WAHA MEMBER INDUSTRY CODE

PERMANENT SINGLE POINT ANCHOR INSTALLATIONS

FOR SAFE WORKING AT HEIGHT

For Public Release

Working at Height Association Limited
PO Box 91, LANE COVE, N.S.W. 1595

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1. SCOPE AND PURPOSE

1.1 Introduction

This Industry Code has been developed by members of the Working at Height Association to set minimum operational standards for fixed height safety installations to improve the standard of safety provided by those installations. This has been done to address the following:-

- Countering an unregulated safety market by defining industry based safety standards that provide consistency in terms of an agreed minimum standard. Whilst there are numerous Australian Standards and Codes of Practice as well as penalties for breaches of WHS legislation, there are no mandatory reporting requirements.
- The confusion that exists with designers / owners / users caused by the lack of any documented industry based operational standards.
- To elevate operator safety as the key decision driver in the selection of system designs and installations rather than minimising installation costs.
- Providing a consistent minimum standard against which all existing and new installations can be measured and existing installations re-certified.

1.2 Scope of the Industry Code

This Industry Code applies to all work at heights activities across all industry sectors and has been developed, and is supported, by members of the Working at Height Association.

The Industry Code may be used to provide guidance for the practitioner to manage work at heights activities through a Risk Management framework allowing the development and implementation of a Fall Prevention Plan that will include the use of a Permit-to-Work System.

The Industry Code also provides guidance on the responsibilities of the various specialist activities involved in designing, installing, testing and operating a fixed height safety system. These specialist activities include:-

- Auditors / Risk Assessors
- System designers
- Component manufacturers (anchors / ladders / walkway etc.)
- System Installers
- System Certifiers – at time of installation
- System re-certifiers

1.3 Purpose

This Industry Code has been prepared to define the standard and consistency of working at height safety systems at workplaces.
The Code covers the design, installation, testing and re-certification of fall control systems and related work practices that can be adopted when the risk of falling from height, or into depth, is present.
The Code does not represent the only acceptable means of achieving the standard to which the Code refers.
The Code provides guidance and clarification on the Workplace Health and Safety Regulation and should be read in conjunction with relevant WHS Codes of Practice.

2. The Hierarchy of Risk Control

The ways of controlling risks are ranked from the highest level of protection and reliability to the lowest as shown in Figure 1. This ranking is known as the hierarchy of risk control. The WHS Regulations require duty holders to work through this hierarchy when managing risk under the WHS Regulations.

Level of Protection	Control	Solution	Reliability of Control
Level 1 HIGH	Elimination	Elimination of the height safety hazard through redesign. Eliminate the need to work at height.	MOST
Level 2 MEDIUM	Substitution	Substitute the height safety hazard with something safer. e.g. Use an EWP	MIDDLE
	Isolation	Isolate the height safety hazard from people. e.g. Implement lock out systems.	
	Engineering Controls	Reduce the risk through engineering controls. e.g. Use guard rails or walkway systems.	
Level 3 LOW	Administration Controls	Use administration systems to control access. e.g. Permit to work systems	LEAST
	Use of Personal Protective Equipment	Use of fall protection equipment (anchor systems, harnesses, shock absorbing lanyards etc.) in conjunction with work method statements	

The aim must always be to eliminate a hazard, which is the most effective control. If this is not reasonably practicable, the risk should be minimised by working through the other alternatives in the hierarchy.

2.1 Level 1 Control Measures

The most effective control measure involves eliminating the hazard and associated risk. The best way to do this is by, firstly, not introducing the hazard in the workplace. For example, you can eliminate the risk of a fall from height by doing the work at ground level. The system owner should attempt to design out the hazard and, if not, work with the system designer to incorporate risk control measures that are compatible with the functional requirements.

2.2 Level 2 Control Measures

If it is not reasonably practicable to eliminate the hazards and associated risks, the system designer should minimise the risks using one or more of the following approaches:-

- Substitute the hazard with something safer. For instance, install permanent ladders and walkways.
- Isolate the hazard from people. For instance, install permanent ladders and walkways.
- Use engineering controls. An engineering control is a control measure that is physical in nature.

