



THE UNIVERSITY OF
SYDNEY

Managing the risk of falls

SAFETY STANDARD

University Infrastructure (UI) & Central Operations
Services (COS)



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1 Purpose

This Standard applies to any person who is required to work with a risk of falling as a result of hazards associated with their work when engaged in University Infrastructure (UI) and Campus Operations Services (COS) activities. It also applies to those who supervise workers who are exposed to falls.

These standards give effect to the [University Work Health & Safety Policy](#). Compliance with this Standard assists the University to meet the specific legislative requirements of the [NSW Work Health & Safety Act 2011](#) and [NSW Work Health & Safety Regulation 2017](#).

2 Scope

This Standard applies to all of UI/COS activities, operations and services provided in the capacity of a Professional Services Unit. It applies to all UI/COS staff, consultants and contractors.

This standard does not apply to:

- Works undertaken or commissioned by other University faculties, schools or units; and
- Workboxes designed to be supported by a crane, hoist, forklift truck or other mechanical device to provide an elevated work area for persons working from the box, refer to UI/COS Safety Standard - Cranes and Lifting.

3 Definitions

Contractor	A person, organisation, their workers or a nominated representative engaged to carry out work for the University in a contract for service arrangement.
Contract Manager Project Manager	The person nominated to administer and supervise the contract: may include UI/COS staff facilities manager or project manager, external project manager, managing agent facilities manager or project manager, with delegated authority.
Competent person	A person who has acquired through training, qualification or experience the knowledge and skills to carry out the task.
Fall	A fall by a person from one level to another
Fall-Arrest System	It is a system incorporating a fall-arrest harness that is designed to minimise the length and severity of a fall.
Fall Prevention Device	It is a control measure for minimising the risk of a fall including secure fences, edge protection, work platforms and covers
Hazard	A source of potential harm, or a situation with potential for harm, to human health or wellbeing or damage to property or the environment.
'must'	Any sentence within this standard containing 'must' is to be considered a mandatory requirement.
'may'	Any sentence within this standard containing 'may' is to be considered an optional course of action



PCBU	A person conducting a business or undertaking.
Permit to Work	It is a formal written statement of work to be done, WHS precautions to be taken and confirmation that associated risks and hazards have been identified and controlled.
Qualified person	An appropriately qualified practising structural engineer certifying temporary structures must have: a) tertiary qualifications in structural engineering; and b) chartered membership of Engineers Australia and/or hold National Engineers Registration (NER) regarding certification
Risk of a fall	A circumstance that exposes a worker while at work, or other person while at or in the vicinity of a workplace, to a risk of a fall that is reasonably likely to cause injury to the worker or other person. This includes circumstances in which the worker or other person is: <ul style="list-style-type: none"> • in or on plant or a structure that is at an elevated level • in or on plant that is being used to gain access to an elevated level • in the vicinity of an opening through which a person could fall • in the vicinity of an edge over which a person could fall • on or in the vicinity of a surface through which a person could fall • on or near the vicinity of a slippery, sloping or unstable surface.
'should'	Any sentence within this standard containing 'should' is to be considered a recommended course of action
Work Positioning System	Work positioning system includes equipment that enables a worker to work supported in a harness in tension in such a way that a fall is prevented

4 Roles and Responsibilities

4.1 UI/COS Contract/Project Manager:

The Contract/Project Managers are responsible for implementation of this safety standard in their area of responsibility / accountability, and, periodically evaluate compliance as per section 6 of this standard.

4.2 Contractor:

Contractors are responsible for ensuring compliance with this safety standard while engaged by the University.

4.3 WHS Manager (UI) & Health & Safety Partner (COS):

Responsible for reviewing and maintaining this safety standard and keeping it up-to-date, and, periodically evaluate compliance as per section 6 of this standard.

4.4 UI/COS Staff

UI/COS Staff must comply with this standard when engaged in UI/COS activities addressed under this standard and report any hazards to their relevant supervisor.

5 Managing Risk of Falls

All UI/COS activities which present a risk of fall must adhere to [Code of Practice Managing the Risk of Falls at Workplaces](#), SafeWork NSW.

The Code provides practical guidance material and advice on ways to eliminate and minimise the risk of falls in workplaces and prescribes circumstances in which the provision of physical fall prevention is necessary. Guidance is also provided on adopting a risk management approach to fall prevention for working at heights, as well as guidance on risk assessment processes, preparation of SWMS and examples of physical fall prevention measures that are required when working at heights, so far as is reasonably practicable.

