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WORK AT HEIGHT

HYER STANDARD

PROCEDURE

CONTENTS

PURPOSE AND SCOPE

The purpose of this procedure is to ensure that work being conducted at or adjacent to a height is managed in such a way to prevent injury. This includes preventing injury to people from:

- Falling from a height (particularly where work is being conducted at a height of more than 2 metres)
- Falling from ground level into holes (e.g. trenches, penetrations)
- Being struck by an object falling from a height or from above (e.g. into an excavation)

The procedure applies to all HY projects where working at height is conducted.

RESPONSIBILITIES

HY PROJECT TEAM

- Ensure inspections and verifications are performed for temporary structures and engineered installations and reports/certificates are obtained
- Ensure Plant and Equipment has been inspected and verified as safe for use prior to use on site
- Ensure applicable Work Permits are implemented prior to commencing work
- Ensure only trained and competent persons perform work on site
- Ensure worker competencies and qualifications are verified prior to commencing work
- Ensure that SWMS are provided for any work that involves a risk of a person falling more than 2m (Note – in South Australia, SWMS to be provided for any work involves a risk of a person falling more than 3m)

HAZARD IDENTIFICATION RISK ASSESSMENT AND CONTROL (HIRAC)

All risks associated with work being done at height are to be included in the project risk register. When conducting the project risk assessment consideration should be given to whether there is a risk to work being conducted:

- Near an unprotected open edge (e.g. incomplete stairwells, windows, floor opening, lift wells, leading formwork edges)
- Using equipment to work at the elevated level (e.g. elevated work platforms (EWPs), ladders)
- On any structure or plant being constructed or installed, demolished or dismantled, inspected, tested, repaired or cleaned
- On or alongside a fragile surface (e.g. cement sheeting roofs, rusty metal roofs, fibreglass sheeting roofs and skylights)
- On a potentially unstable surface (e.g. areas where there is potential for ground collapse)

- Near a hole, shaft or pit into which a worker could fall (e.g. trenches, lift shafts, service pits or floor and column penetrations)

WORKING AT HEIGHT HIERARCHY OF CONTROLS

Control measures must be implemented in accordance with the following Working at Height Hierarchy of Controls:

1. Eliminate the risk of a fall or falling objects by working on the ground or on a solid construction
2. Provide a fall prevention device (e.g. edge protection that prevent the fall)
3. Provide a work positioning system (limits movement and therefor minimises access to areas where a fall can occur)
4. Provide a fall arrest system (does not eliminate the fall, only prevents the person or object from falling to the ground)

TRAINING AND COMPETENCY

Where workers are required to install or use a work positioning system and/or fall arrest equipment, they must hold the following qualifications:

Installers:

- Working at Heights ticket (issued by an RTO),
- Hold a high risk work licence for either Rigging or Scaffolding (RB, SB), or
- Where a proprietary system is used (and the installer doesn't hold a either of the high risk work licences above), the installer must be able to demonstrate competency by providing a record, that they have been trained and instructed to safely install the specific proprietary system.

Users:

- Working at Heights ticket (issued by an RTO) or
- Hold a high risk work licence or RTO-issued competency card which includes harness training as part of the competency (e.g. Rigging, Work Platform >11m or BL <11m).

TEMPORARY WORKS

Erection, certification, inspection, maintenance & dismantling of all temporary works, including fall prevention devices, work positioning systems and fall arrest systems, must be conducted in accordance with the Temporary Works procedure.

BARRIERS

Barriers, including guardrails, may be used to provide effective fall prevention:

- At the edges of roofs
- At the edges of walkways, stairways, ramps, work platforms, floors and landings
- On top of plant and structures where access is required (e.g. delivery trucks)
- Around openings in floor and roof structures
- At the edges of shafts, pits and other excavations

The top of the guardrail or component should be between 900 mm and 1100 mm above the working surface.