2.3 Level 3 Control Measures

These rely on human behaviour and supervision, and used on their own, tend to be the least effective in minimising risks. Two approaches to reduce risk in this way are:-

- Use Administrative Controls

Administrative controls are work methods or procedures that are designed to minimise exposure to a hazard. These should be documented by both the system designer and the operator. System signage is part of administrative controls.

- Use Personal Protective Equipment (PPE)

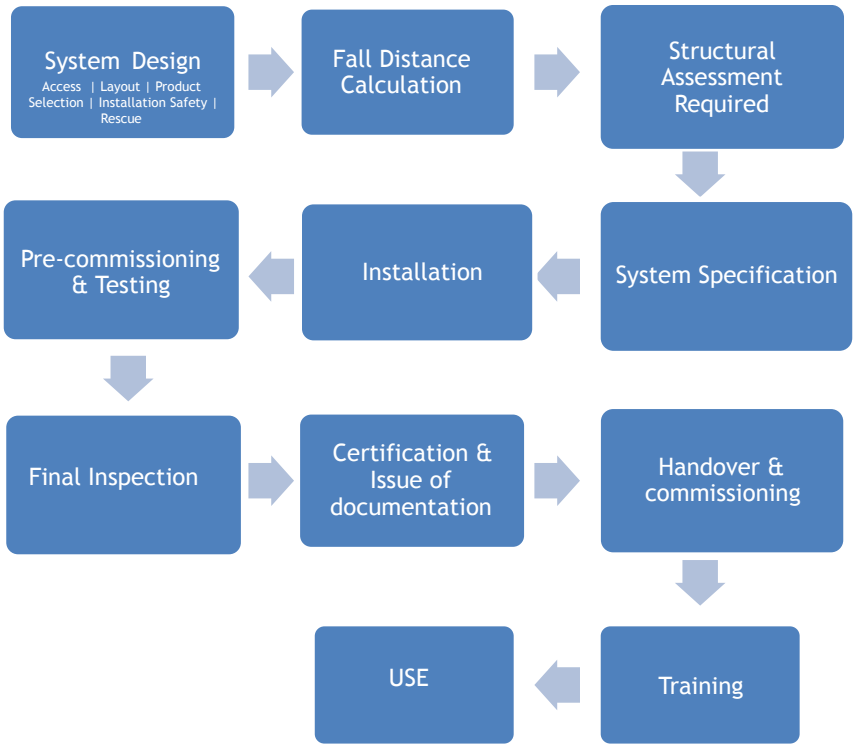
In height safety, examples of PPE include fall arrest rated full body harnesses and shock absorbing lanyards. Personal protective equipment only limits the harmful effects of a hazard if workers wear and use the PPE correctly.
Administrative controls and PPE should only be used when there are no other practical control measures available or as an interim measure until a more effective way of controlling the risk can be used, or to supplement higher level control measures as a back-up.

3. System Installation Process and Key Responsibilities

The design, installation and commissioning of a fall protection system of anchors or lifelines involves a number of distinct steps, each performed by a person with defined skills. Some people may have the demonstrated skills and competency to perform more than one task.

3.1 System Development Process

The installation process is a simple progression of steps to ensure a safe and reliable system is affixed to a defined structure. Regardless of the simplicity or complexity of the installation, it is essential all steps are completed to ensure a system is safe for use.



3.2 Responsibilities

The core roles / functions of the various steps for each project are as follows:-

3.2.1 System Designer – The system design must be based on the methodology to be used to undertake the specified work tasks.
The system designer is responsible for documenting the layout and positioning of the anchorages or lifeline, including consideration of public protection and rescue requirements. The system designer must also define the system specification and use the manufacturer's system design information for their proposed layout / design. In some cases, this may be by way of a calculation program defining a system design load. In other cases, the system designer may access a product that offers design parameters from which a suitable design can be verified as able to perform to the design requirement (such as instruction manuals, technical literature).The system designer must ensure that provision has been made - and evidence can be provided - for adequate fall clearances during the work task. (System calculation records)

3.2.2 Engineer – is responsible for any required structural elements and assessment of the underlying substrate to which anchorages will be fixed and its suitability to sustain structural and fall arrest loads.