The control measures that are put in place to prevent falls must be reviewed, and if necessary revised, to make sure they work as planned and to maintain an environment that is without risks to health and safety.

5.1 Work on the ground

Most effective method of protecting workers from risk of falls is eliminating the need to work at heights. Following are few examples eliminating the risk of working at height:

- Prefabricating roofs at ground level;
- Prefabricating wall frames horizontally, then standing them up;
- Using mechanical tarp spreaders to cover loads on trucks from the ground;
- Fitting outlets, inlets and controls of large tanks and silos near the ground;
- Reducing shelving heights so that workers can access items from ground level;
- Using tools with extendable handles, such as paint rollers (the risk of musculoskeletal disorders will need to be considered when deciding whether to use such tools);
- Installing windows that pivot to enable cleaning from a safe position inside a building; and,
- Lowering equipment to ground level to carry out repairs where practicable.

5.2 Work on a solid construction / barrier

Risk of falls fall from height may be eliminated by working on a solid construction. Solid construction means an area that:

- Is structurally capable of supporting workers, material and any other loads applied to it;
- Is provided with barriers around its perimeter and around any openings from or through which a person could fall;
- Has an even, accessible surface and gradient; and,
- Has a safe means of entry and exit.

Structural Strength:

The solid construction surface and its supports must be able to safely carry the expected loads, including workers, materials, tools and equipment.

A structural engineer must determine the safe load capacity of the solid construction before use.

5.2.1 Edge Protection

To prevent a person falling over edges and into holes edge protection must be provided on relevant parts of a solid construction.

This includes:

- The perimeters of buildings or other structures
- Mezzanine floors
- Openings in floors
- The open edge of a stair, landing, platform or shaft opening

The barrier must be designed and constructed to withstand the force of someone falling against it. Edge protection must consist of guard rails, solid balustrades or other structural components, for example wire mesh supported by posts and provided with a reinforced top edge.

The top of the guard rail or component must be between 900 mm and 1100 mm above the working surface. If a guard rail system is used, it must also have mid-rails and toe boards or wire mesh infill panels.

If access is required to equipment (e.g. a hoist) it must be protected with gates, safety chains or other means to prevent a person falling.

Where it is impractical to have edge protection or travel restraint systems in place 'no go' areas can be an effective method of making sure people are not exposed to hazards. They require clear warnings and physical hard barriers for people not to access the hazardous area. They can be used to highlight the risks of entry to an area where there is an unguarded hazard. Relevant information and instruction should be provided about 'no go' areas with adequate supervision to ensure that no unauthorised worker enters the 'no go' area.

5.2.2 Protection of penetrations holes and openings

Holes, penetrations and openings through which a person could fall must be made safe immediately after being formed by implementing appropriate controls (such as properly covered or appropriate barriers in place, danger signs placed nearby).

If a cover is used as a control measure, it must be made of a material that is strong enough to prevent persons or objects falling through and must be securely fixed to prevent any dislodgement or accidental removal. Ensure the cover is labelled to alert others as to what lies beneath.

5.2.3 Surface and Gradient

Surfaces of solid construction must be non-slip, free from trip hazards and must generally, not exceed 7 degrees (1 in 8 gradient).

Cleated surfaces, which provide greater slip-resistance must not be steeper than 20 degrees (1 in 3 gradient).



If grid mesh or checker plate flooring is used for walkways and working platforms, ensure that:

- flooring panels are securely fixed and assembled in accordance with manufacturer's specifications
- where possible, they are fitted to the structure prior to it being lifted into permanent
 - position
 - each panel is fixed securely before the next panel is placed in position during installation, this type of flooring is secured by tack welding, panel grips or other
- means to prevent movement before being fixed permanently
 - if panels of grid mesh or checker plate flooring are removed, edge protection is provided, and the gaps left due to removed panels are protected.

5.2.4 Safe Access

The solid construction must have a safe means for people to get to, from and move around the work area, for example permanently installed platforms, ramps, stairways and fixed ladders. They must comply with *AS 1657 Fixed platforms, walkways, stairways and ladders – Design, construction and installation*.