ROOF AND EDGE PROTECTION

Roof or edge protection shall be an engineered system in accordance with AS/NZS 4994 Temporary edge protection. If a guardrail system is used, it must:

- Be installed in accordance with the manufacturer's specifications by competent persons
- Consist of:
    - a top rail, midrail and toeboard/bottom rail, or
    - a top rail and screen
- Have top rail at an effective height of not less than 900 mm (at a height appropriate for the slope of roof as per AS/NZS 4994.1)
- Where midrails are used, the nominal clear distance between rails must not exceed 450 mm. The nominal clear distance between a midrail and a toeboard or bottom rail must not exceed 275 mm.

- Where used, toeboards must not be less than 150 mm high

The guardrail system, method of attachment and the supporting structure must be capable of withstanding the loads that may be applied.

An engineered handrail system is to be used if there is a risk of workers or objects falling from height (>2.0m).

All Roof & Edge Protection systems must be registered in HammerTech as an item of Fall Protection equipment in accordance with the Plant & Equipment procedure and the next verification date set for the next inspection/servicing. Relevant documents must be attached to the Equipment item such as:

- Installation guide
- Engineer's report
- Handover certificate

Prior to initial use of the Roof Edge Protection the Installer must supply HY with a handover record or certificate stating that the roof edge protection has been installed in accordance with the following (as applicable):

- Manufacturer's recommendations
- Engineered Design
- AS/NZS 4994.2 Temporary edge protection – Roof edge protection – Installation and dismantling

Regular inspections are to be completed at intervals not exceeding 30 days for Scaffold Edge Protection Systems. Where the roof or edge protection system has been altered or damaged after the initial installation, it must be reinspected to ensure it has been reinstalled in accordance with the installation requirements.

Inspection records shall be attached to the Equipment item in HammerTech and the next verification date re-set accordingly.

MULTILEVEL PERIMETER SCREENS

Gaps between adjoining screens and between live deck and screens must be covered. Gaps must not exceed 10mm. Screens must not be raised and must remain in place until all adjacent works have been completed.

ROOF ACCESS/EGRESS

Roofs must be access by:

- Designated stair type access; or
- Enclosed system type scaffold access
- 1 stretcher stair access
- 2 stretcher access (QLD only)

In Victoria, two points of access must be maintained. As a minimum this must be one stretcher stair and one single bay access.

A ladder may be used to access roof areas not greater than 6m off the ground (i.e. awnings, office roofs) with prior approval by HY, and must be in accordance with the ladders section of this procedure.

An EWP must not be used to access roof work areas unless:

- In an emergency
- Other means of access are not practicable and controls in place as per AS 2550.10 (5.9)

Depending on processes documented in the project's WHS Management Plan, roof access may be controlled via a roof access permit and roof access register. Where practicable, a lockable gate with cautionary signage to be placed at ground level entry point.

Handover certificates must be provided where box gutters are used for access along the roof.

PENETRATIONS AND OPENINGS

A design risk assessment must assess and look at mitigating and minimising both the size and number of penetrations and openings on the project.

Penetrations and openings that are built into slabs must include embedded mesh where practicable.

Penetrations and openings must be covered and protected as soon as they are created and be clearly identified. Covers must be:

- Bolted or screwed in position unless utilising hinged covers
- Capable of supporting any load likely to be placed on it (e.g. plant/worker)
- Marked to indicate Hole Below (e.g. Danger Penetration Below)
- Gap free between cover and concrete

Penetrations over 450mm up to 1000mm must:

- Have safety mesh cast into slab where practicable; or
- Be covered with load bearing steel plate / double 19mm ply; or
- Have solid handrails & screens fixed around the perimeter

Where practicable, kickers must be installed adjacent to penetrations, void edges, floor opening, edges of floors and set down areas in areas where mobile plant is operated. Kickers are also used to prevent ladders, scaffolds, platforms etc. and EWPs being driven or pushed over the edge.

Refer to Temporary Works procedure for the design of covers, safety mesh and handrails as well as kickers.