3.2.3 Qualified Installer – should be trained and certified as currently competent by the product manufacturer to install the product as well as following the manufacturer's installation instructions and the design layout.

3.2.4 Installation Certification – should be issued by the Qualified Installer confirming that the engineer's, system designer's and manufacturer's requirements have been met for the installation when first installed. Documentation provided should include:-

- the system design details,
- the manufacturers instructions for the individual products installed,
- the personal protective equipment to be used by those using the system
- the recertification requirements.

3.2.5 Installation Inspector / Re-certifier – conducts routine inspections and maintenance of the system. The inspector ensures that the system is suitable for ongoing use based on the manufacturer's specifications.
The Working at Heights Association requires its members to have a minimum of 2 workers when carrying out inspections, as the work involves activities at height, unless a Risk Assessment has been carried out and deemed the nature of the works are not working at height. e.g., inspection of anchors on a flat concrete roof more than 2.0m back from any fall edge.

4. Design

4.1. System Design, Including Layout Plan or Rigging Layout

The safety of any fall protection safety system is primarily defined by the initial design. Poor design can increase the likelihood of a system being unused or impact the ability of a person to complete their task safely or effectively. Conversely, an excellent system design enables a person to access a system with ease, limiting the chance of an injury and indeed should assist them to complete a task efficiently without risk to themselves or others.
The initial stage of design is therefore the 'Use definition' by outlining the tasks to be completed at any time when a user is on the system (e.g. gutter cleaning, air-conditioning maintenance). The System Designer will then develop a layout that will take into consideration access to the system, the work method and rescue considerations in the event of a mishap.
The System Designer should first consider a Restraint Technique System before a Fall Arrest system.

4.2 Product Selection

Once the primary applications and tasks are identified, product selection becomes an important feature in design. All types of systems should be considered including horizontal or vertical systems as they may be a more suitable alternative, or complementary alternative, to anchors points - given the building or structure design.

Whichever system is chosen, it is important for the system to be designed in accordance with a the product manufacturers requirements.
Additional considerations in the layout are:-

- How many people are required to be working at one time
- The skill level of users
- Fall clearances
- Lanyard / Rope contact over sharp edges
- Pendulum falls
- Supervision and objects on the structure that a falling person may come into contact with
- Protection of those under the work area from possible falling tools and equipment.

There are a significant multitude of layout designs that might be considered for different structures, as well as products that are suitable for different applications.

4.3 Structural Assessment

There is no point installing a fall protection system that is rated to defined performance loadings if the structure to which the system attached is incapable of supporting the load.
The System Designer must consider how the loads from the system or anchor are to be transferred to the structure and ensure the structure is adequate.
Other considerations around structural assessment include product type, fixings and the substrate.
System Designers must ensure the system is fit for purpose, capable of sustaining loadings and that it is, installed, tested, inspected and maintained to the manufacturer's requirements.
Different manufacturers offer different methods to assist a System Designer determine that loads are appropriate for a defined structure. Some manufacturers provide minimum design load guidelines. This information is usually supported by testing documentation.
The System Designer must ensure the load capacity of the structure is adequate and, in the absence of definitive evidence, must call upon an Engineer to assess the structure accordingly.

4.4 Engineering Review and Design of the Structure

If an engineering review is required to be undertaken, the Engineer must perform calculations or assessments to determine if the potential loads being applied to a defined system will impact the structure negatively in any way.