While providing means for access and egress following safety considerations must be taken into account:

- Exposure of access systems to the weather (e.g., rain can make surfaces slippery and strong winds can cause loss of hand grip)
- the provision of adequate natural or artificial lighting to all access ways
- the clearance of obstructions so that persons are able to move easily to and from the workplace

5.3 Temporary work platforms

A 'temporary work platform' is a working platform, other than a permanently installed fixed platform used to provide a working area for the duration of the job. The design of the platform prevents workers from falling.

Temporary work platforms include scaffolds, elevating work platforms, mast climbers, workboxes, building maintenance units, portable or mobile fabricated platforms or any other platform that provides a working area and is designed to prevent a fall.

5.3.1 Scaffolding

Where scaffolding is required to be erected, it is to be located on solid foundations and care taken to secure work tools and materials, to prevent damage to scaffolding planks and prevent components from falling and striking persons below.

All scaffolding must conform to *AS/NZS 4576 Guidelines for scaffolding and the AS/NZS 1576 Scaffolding series. Requirements of City of Sydney Guidelines for Hoarding & Scaffolding 2017, must be complied for scaffolding at the University Campuses which are within the limits of City of Sydney Local Government Area (LGA) as defined in the guidelines.*

Scaffolds must be erected, maintained, repaired and dismantled by competent scaffolders. Any scaffold from which a person or object could fall more than four meters or suspended/cantilevered/spur/hung scaffold must be erected, altered and dismantled by or under the direct supervision of a licensed person.

Scaffold from which a person or object could fall more than four metres or suspended/cantilevered/spur/hung scaffold, must be inspected with written confirmation by a Qualified Person when completed and before use (e.g. Scaff Tags).

Condition Assessment of scaffold must be carried out by a Qualified Person monthly and after every modification. Prior modifying a certified scaffold, advice must be obtained from a Qualified Person. The inspection report and certification must be maintained by the person responsible for the site. The conditions of approval by the Qualified Person must be complied. Any failure to comply with the conditions of approval must be immediately brought to the attention of the responsible UI/COS Contract Manager/ Project Manager/ Supervisor and re-inspection must be carried out by a Qualified Person

Scaffolding must be protected on site to prevent damage from vehicles moving in the immediate work vicinity. Furthermore, all scaffolding will be secured properly to prevent any unauthorised access to the scaffold during and after working hours. All scaffolding must conform to relevant legislation governing the erection, use and maintenance of such equipment.

Prefabricated scaffolds must be of the same type and not mixed components, unless the mixing of components has been approved by the manufacturer. Safe access to and egress from the scaffold must be provided. Edge protection (handrails, mid-rails and toe boards) must be provided at every open edge of a work platform.

5.3.2 Light duty suspended scaffold

A suspended scaffold incorporates a suspended platform that is capable of being raised or lowered when in use. Common types of suspended scaffolds include:

- Swing stages which have cradles supported by a single row of suspension ropes
- Double rope scaffolds, with cradles supported by two rows of suspension ropes
- Work cages which are small cradles supported by one suspension rope only
- False cars, which are specialised forms of suspended scaffolding and are often used in the construction of lifts before lift cars are installed

Following specific safety consideration must be taken into account when using Swing Stages:

- The working load and specifications are in accordance with AS 1576.4 Scaffolding – Suspended Scaffolding
- Persons operating light duty suspended stages are trained in safe operation
- Persons installing or servicing a light duty suspended stage hold a licence for advanced rigging or advanced scaffolding
- Where the swing stage is suspended by two wire ropes to each winch, a safety harness and restraint lanyard is attached to a suitable anchor point of the swing stage.

Further guidance on the safe design, erection and use of scaffolding, including suspended scaffolding, is available in the *Scaffolding Code of Practice [under development]*.



5.3.3 Elevating Work Platform (EWP)

All activities involving the use of EWP must be designed in accordance with AS/NZS 1418.10 Cranes, hoists and winches Mobile elevating work platforms and operated by a competent person in accordance with AS 2550.10 Cranes, hoists and winches - Safe use Mobile elevating work platforms.

As captured in the Working at Heights permit, workers must have a high-risk work licence for operating boom-type elevating work platforms with a boom length of 11 metres or more. Plant must be in good condition, serviced and inspected as per manufacturer requirements, and fitted with appropriate safety controls.

Workers working in travel towers, boom lifts or cherry pickers must wear a properly anchored safety harness at all times.