RISERS AND SHAFTS

Penetrations to risers and shafts must be fully protected prior to jump-forms/slip-forms being lifted or formwork being fully stripped. Open edges of risers and shafts at live deck or slab level must be protected by solid barriers (e.g. handrails and screens or 19 mm form ply bolted to shaft core walls).

The base of all risers and shafts must be:

- Fully enclosed using 19 mm form ply bolted to concrete walls or a lockable gate system
- Clearly marked/signed (e.g. “CAUTION DO NOT ENTER< WORKERS ABOVE”)

ELEVATED WORK PLATFORMS (EWPS)

Control measures must be implemented to manage the risk associated with working at height when Elevated Work Platforms (EWPs) are used at the workplace. This includes the risk of overturning the machine, falling from the work platform, and dropped objects. This is in addition to the requirements for EWPs outlined in the Mobile Plant procedure.

Relevant risk control measures when using EWPs must include:

- Ensuring the EWP is only used as a working platform and not as a means of entering and exiting a work area unless the conditions set out in AS 2550.10–2006: Cranes, hoists and winches – Safe use – Mobile elevating work platforms are met
- Ensuring the EWP is only used on a solid level surface, unless it is designed for use on rough terrain, and
- Checking the surface area to make sure there are no penetrations or obstructions that could cause uncontrolled movement or overturning of the EWP

Workers working in travel towers, boom lifts or cherry pickers must wear a properly anchored fall arrest harness. The lanyard must be as short as possible and must be attached directly to the designated anchor point on the EWP, not to the handrail (unless the handrail is the manufacturer's specified anchor point)

Workers operating boom-type EWPs with a boom length of >11 metres must hold a boom-type EWP (WP) high risk work licence.

When in use, the EWP must be positioned so that the emergency descent controls are accessible and clear of obstructions at all times.

SUPPORT PERSONNEL

When an EWP is being operated on site, a Support Person must be available to support the operator in the event of an emergency.

Support Personnel must be familiar with the particular EWP's emergency descent controls, maintain positive communication with workers in the EWP, and remain in the EWP operator's line of sight.

A Support Person may look after multiple EWPs provided that the above requirements are met, and the EWPs are within a reasonable distance.

Support Personnel assisting boom-type EWPs >11m must hold a WP type licence at minimum.

While Support Personnel can perform other tasks (unlike designated spotters), the type of work being undertaken must be considered. The Support Person must have capacity to get to any EWP they are looking after quickly.

Workers in adjacent EWPs may be able to act as the Support Person for each other if certain conditions are met (i.e. line of sight, positive communication, minimum WP licence if assisting >11m boom). Consideration needs be given to:

- the type of tasks being undertaken, and the distance between machines. If workers are welding, grinding, or are performing tasks that require them to face away from the other machine for periods of time (such as continually repositioning the EWP) this would not be appropriate.
- the type of EWP being operated – larger Booms / Scissors may take too long to get to the ground to assist if there were an issue.

WORKBOXES

Where possible, other working platforms like EWPs or scaffolds should be used as an alternative to a workbox. Where people are to be suspended or lifted using plant not specifically designed for that purpose, a lift plan must be developed (refer to Cranes and Lifting procedure). This must ensure that:

- The persons are lifted or suspended in a work box that is securely attached to the plant
- The persons in the work box remain substantially within the work box while they are being lifted or suspended
- If there is a risk of a person falling from a height (>2m off the ground/work deck), a full body safety harness must be worn by the person to prevent, so far as is reasonably practicable, injury to the person as a result of the fall
- Means are provided by which the persons being lifted or suspended can safely exit from the plant in the event of a failure in its normal operation
- That the working load limit, tare mass and design registration number clearly marked
- That directions to the crane operator are only provided from the workbox by a person holding a dogging or rigging licence

TRESTLES AND PLATFORMS

Trestle type platforms may only be used for light duty tasks provided:

- Maximum height of a trestle type work platform is 600mm
- Minimum width of a trestle type work platform is 450mm (two planks wide)
- Has provision for safe access and egress e.g. provision of steps

Only minor tasks can be performed e.g. painting, sanding, signwriting etc.