In some cases, reference to an Engineer is essential wherever anchors are fixed into substrates whose structural ability cannot be readily verified. Some examples include:-

- Natural Stone
- Brickwork
- Block-work
- Hollow Core concrete
- Slab with screeds
- Edges of slabs
- Parapets
- Timber
- Roof sheets (Except where roof sheets and structure meets the anchor manufacturers requirements defined in testing)

4.5 Design - Rescue

Whilst the chances of an incident can be very low for experienced working at height operatives. However, many trade operatives using the system may be less experienced working at height and therefore the overall layout, product selection and design of the installation is required to take account of the possible rescue and retrieval requirements following a fall on the system.

Whilst some anchor points are designed for two person loads, some products are not suited to perform a contact rescue (where a second operator is lowered to retrieve a disabled operator) utilising the same anchorage point.

5. Installation

5.1 Installation

The installation process is not a single operation – it involves the series of steps required to complete the end-to-end job of the installation. Components of the job include:-

- Risk assess the work area for hazards
- Complete Safe Work Method Statements (SWMS)
- Access the structure safely – utilising Elevated Working Platforms (EWPs), ladders, scaffolding or other structure to complete the task
- Compile and transfer the system components and tools onto the worksite
- Install a safety system on a defined structure - including system labelling
- Obtain System Installation certification from the relevant person
- Following installation, remove the installation tools, excess materials and debris from the structure
- Safely exit from the site once complete
- Remove all temporary access equipment from the location.

5.2 Site Supervisor

The Workplace Manager has a duty to ensure that the design, installation, testing (where required), certification, documentation and handover are carried out correctly. This includes ensuring that personnel are competent to carry out the physical works and that the correct process is followed in undertaking the design and installation.

Further, safety while the works are being carried out must be ensured at all times. This not only extends to the staff of the work place, but is for all contractors who are employed to complete and certify the installation.

In ensuring the safety of persons and the works, the competencies to operate equipment including any access equipment (e.g. EWP) must be maintained.

5.3 Installer Competency

The installation team shall comprise individuals who demonstrate competency in the installation of anchorage points and / or lifeline systems, relevant to the works to be carried out. A team - which must comprise at least two persons - shall have installers that are fully trained and carry Nationally Accredited height safety training certification for working at height operations and all aspects of the works to maintain their safety and the safety of others. They must also be able to demonstrate their rescue plan in the event of an emergency.
The team must also have individuals within it that have the skills to operate tools and testing equipment and shall be able to demonstrate they can safely complete the works (herein identified as Qualified Installers). The Workplace Manager has the responsibility to ensure that the installers performing the works required are capable of performing the work in a safe method.

Some examples of the verification of this competency could be as follows:-

- Evidence of successful training completion of the Qualified Installer by the Manufacturer of the products being installed
- Work Safely at Heights training certificates
- White Card / Construction induction certificates
- Building licenses - where applicable
- Other forms of relevant qualifications
- Meets the requirements of relevant Codes of Practice

The installation team must understand all relevant aspects of the access equipment and anchors being installed and of any fixings, adhesives or compounds that may require special treatment to ensure they operate satisfactorily. Specialised product installation training must have been provided to the installers by the manufacturer. The manufacturer must have certified the installer competent in the installation of their product.

5.4 Insurance

A Qualified Installer must be able to produce a copy of their certificate of currency for Public Liability Insurance (typically for $20M or greater) and Workers Compensation Insurance, where applicable, to the Workplace Manager prior to any works being undertaken. System designers and re-certifiers must carry an appropriate level of Professional Indemnity insurance ($5M). There may be requirements for insurance cover for the use of other specialist equipment (e.g. EWP's, vehicles etc.)

5.5 Working Safely at Height

Every installer shall be suitably qualified and certified as competent to work safely at heights, including the use of temporary systems for their own personal safety during the installation. These Qualified Installers must be able to provide a system for their own rescue, if there is a likelihood of them falling whilst installing the anchors or systems.

5.6 Manufacturer's Instructions

Every manufacturer should be able to supply instructions for the correct installation of their product. Installation of all anchorage and lifeline products must be exactly in accordance with the manufacturer's instructions.

6. Commissioning / Testing / Certification

The commissioning, testing and installation certification process is a sub-set of the installation process. It is specifically called out in this Industry Code due to the importance to the installation.