5.3.4 Mast climbing work platforms

Mast climbing work platforms are hoists with a working platform that is used to raise workers and material to a temporary working position. They use a drive system mounted on an extendable mast, which may need to be tied to a building under circumstances prescribed by the manufacturer.

The erection and dismantling of mast climbing work platforms must be carried out, or be directly supervised, by a person holding an appropriate rigging or scaffolding licence. Information on mast climbing work platforms is provided in AS 2550.16 Cranes-Safe Use-Mast climbing work platforms

Mast climbing work platforms can be set up in either single-mast or multi-mast configurations. They are generally not suitable for use if the profile of a structure changes at different elevations (for example, if the upper floors of a building 'step' back or balconies protrude from the building)

5.3.5 Building Maintenance Unit (BMU)

A building maintenance unit is a power-operated suspended working platform that is fixed permanently to a building or structure. It is used for access for building maintenance or window cleaning

All activities involving the use of BMU must be designed in accordance with AS 1418.13 Cranes (including Hoists and Winches) Building Maintenance Units and operated by competent persons in accordance with AS 2550.13 Cranes-Safe Use-Building Maintenance Units.

5.3.6 Workboxes

A workbox is designed to be supported by a crane, hoist, forklift truck or other mechanical device to provide an elevated work area for persons working from the box. It consists of a platform surrounded by an edge protection system.

Refer to UI/COS Safety Standard - Cranes and Lifting for specific requirements.

5.3.7 Platforms supported by trestle ladders

Trestle ladder scaffolds are only suitable for use at heights greater than two metres when guard rails and toe boards are incorporated to prevent people and material falling off the working platform.

Trestle ladder scaffolds are only suited to light duty tasks such as painting and rendering. Work must only be performed between the trestles. The minimum width of the working platform must not be less than 450 mm.

Alternatives to trestle ladders such as small scissor lifts, light duty aluminium mobile scaffolds, booms arms and modular scaffolding must be considered as far as practicable.

Use of outriggers must be considered to increase the stability of trestle ladder scaffolds.

5.4 Perimeter guard rails

Guard rails may be used to provide effective fall prevention:

- at the edges of roofs.
- at the edges of mezzanine floors, walkways, stairways, ramps and landings.
- on top of plant and structures where access is required.
- around openings in floor and roof structures.
- at the edges of shafts, pits and other excavations.

When using Guard rails AS/NZS 4994-Temporary Edge Protection series must be complied. Guard rails must incorporate a top rail 900mm to 1100 mm above the working surface and a mid-rail and a toe board.

Before using a guard rail system, it must be ensured that they will be adequate for the potential loads. The required load resistance will depend on the momentum of a falling person. For example, the momentum of a person falling from a pitched roof will increase as the pitch (or angle) of the roof increases.

5.5 Safety Mesh

Safety mesh does not prevent falls from the edge of a roof or through holes in a roof, so it must always be used in conjunction with appropriate edge protection, guard rails or fall-arrest systems.

Safety mesh must be installed in accordance with the manufacturer's instructions by competent persons, who must be protected against the risk of falling by using appropriate control measures such as scaffolding, elevating work platforms or fall-arrest systems.

Safety mesh must comply with AS/NZS 4389 Roof Safety mesh, which specifies the minimum requirements for the design, construction, testing and installation of safety mesh for use in domestic, commercial and industrial building applications.

The mesh must be formed from 2 mm diameter wire of not less than 450 MPa tensile strength, welded into a mesh with the longitudinal wires not more than 150 mm apart and the cross wires not more than 300 mm apart.

5.6 Work positioning systems

A work positioning system involves the use of equipment that enables a person to work supported in a harness in tension in such a way that a fall is prevented.

Work positioning systems require a high level of competency on the part of the user and supervisors to ensure safe use. Users, including supervisors, must undertake a competency-based course of training.

5.6.1 Industrial rope access system

Industrial rope access systems are used for gaining access to and working at a workface, usually by means of vertically suspended ropes. Although fall-arrest components are used in the industrial rope access system, the main purpose of the system is to gain access to a work area rather than to provide backup fall protection.

The industrial rope access system must only be installed and used by a competent person. AS/NZS 4488 Industrial rope access systems series must be complied with when using Industrial rope access system.