ROOF SAFETY MESH

Safety mesh is designed to prevent internal falls through a roof. Approved safety mesh must be installed with double side laps (300 mm) and 2 mm staples every 2nd square on alternate sides. This system must be used in every case regardless of purlin spacing.

It does not prevent falls from the edge of a roof or through holes in a roof so it should always be used in conjunction with other types of fall prevention devices. Safety mesh must comply with AS/NZS 4389:2015: Roof safety mesh.

Safety mesh must be installed by competent people in accordance with the manufacturer's instructions. A Roof Safety Mesh handover certificate must be obtained from the relevant Subcontractor prior to any subsequent works.

WORK POSITIONING AND FALL ARREST SYSTEMS

The use of work positioning systems and fall arrest requires a high level of competency. Users (including supervisors) must undertake a relevant competency-based course of training before using the system. As a minimum, workers using fall restraint and fall arrest systems must have completed basic fall protection training (through a RTO).

FALL RESTRAINT SYSTEMS

A restraint system must be installed by a competent person in accordance with the manufacturer's instructions. It must be set up to prevent the user from reaching an unprotected edge.

INDUSTRIAL ROPE SYSTEMS

A risk assessment must be carried out before using an industrial rope access system. It must include consideration of:

- The location of the work and any associated special features of the structure
- Anchor points
- Emergency access
- Weather conditions

Use of industrial rope access systems must be in compliance with AS/NZS 4488 Industrial rope access systems.

Industrial rope technicians (including supervisors) must have certification (i.e. level 1, 2 or 3) relevant to the type of work being undertaken.

FALL ARREST SYSTEMS

Fall arrest systems include catch platforms, safety nets and individual fall arrest systems (including anchorage lines or rails). Equipment used for individual fall arrest systems must be designed, manufactured, selected and used in compliance with AS/NZS 1891(set)4: Industrial fall-arrest systems and devices.

When using fall arrest systems:

- Fall arrest equipment must be selected, installed and used correctly
- The equipment and anchorages must be designed, manufactured and installed to be capable of withstanding the force applied to them as a result of a person's fall (as per Temporary Works procedure)
- The system must be designed and installed so that the person travels the shortest possible distance before having the fall stopped

Equipment that has been used to arrest a fall, must not be used again until it has been inspected and certified by a competent person as safe to use.

Fall arrest lines that can come into contact with edges such as concrete or steel beam edges must be of a type that has been tested or authorised by the manufacturer to not fail during such use.

Harness-based fall arrest systems should be installed so that the maximum distance a person would free fall before the fall arrest system takes effect is 2 metres (although a lesser free fall distance is preferable). There must be sufficient distance between the work surface and any surface below to enable the system, including the action of any shock absorber, to fully deploy.

FALL RESTRAINT/ARREST SYSTEM EQUIPMENT

All Fall Restraint and Arrest systems and devices must be designed, selected, used and maintained in accordance with AS/NZS 1891 Industrial fall-arrest systems series.

All Fall Restraint and Arrest systems and devices, including attachment points must be installed in accordance with the design and/or manufacturer's requirements by a trained, competent person, and must be inspected regularly by a competent person.

HY is to ensure that a competent person verifies fall restraint and arrest systems (including all components) as installed in accordance with any engineer's design plans, required documentation and legislation. Installation can be undertaken by a person holding any of the following training, competencies, HRWL or qualification:

- Horizontal lifelines and rail systems, static lines, and anchor points
- Rigger Basic or higher
- Scaffolder Intermediate or higher
- Engineer – Structural or Civil eligible for registration with the AIE
- Person trained in the installation of the proprietary Fall Restraint and Arrest systems by the manufacturer/supplier
- Structures used as anchor points
- Engineer – Structural or Civil eligible for chart with the AIE

HY Fall Restraint/Arrest Equipment is to be registered in HammerTech as an item of Fall Protection Equipment in accordance with the Plant & Equipment procedure and the Next Verification date set for inspection/servicing.