6.1 Installation Certification

Installation Certification is different to Product Certification. The Installation Certification is the process by which a Competent Person certifies that a product installation is consistent with the manufacturer's specifications and the layout specified by the System Designer.

A full certification should consist of:-

6.1.1 Collating and reviewing the documentation for the system, including the safe work method statement, system design layout, anchor compliance certification, proof loading compliance where required (see 6.4.1), and user instructions.

6.1.2 An inspection of the installed system and certification that it meets the System Designer and product manufacturer requirements.

6.1.3 Issuing a compliance certificate once all requirements are satisfied.

Certificates of compliance are only considered valid if they are provided in conjunction with the supporting evidence as outlined above. Some manufacturers may also have a centralised system of project or 'system registration' in place, which allows for an effective cross-reference that a design and installation is registered as being compliant. Verification of the availability of this process can be sought through the installer or directly with the manufacturer.

6.2 Commissioning

Once the product has been installed, anchors shall be tested, if required.

All equipment installed shall be labelled with a weather proof data-plate. Each anchorage point or lifeline system shall be individually tagged. Each anchor shall be identifiable on an indelible layout located with the system documentation file which is maintained by the Workplace Manager.

Commissioning shall include the following documentation which is an essential part of the system manual:-

6.2.1 A layout of anchors/rigging plan / lifeline design and types of devices used with each element clearly identified;

6.2.2 Inspection requirements and testing results (if required) for each anchor or lifeline system;

6.2.3 Labelling in accordance with AS/NZS1891.4: 2009 Section 2.2.9;

6.2.4 Maintenance requirements and instructions.

6.3 Anchor Marking / Labelling

All anchor points shall be identified with a weather proof plate. Each anchor point shall be individually tagged, or identified on an anchor/rigging plan positioned at the entry point to the system.

Each anchor shall be marked showing:-

6.3.1 An indelible serial number or batch number;

6.3.2 The manufacturer and supplier's name, trade mark or other means of identification;

6.3.3 The manufacturer's batch number or serial number of the component;

6.3.4 The product rating, in kN, or capacity (e.g. single person/limited free-fall);

6.3.5 The characters in the identification mark shall be readable and discernible after installation;

6.3.6 Each anchor shall have an attached label or marking to identify it for personnel attachment only.

The labelling shall be legible and durable taking account of likely weather conditions. Following any incident such as a fall, affected anchors shall be tagged and withdrawn from service until an engineering assessment/inspection has been carried out and the anchor replaced, repaired or re-certified.

6.4 On Site Testing

Two (2) different types of tests may be required, these being:-

- Proof load test
- Verification test

6.4.1 Proof load test – The proof load test is used to prove that the connection to the substrate is adequate. This test shall be performed on anchors in masonry materials and may be prescribed by the designer for other types of anchors.

Proof loads are performed in axial tension (direct pull). On-going proof-loading (i.e. after initial installation) may require removal of the anchors for inspection for corrosion.

Products that shall be proof loaded include glued in anchors and friction type anchors.
- The proof load applied shall be 50% of the minimum anchor design load (e.g. apply 7.5kN to an anchor rated to 15kN and held for a period of 3 minutes without failure), unless the manufacturers requirements say otherwise.
- Pass / fail criteria – no visible permanent deflection/deformation or failure to hold the load.
- Proof load testing shall also be carried out for fasteners that attach components of a lifeline system to masonry materials.
- Proof load testing may also be required by the lifeline manufacturer of the termination components to the cable.

6.4.2 Verification test – No proof load test is required, a visual inspection is performed to confirm the installation is as per the manufacturer's recommendations / specifications. The verification test includes the anchor or lifeline and the substrate. A typical example of a verification test would be a top fixed anchor attached to roof sheeting.

6.5 Installation Certifier Competency

Certifier competency is a combination of training, education and experience covering:-
- Knowledge of relevant standards;
- Ability to assess the installed system and the substrate.