5.6.2 Restraint Technique

A restraint technique controls a person's movement by physically preventing the person reaching a position at which there is a risk of a fall. It consists of a harness that is connected by a lanyard to an anchorage or horizontal lifeline. It must be set up to prevent the wearer from reaching an unprotected edge

A restraint system must be installed by a competent person in accordance with the manufacturer's instructions. Restraint anchorage must be designed for fall-arrest loading.

Restraint techniques must only be used if it is not reasonably practicable to prevent falls by providing a physical barrier (for example, a guard rail). This is because restraint techniques require a high level of user skill to operate safely and also greater supervision.

Fall restraint systems can include (but are not limited to):

- Harnesses
- Lanyards
- Retractable lifelines
- Rope
- Wire grabs and other certified anchorage points.

Restraint systems must not be used if any of the following conditions apply:

- the user can reach a position where a fall is possible
- the user has a restraint line that can be adjusted in length so that a free fall position can be reached
- there is a danger the user may fall through the surface, for example fragile roofing material
- the slope is over 15 degrees

5.7 Fall arrest systems

All equipment used for fall-arrest must be designed, manufactured, selected and used in compliance with the AS1891 series of standards.

As captured in the Working at Heights permit, the fall arrest system and use of the system must comply with standards and that the fall arrest system must be inspected and certified by a competent person as safe to use.

Prior to the works, emergency and rescue procedures must be established and tested and ensured that they are effective. Relevant workers must be provided with suitable and adequate information, training and instruction in relation to the emergency procedures.

5.7.1 Catch Platforms

A catch platform is a temporary platform located below a work area to catch a worker in the event of a fall. The platform must be of robust construction and designed to withstand the maximum potential impact load. Scaffolding components may be used to construct fixed and mobile catch platforms.

Catch platforms must:

- incorporate a fully planked-out deck
- be positioned so the deck extends at least two metres beyond all unprotected edges of the work area, except where extended guard railing is fitted to the catch platform
- be positioned as close as possible to the underside of the work area—the distance a person could fall before
- landing on the catch platform must be no more than one metre
- always be used with an adequate form of edge protection.

5.7.2 Industrial Safety Nets

Safety nets can provide a satisfactory means of protection while allowing workers maximum freedom of movement. They must not be used to enter or exit a work area or as a working platform.

Following safety precautions must be ensured when using safety nets:

- safety nets are securely anchored before any work starts
- safety nets are constructed of material strong enough to catch a falling person or thing
- safety nets are hung as close as is practicable to the underside of the working area, but no more than two metres below the working area
- perimeter safety nets used where there is no edge protection extend at least 2.5 metres beyond the leading edge of the working area
- the safety net has sufficient tension and clearance to prevent a falling person contacting any surface or structure below the net
- material is not allowed to accumulate in suspended safety nets
- no welding or oxy cutting is performed above safety nets
- safety nets are inspected, particularly after installation, relocation or repair
- safety nets are stored correctly in dry, shaded areas with good air circulation

5.7.3 Individual fall-arrest systems

Individual fall-arrest systems rely on workers wearing and using them correctly, and therefore workers who will use such a system must be trained in its safe use. They must only be used where it is not reasonably practicable to use higher level control measures.

Following must be ensured when using Individual fall arrest systems:

- Each anchorage point must comply with the requirements in AS/NZS 1891:4 Industrial fall-arrest systems and devices – selection, use and maintenance.
- Each component of the system and its attachment to an anchorage must be inspected by a competent person:
 - after it is installed but before it is used
 - at regular intervals
 - immediately after it has been used to arrest a fall.
- Inspection of all components must be conducted in accordance with the manufacturer's specifications and the relevant standards. If any signs of wear or weakness are found during the inspection, the components or means of attachment must be withdrawn from use until they are replaced with properly functioning components.
- Each anchorage point should be located so that a lanyard of the system can be attached to it before the person using the system moves into a position where the person could fall.
- Fall-arrest systems, incorporating a lanyard, must be installed so that the maximum distance a person would free fall before the fall-arrest system takes effect is two metres.
- Lanyards **must not** be used in conjunction with inertia reels as this can result in an excessive amount of free fall prior to the fall being arrested.
- Emergency rescue procedures must be established when using fall-arrest systems. The rescue of a worker who is suspended in a full body harness must occur promptly to prevent suspension intolerance.
- A worker must not use a fall-arrest system unless there is at least one other person on the site who can rescue them if they fall.
- To prevent situations where lanyard slides back along the edge of the roof until its vertical where person might hit the ground or lanyard may break due to contact with the edge following measures must be taken:
 - the installation of guard rails
 - placing the anchorage point at a right angle to the position of the lanyard at the perimeter edge (for example, by using a mobile anchorage)
 - the installation of a second anchorage point and belay devices (intermediate anchorages)

5.7.4 Anchorage lines or rails

Anchorage lines or rails are temporary or permanent fall-arrest systems, which can be installed to provide continuous fall protection for persons using ladders or climbing towers. These can be used on plant, such as tower cranes, as well as buildings or structures.

