from an area covering less than 100 square metres from a Class 1a building or a Class 10 building, as specified in the *Building Code of Australia 1996* (see www.abcb.gov.au)
- asbestos cement or other similar non-friable products from an area covering less than 20 square metres from a building or structure other than a Class 1A building or a Class 10 building
- one full glove bag of friable asbestos material
- asbestos samples for analysis or other testing.

It may cover any other removal work the Director of Industry Safety judges to be exempt. Exempt removal work should still be conducted in accordance with the Code of Practice for the Safe Removal of Asbestos [NOHSC:2002 (2005)].

A **hazardous substance** is either listed on the List of Designated Hazardous Substances, or it satisfies the criteria of the Approved Criteria for Classifying Hazardous Substances. Both are available at www.ascc.gov.au

**Licenses to perform high risk work** were introduced into Tasmania on 17 October. These licences were previously known as certificates of competency. They were introduced to align with national safety standards, improve interstate recognition of skills, and better protect against fraud by incorporating a photograph of the licence hoder. Licences are issued with an expiry date (issued for a period of up to 5 years) For more information, call the Helpline on 1300 366 322 or go to www.wst.tas.gov.au for your free copy of *High risk work licencing in Tasmania* (GB101).

**Material safety data sheet** or MSDS must be produced by all hazardous substance manufacturers. It contains the health and safety information relevant to handling, storing and using the product. It must be made available by the supplier on demand by the purchaser. Employers must have a copy of the MSDS for all products they have on site and make this available to all workers. Work activities must comply with the requirements of the MSDS.

**Plant** includes any machinery, equipment, scaffolding, amusement structure, appliance, implement or tool and any component or fitting of any of those things.

A **risk assessment** involves evaluating the probability and consequences of injury or illness arising from someone being exposed to an identified hazard.

A **workplace** is any premises or place (including any mine, aircraft, vessel or vehicle) where an employee, contractor or self-employed person is employed or engaged in industry.

**1300 366 322** www.workcover.tas.gov.au

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