A certifier should have at least 2 years relevant experience of a combination of system design, installation and use of installed systems, unless a person can demonstrate equivalent relevant experience.

Some manufacturers may require, that in order for a system to be initially certified, they will only recognise that certification if the installer has been trained by the manufacturer as being capable of such an inspection. Verification of this can be by way of a certificate issued by the manufacturer to the Certified Installer / Re-Certifier detailing the validity of their training in that system type.

7. Documentation / Handover

The following documents shall be provided to the WorkplaceManager:-

7.1 System Certification

The compliance certificate shall include that:-
- The system and anchors are designed in accordance with the standards referenced in appendix A, (and any other relevant design and material Standards), and
- The system and anchors are installed in accordance with the System Designer's specifications, Manufacturer's instruction, Engineer's requirements and in line with defined workplace health and safety conditions.

7.2 System Manual

The system manual must include at least the following information:-
- Rigging plan / system layout instructions for the user on how the designer intended the system to be used and accessed. This shall be site specific.
- Product and manufacturer's instructions for use.
- Any additional training requirements that may be required (specific to the installation).
- Supervision level required to use the as-designed installation.
- A listing of any special components required (lanyards, self-retracting lifelines, mobile traveling devices, slings, rope protection etc.) to use the system safely.
- The intended (designed) rescue method.
- Test reports where applicable for proof loading.

- Requirements for any special protection needing to be placed or supplied by the operatives, to protect the building, the equipment and the operators – this includes where edges are likely to be an issue to operator's lanyards and any likely pendulum falls resulting from the layout of the anchor system.
- Any exclusion zones

The system shall not be used until the worker has sited the system manual and certification (i.e. Verify the anchor or lifeline are within current inspection and/or testing date).

7.3 Inspection and Re-Certification Requirements

The handover documentation should set out all relevant information with regards to on- going testing and inspection of the anchor or lifeline system. Note that inspection requirements differ between jurisdictions with some requiring 6 monthly inspections while others are 12 months. The documentation should be specific regarding inspection frequency, levels of inspection (including testing, where required), documentation and the like.

8. Workplace Manager Responsibilities

The person who is in control of the workplace is referred to in this document as the Workplace Manager. The Workplace Manager may include the building manager, body corporate, the commercial tenant, the facility manager, the property owner, the employer etc.

8.1 After the Installation

After commissioning of the works, the system is handed over to the Workplace Manager.

8.2 Workplace Manager Guidelines

Once the anchor or lifeline installation has been handed over, the Workplace Manager has the responsibility to ensure that:-

- Handover documents are retained and updated as required;
- Procedures are developed to ensure that only persons trained in use of the installation are allowed to use the system;
- User information is provided to system users;
- A reasonable amount of supervision is provided to ensure that the systems are used correctly;
- That there are adequate rescue plans in place, which are practiced;
- The system is used correctly, by suitably trained personnel;
- The system is maintained and inspected in a timely fashion in accordance with the instructions in the Inspection and Recertification guidelines (refer to Section 9).

In addition to the Workplace Manager, other persons may also have concurrent responsibilities in regard to the proper use and maintenance of the anchor or lifeline installation (e.g. Subcontract Company who intends to use the installation).

8.3 Inspection and Re-Certification

This involves the process of conducting routine compliance inspections for all installations in the control of the Workplace Manager. They should seek to ensure:-

- That inspections are performed in a timely fashion;
- That the manufacturer's recommendation/specification are adhered too;
- That prior to and during use of the system, the user conducts ongoing inspections to ensure that any damage is identified and reported to the Workplace Manager;

- That the system should not be allowed to be used if it is not current in regard to inspection and is not bearing markings indicating currency;
- Each state has its own requirements for the frequency of anchor and lifeline inspection. These requirements are prescribed in state based OH&S Regulations, Codes of Practice or industry specific guidance material;
- Acts, Regulations and Codes of practise are higher order legislation than Australian Standards, and as such, when those documents prescribe how often anchors and lifelines are inspected, takes priority and precedence over the requirements Australian Standards or this document.