Following must be ensured when using anchorage lines or rails:

- temporary systems comply with the AS/NZS 1891 series of standards
- the locking device is attached to the frontal attachment point of the harness and the lanyard assembly is a maximum of 300 mm length
- the point of connection onto the ladder by the climber is near the base of the ladder to allow the connection



- before ascending begins and also to provide continuous connection to the disconnecting point when at a safe higher-level free fall is limited to a maximum of 600 mm
- permanent systems are of wire or rail construction and are installed according to the manufacturer's instructions
- After a fall, remove the system from service and have it inspected by a competent person before it is used again.

Double lanyards: An alternative to anchorage lines or rails is the use of a double lanyard or twin tail or 'Y' lanyard which means that the person climbing can always be connected to the ladder structure. They are easy to misuse hence adequate training must be provided on their use.

Fall arrest system must only be used if it is not reasonably practicable to use higher level controls or if higher level controls may not be fully effective in preventing falls on their own.

Fall-arrest systems should be used instead of restraint techniques when:

- Workers can reach a position where a fall is possible;
- Workers have a restraint line that can be adjusted in length, so that a free fall position can be reached;
- There is a danger the user may fall through the surface, for example fragile roofing material; and,
- The surface slope is over 15 degrees.

Use of Anchorage lines or rails must be preferred over double lanyards as far as practicable.

5.8 Ladders

Portable and fixed ladders are primarily a means of access and egress. Many falls take place when people are working from ladders due to:

- Limited working width and movement;
- the time involved in moving and setting up ladders is often underestimated when planning work; and,
- the working position on ladders is often uncomfortable (the need to stretch sideways, work above shoulder height and stand on narrow rungs for a long time) and may cause musculoskeletal disorders.

As far as practicable, use of an EWP or scaffolding which are safer and more efficient, must be considered instead of ladders.

5.8.1 Portable Ladders

Portable ladders may be used as a means of access and egress. Extension or single ladders must only be used as a working platform for light work of short duration that can be carried out safely on the ladder.

A risk management process must demonstrate that risks are minimised so far as is reasonably practicable when using a ladder and other control measures have been considered as per the hierarchy of control. This include working on the ground or solid construction and using temporary work platforms such as scaffolds and Elevating Work Platforms (EWP).

Where electrical works requires the use of portable ladders, only fiberglass ladders must be used. This includes works to gain access to electrical installations such as cutting gyprock, removing roof panels. Metal ladders, including step and trestle ladders, must not be used where electrical hazard exists. When handling metal ladder for non-electrical work, care must be taken to ensure that the ladder does not make contact with power lines and conductors.

For accessing roof surfaces or roof spaces, an authorised Roof Access Permit, or Working at Height Permit must be obtained, and such requirements must be addressed in the permit application. When using a ladder, all the best practices from the *SafeWork Australia Model Code of Practice: Managing the risk of falls at workplaces*, *SafeWork Australia Model Code of Practice: Preventing falls in housing construction* and *Australian Standard AS/NZS 1892 Portable Ladders Part 5: Selection, safe use and care* must be complied with.

This includes:

- Selection of the ladder;
- Positioning of the ladder;
- Access and egress from the ladder;
- Safe use of the ladder; and
- Ladder maintenance.

A Working at Heights Permit must be obtained if using a step ladder, extension ladder or fixed ladder which involves a risk of a person falling more than 2 metres.

5.8.2 Fixed Ladders

Fixed ladders must be installed in accordance with *AS/NZS 1657 Fixed platforms, walkways, stairways and ladders -Design, construction and installation*.

Following safety considerations must be taken in installation of Fixed Ladders:

- The angle of slope must not be less than 70 degrees to the horizontal and not greater than 75 degrees to the horizontal.
- The ladder **must not** overhang the person climbing the ladder
- If the angle is more than 75 degrees, a safe system of work to prevent falls must be provided such as a permanent fall-arrest system or a full body harness with double arm lanyard.