Subcontractors must submit a register and supporting records of their Fall Arrest/Restraint Equipment prior to its use.

ATTACHMENT POINTS AND ANCHOR POINTS

All attachment and anchor points for fall arrest/restraint equipment must be designed, certified, installed and regularly inspected by a suitably qualified person.

The following documentation must be provided to HY once attachment points have been installed and tested:

- Certification
- Handover certificate or record
- Anchor test/pull test records

INSPECTION, SERVICING & MAINTENANCE

Inspection, servicing and maintenance of fall arrest/restraint equipment including attachment points must be conducted by a competent person in accordance with the manufacturer's requirements, and in accordance with relevant Codes of Practice and Standards, in particular:

- AS/NZS 1891.4 Industrial fall arrest systems & devices – Selection, use and maintenance.
- AS/NZS 4488 Industrial rope access systems – Selection, use & maintenance

A qualified Height Safety Inspector must conduct 6 monthly inspections of harnesses, lanyards and attachment points as required by AS 1891.4.

FALLING OBJECTS

The risks associated with falling objects must be assessed and managed. This includes the use of controls such as lanyards, screens, barriers, catch nets and catch platforms to prevent and/or manage dropped objects (including objects that may get blown off from an elevated surface).

EXCLUSION ZONES

Exclusion zones must be established where there is a risk of people being hit by a falling object. An exclusion zone must be established below installation works e.g. precast, stripping formwork, erecting walling etc.

WORK ZONES

Work zones with restricted access are to be established to clearly define which areas are under construction and which are completed. (i.e. Formwork decks). Work zones must have appropriate signage in place.

ACCESS AND EGRESS TO/FROM ELEVATED WORK AREAS

Safe access and egress to/from elevated work areas must be provided. Preference should be given to scaffold (either fixed or mobile) or installing fixed stairs/ steps to access the work area.

Where a ladder is used to access an elevated work area, the ladder must extend at least 1 metre above the work platform, be securely tied or fixed at top and bottom to prevent movement of the ladder and have fall prevention controls in place at the stepping-off point where people access the working platform. The area around the access point to the ladder must be kept clear. Access must not be obstructed or restricted by items such as perimeter handrails.

Workers are:

- To stand on the MEWP platform only and not on toeboards, midrails or handrail
- Not to exit from elevated EWPs onto adjoining structures
- Not to remove or alter edge protection systems and or scaffolding

LADDERS

Ladders can be used as a means of access to or egress from a work area. Working off ladders may only be considered after all other avenues have been exhausted. Where ladders are being used to perform work that requires a

SWMS, the ladder must be listed as a control.

Metal ladders and metal-reinforced ladders must not be used for live electrical work. Only nonconductive (e.g. fibreglass, timber) ladders may be used. Ladders must be industrial rated, not domestic grade.

In the event that a ladder is used, the following controls must be in place:

- Must not be used within two metres of the edge of the building structure or void such as the edge of an open floor, or penetration.
- Access ladders must be
    - Secured top & base and free of damage
    - Extend one metre past any landing
    - Accessible without creating a risk of falls
    - Area at top / base of ladders must be kept clear
    - Platform ladders above 2m must have hand rails fitted

“A frame” ladders are only to be used if safer alternative is not practicable

Step ladders with 4 steps or less are not permitted on site (platform ladders excepted)

TRESTLE LADDERS

Trestle ladders are prohibited on HY sites.

EMERGENCY PROCEDURES

Procedures for responding to a fall from height must be included in the project **Emergency Response Plan** and the **SWMS** for tasks where there is a risk of falling. It is not sufficient to rely solely on external emergency services.