8.4 Verification of Anchor Design and Installation

The Workplace Manager should ensure that they have documented evidence of the adequacy of the anchors i.e. that the anchor complies with the strength requirements of AS/NZS 1891.4 and the manufacturing testing requirements of AS/NZS 5532. This is particularly important for anchors installed prior to October 2013 (the release date of AS/NZS5532). Where this is not available, they should take the anchors out of service. The anchors may be returned to service if such documentation is located or adequacy confirmed by engineering review.

Any review shall also include the adequacy of the substrate's capacity. For any anchors installed after the release of AS/NZS 5532, these shall comply with this Standard.

Where a system is found to be deficient:-
- Tag the anchor system out of use;
- Upgrade the system to meet minimum requirements, or
- Remove the system and replace with one meeting the current requirements.

8.5 Uncertified / Non-Verified Systems

There may be an occasion when a Workplace Manager becomes aware of an anchor or lifeline installation on a new premises that they are unsure about. Even if it does have a compliance plate and is within service, the workplace manager should confirm its ongoing suitability by:-
- Until further notice, check the system out of service until an inspection can be performed;
- Contact the last inspection company to review their documentation and provide copies of the latest data;
- If non-contactable, contact the installation company to determine the details of the system installation if available;
- If non-contactable, contact the manufacturer to determine the details of the system installation if available. They can arrange for a suitably qualified installer to visit the site and conduct an inspection;
- Only return the system to service when satisfied the system is fit for use.

9. On going Inspection and Testing

9.1 Installation Inspection

On-going inspections are called re-certifications and should be carried out at the frequency and as prescribed in the handover documents.

Where state based legislation mandates a more frequent inspection regime than Australian / New Zealand Standards or the manufacturer's requirements, then the higher order legislation shall take precedence, and that inspection frequency should be applied.

9.2 Engineering Systems Installations Without Documentation

If conforming documentation is not available, the system shall not be used until all aspects of certification are confirmed. On pre-existing installations, the process of verifying on-going suitability is the same as the process for new installations, irrespective of installation date.

9.3 Inspection and Testing Requirements

Each anchor shall be inspected and the details of the inspection recorded. Checklists are mandatory. Checklists provided by manufacturers are preferred as they cover specific aspects of the manufacturer's design.
Marking the system and anchors with last inspection dates also enables the users to be able to determine if the system is safe for use based on last inspection date.

9.4 Inspection and Testing Competency

The inspection body must demonstrate they have the skills and equipment necessary to perform the inspection and testing function.

Inspection and testing must be carried out by competent person who is suitably qualified to undertake these works. Inspector competency is a combination of training, education and experience covering:-

- Knowledge of relevant standards (Eg, AS/NZS1891, AS1657);
- Ability to identify defects in the product and substrate;
- Ability to identify deficiencies in the installation of the product and location;
- The system and layout remains fit for purpose.

9.5 Installation Inspector / Re-Certifier

An Inspector or Re-certifier should have at least 2 years relevant experience of a combination of system design, installation and use of installed systems, unless a person can demonstrate equivalent relevant experience.

APPENDIX 1 - USEFUL REFERENCE DOCUMENTS

Where an Australian Standard or Code of Practice is referenced, the latest edition should always be used. Dates quoted in the Code of Practice are correct at the time of publication but amendments may have been made since that time.

The following documents are referred to in this Code of Practice:-

• ASA/NZS 1891Series	Industrial fall arrest system and devices
• AS/NZS 1891.1	Part 1 Harnesses and ancillary equipment
• AS/NZS 1891.2	Part 2 Horizontal lifeline and rail systems
• AS/NZS 1891.4	Part 4 Selection use and maintenance
• AS/NZS 5532	Manufacturing standards for single point anchor devices used for harness based work at height
• AS/NZS 4488 Series	Industrial rope access systems
• AS/NZS 4488.2	Part 2 Selection use and maintenance
• AS/NZS 1657	Fixed platforms, walkways, stairways and ladders - Design, construction and installation

APPENDIX 2 - DEFINITIONS

FROM AS/NZS1891.1:2009

Anchorage point

A secure point of attachment to a structure to which a fall-arrest device or an anchorage line may be attached.