Ladder cages in fixed ladders do not stop a fall but simply funnel a fall and, in some cases, more injuries can occur from striking the protective back guards on the way down. The cages may also hinder rescues. Therefore, a specifically designed rescue procedure must be developed for use in ladder cage situations. Training in rescue procedures must occur before using the fixed ladder.

A Working at Heights Permit must be obtained if using a fixed ladder which involves a risk of a person falling more than 2 metres

5.9 Emergency procedures for falls

Contractors must ensure that emergency and rescue procedures are implemented and tested to ensure their effectiveness. The workers must:

- be provided with suitable and sufficient information, training and instruction on the procedures;
- have access to equipment and facilities to provide first aid; and,
- be trained to administer first aid or should have access to trained first aiders.

5.10 Training & Certification

All workers, who are required to work at height are appropriately trained in a competency-based Work Safely at Heights Training Course (RIIWH5204D).

A person undertaking scaffolding work must hold the relevant class of scaffolding high-risk work licence as required by the WHS Regulations. The scaffolding high risk work licence classes are:

- Basic scaffolding licence;
- Intermediate scaffolding licence; and
- Advance scaffolding licence.

The operator of a boom-type elevating work platform (boom length 11 metres or more) must hold a valid high-risk work license.

It is important to note that this license does not cover Scissor lifts, Vertical mast lifts or trailer/truck mounted EWP's.

However, the WHS Act 2011 states that the PCBU must ensure, so far as is reasonably practicable, the safe use, handling, and storage of plant, structures and substances.

In order to ensure compliance with the legal obligation of duty of care, the operators of EWP's with boom length less than 11 metres including Scissor lifts, Vertical mast lifts or trailer/truck mounted EWP's must hold a certification such as EWPA Yellow Card as an evidence of training in the type of EWP from an accredited Yellow Card training provider.

5.11 Roof Access Permit

Access to the roof and roof spaces is only permitted when a Roof Access Permit has been authorised. The UI/COS Contract/Project Manager is responsible for organising application of the permit for contractor work activities. The UI/COS Supervisors are responsible for organising application of the permit for their staff.

As part of the permit process, consideration must be given to the following:

- Obtaining details of the Roof Register and relevant Roof Safety Report:
 - Each building that has been inspected has a report containing important information about risks, control measures in place, and precautions to be taken when accessing rooftops and roof spaces. These reports are currently available by logging into the [Partners Site](#) then searching by Campus or Building Code.

To obtain access to this site, you need to use a personal or organisational Microsoft account authorised by UI/COS. See relevant section for more details about the [Partners Site](#) and on how to obtain access.

- Any special hazard specific to the Faculty, or any other risks e.g. fragile roof, skylights, power lines, asbestos and hazardous materials, radio frequency radiation, work on/near cooling towers, weather, etc.
- Potential for the works to impact anything outside the work zone
- Risk of falling objects

A Roof Access Permit can only be authorised if the risk of fall from heights, with control measures agreed with the permit, is eliminated or minimised so far as is reasonably practicable AND IF the works do not include erection, alteration or dismantling of a scaffold or use of an EWP, workbox, BMU, temporary guardrails, safety mesh, work positioning system (restraint system), or a fall arrest system. Otherwise a Working at Heights Permit must be used in place of a Roof Access Permit. The permit is available on the Partners Site.

5.12 Working at Heights Permit

A Working at Heights Permit must be obtained to undertake any works where there is a risk of fall from heights. The UI/COS Contract/Project Manager or Principal Contractor is responsible for organising application of the permit for contractor work activities. COS Supervisors are responsible for organising application of the permit for their staff.

UI Staff **must not** carry out work requiring a Working at Heights Permit.

A Working at Heights Permit must be completed IF:

- The risk of fall from heights, with control measures agreed in a Roof Access Permit, is not eliminated or minimised so far as is reasonably practicable; OR IF
- Using a step ladder, extension ladder or fixed ladder which involves a risk of a person falling more than 2 metres; OR IF
- Erection, alteration or dismantling of a scaffold is conducted; OR IF
- EWP, workbox, BMU, temporary guardrails, safety mesh, work positioning system (restraint system), or a fall arrest system is used as a control measure.

The permit is available on the [Partners Site](#).