A **task-specific rescue plan** must be documented prior to commencing any work that involves the use of fall arrest systems or harness-based activities. The plan must identify the rescue method, the required equipment, and the personnel trained to carry out the rescue.

The plan must cover the following scenarios:

- **Arrested fall** (e.g. a person suspended in a harness):

    - Nominate the rescue method (e.g. retrieval kit, EWP).
    - Identify the equipment to be used and ensure it is readily available.
    - Detail the qualifications and roles of trained personnel.
- **Unarrested fall** (e.g. medical emergency):
    - Outline steps for providing immediate medical assistance and accessing emergency services.
- **Rescue using an EWP**:
    - The rescue plan must specify the model of EWP, pre-checks, and the role of the ground-based Support Person in controlling or operating the EWP if required.

All nominated rescue methods and personnel must be reflected in the SWMS and rehearsed where practicable.

DEFINITIONS AND ABBREVIATIONS

EWP – Elevated Work Platform

RTO – Registered Training Organisation

Solid construction means an area:

- With a surface that is structurally capable of supporting workers, materials and any other loads applied to it
- Provided with barriers around its perimeter and around any openings from or through which a person could fall
- With an even and readily negotiable surface and gradient, and
- With a safe means of entry and exit

Work positioning system – includes any plant or structure, other than a temporary work platform, that enables a person to be positioned and safely supported at a location in such a way that a fall is prevented

Individual fall arrest systems consist of some or all of the following components:

- Anchorages including rail system

- Lifelines, lanyard, shock absorber and inertia reel
- Rope and wire grabs
- Harness
- Snap hooks and karabiners (double or triple action to prevent rollout)
- Rescue equipment

Anchor Point/Anchorages – device or system attached to a structure designed for the attachment to personnel for protection against falls from a height.

REFERENCES

- Work Health & Safety Regulation 2011 (QLD), 2012 (SA/TAS) and 2017 (NSW) – Part 3.2; Division 10 Falling Objects, Part 4.4 Falls and Part 6.4; Division 3 Duties relating to falling objects
- Occupational Health and Safety Regulations 2017 (Victoria) – Chapter 3; Part 3.3 Prevention of Falls
- Managing the risk of falls at workplaces (Model Code of Practice)
- AS/NZS 1891 (set) Industrial fall-arrest systems and devices
- AS 2550.10: Cranes, hoist and winches – Safe use Part 10: Mobile elevating work platforms
- AS/NZS 4389: Roof safety mesh
- AS/NZS 4488 (set) Industrial rope access systems
- AS/NZS 4994 (set) Temporary edge protection
- AS/NZS 5532: Manufacturing requirements for single-point anchor device used for harness-based work at height
- Federal Safety Commission (FSC) Audit Criteria – H1 Working at Heights

ASSOCIATED DOCUMENTS

- HYer Standard – Work at Height
- Quick Guide – Elevated Work Platforms (https://www.hyworkzone.com.au/elevated-work-platforms-quick-guide/)
- Quick Guide – Formwork and Falsework (https://www.hyworkzone.com.au/formwork-and-falsework-quick-guide/)
- Quick Guide – Scaffold (https://www.hyworkzone.com.au/scaffold-quick-guide/)

- Quick Guide – Ladders (https://www.hyworkzone.com.au/ladders-quick-guide/)
- Quick Guide – Personal Protective Equipment (https://www.hyworkzone.com.au/personal-protective-equipment-quick-guide/)
- Quick Guide – Work Zones (https://www.hyworkzone.com.au/work-zones-quick-guide/)
- Cranes and Lifting procedure (https://www.hyworkzone.com.au/cranes-and-lifting-procedure/)
- Mobile Plant procedure (https://www.hyworkzone.com.au/mobile-plant-procedure/)
- Plant and Equipment procedure (https://www.hyworkzone.com.au/mobile-plant-procedure/)
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Last Modified: December 21, 2023

ANIMATION

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