Any worker carrying out works at heights must be competent to carry out the task and trained in Working Safely at Heights.

6 Inspection of Height Safety Systems

Head of Facilities Services (AMO), COS is responsible for regular inspection and maintenance of Height Safety Systems. This does not include equipment owned by Contractors including temporary anchor points and associated height safety systems.

7 Quality assurance & evaluation

The iAuditor checklist Safe Work Method Statement (SWMS) Review and Compliance – Work Permit Review must be used to verify and evaluate compliance to this Standard for works involving risk of fall from height.



8 Document Amendment history

Version (Revision)	Amendment	Commencing
01	First issue	July 2019
02	Administrative updates to effect CIS PSU split into UI & COS.	March 2020
02.1	Updates to contact details and UI staff permit to work requirements	August 2021

9 Record Keeping Requirements

The following University of Sydney Recordkeeping requirements outlined must be implemented for creating, uploading and approving controlled documented information.

1. **Make records to support the conduct of your University activities:** Records will be created utilising the steps outlined in this standard.
2. **Register records into either paper or electronic recordkeeping systems:** Records of Working at Heights & Roof Access permit must be maintained on UI/COS Permits to Work page.
3. **Do not destroy University records without the authority to do so from the Manager, Archives and Records Management Services (ARMS):** Records will not be destroyed without the appropriate authority as it is an offence to destroy damage or transfer ownership of records without authority from ARMS. For further information in respect to the requirements under the New South Wales *State Records Act 1998* please click [here](#). Alternatively contact the UI/COS WHS Advisors.
4. **Do not lose University records: Records are a corporate asset and must not be removed from both UI/COS and University custody.** Data in SharePoint and iAuditor is regularly backed-up for security and record keeping requirements.
5. **Management of Technical Records:** Technical records such as plans, drawings, project manuals, etc are to be electronically scanned, quality checked and saved in Records Online or TRIM. After a six-month period, the technical records can be destroyed through a confidential document management process that will see these records permanently destroyed.

10 Further Information

10.1 Key Contact Person

For further information in respect to this Standard, please contact

- UI - WHS Manager– adrian.powell@sydney.edu.au.
- COS – Health & Safety Partner – gohar.akram@sydney.edu.au.

10.2 Links, Attachments & Supporting Documents

- [NSW Work Health & Safety Act 2011](#)
- [NSW Work Health & Safety Regulation 2017](#)
- [Code of Practice Managing the Risk of Falls at Workplaces](#)
- [University Work Health & Safety Policy 2016](#)
- [University Work Health & Safety Procedures 2016](#)
- **UI/COS Contractor Handbook**
- [Guidelines for Hoarding & Scaffolding, City of Sydney- 2017](#)
- AS 1418.13 Cranes (including Hoists and Winches) – Building Maintenance Units
- AS/NZS 1418.10 Cranes, hoists and winches Mobile elevating work platforms
- AS 2550.1 Cranes, Hoists and Winches-Safe Use-General Requirements
- AS 2550.10 Cranes, hoists and winches - Safe use Mobile elevating work platforms
- AS/NZS 1576:2010 Scaffolding series
- AS/NZS 1657 Fixed platforms, walkways, stairways and ladders – Design, construction and installation
- AS/NZS 1891.1 Industrial fall-arrest systems and devices – Harnesses and ancillary equipment
- AS/NZS 1891.2 supp:1-2001 Industrial fall-arrest systems and devices – Horizontal lifeline and rail systems – Prescribed configurations for horizontal lifelines (Supplement to AS/NZS 1891.2:2001)
- AS/NZS 1891.3 Industrial fall-arrest systems and devices – Fall-arrest devices
- AS/NZS 1891.4 Industrial fall-arrest systems and devices – Selection, use and maintenance
- AS/NZS 1892 Portable ladders series
- AS/NZS 4142.3 Fibre ropes – Man-made fibre rope for static life rescue lines
- AS/NZS 4389 Safety mesh
- AS/NZS 4488 Industrial rope access systems series
- AS/NZS 4488.2 Industrial rope access systems – Selection, use and maintenance
- AS/NZS 4576 Guidelines for scaffolding
- AS/NZS 2550.16 Cranes-Safe Use-Mast climbing work platforms
- AS/NZS 4994 Temporary edge protection series
- AS 2550.16 Cranes-Safe Use-Mast climbing work platforms
- AS/NZS 4389 Roof Safety mesh