Anchorage line
A rigid rail or flexible line secured to an anchorage point along which a Type 1 fall-arrest device travels, or a flexible line which unreels from a fall-arrest device.

FROM AS/NZS1891.4:2009

Competent person
A person who has, through a combination of training, qualification and experience, acquired knowledge and skills enabling that person to correctly perform a specified task.

Engineer
A person who is eligible for Corporate Membership of the Institution of Engineers Australia or the Institution of Professional Engineers, New Zealand and who has appropriate experience and competence to assess the integrity of a building or structure and anchorage points.

Fall-arrest system
An assembly of interconnected components comprising a harness connected to an anchorage point or anchorage system either directly or by means of a lanyard or pole strap,and whose purpose is to arrest a fall in accordance with the principles and requirements of this Standard.

FROM AS/NZS 4488.1.1997

Anchorage point
A secure point on a rigid structure for the attachment of a working line, safety line, fall-arrest device or other elements of a rigging system.

FROM AS/NZS 5532:2013

Anchor
Device or system attached to a structure, ready for the attachment of personnel for protection against falls from a height.

Anchor Device
A component or assembly of components which incorporates one attachment point.

Anchor System
An assembly of multiple anchor devices with one or more attachment points.

Fall Arrest
The arrest of a fall where the fall distance before the arrest of the fall begins to take

any loading is in excess of 600mm either vertically or on a slope where it is not possible to walk without the assistance of a handrail.

Manufacturer
The person designing, manufacturing and testing anchor devices to meet this Standard.

GUARDRAIL
A system of rails or panels or both, that provides edge protection at the edge of a floor or platform or walkway.

Handrail
A rail that provides a handhold on a platform, walkway , stairway or step-type ladder.
Note: A handrail may form part of a guardrail.

Walkway
A designated walking surface used for moving from one point to another.

OTHER USEFUL DEFINITIONS

Horizontal Lifeline or Horizontal Rail

A linear anchor which allow users of fall arrest equipment the flexibility of lateral movement, without having to disconnect from the anchorage.

Installation Certification
A product installation that has been certified as meeting the requirements of the Manufacturer's installation instructions and the designer in order to be able to perform to the specified design and use requirements.

Installation Inspection
The procedure by which a competent person (Installation Inspector) assesses the completed anchor installation as to its compliance with the Standard, relevant Code of Practice, manufacturers' installations instructions and suitability for ongoing use by an end user such that their safety is assured.

PCBU
Person conducting a business or undertaking.

Prescribed System
Refers to a series of components provided from multiple sources and deemed suitable to be used together by the installation company for creating a permanent horizontal or vertical lifeline system. Prescribed systems are not required to be tested, but only be signed off by a Competent Person. Given the lack of testing accountability by virtue of their design, for this reason they are not recommended for use under this Industry Code.

Proprietary System
A proprietary system in this Code refers to a set of components provided by a single manufacturer that are assembled together in order to create a permanent horizontal or vertical lifeline or rail system. A product certified to AS/NZS1891.2 is automatically recognised as a Proprietary System.

Qualified Installer
A person who has been through defined training courses and passed the testing process sufficient to demonstrate their competency at installing a fall protection system to the Manufacturer's defined requirements.

Re-certification Process
A periodic review of an anchor point or lifeline system and the verification of its compliance with the original Installation Certification by a Competent Person.

Screw-in Anchor (concrete or masonry) (fixing)
An anchor fixing drilled into a concrete or masonry substrate and held in place via coarse threads on the body of the anchor, which cut into the substrate to enable the anchor to grip. A screw-in anchor is deemed to be a friction anchor with regards to installation orientation and inspection / testing requirements.

System History File
The document developed during the system design, installation, testing, operation, repair and recertification that records all information relating to, and over the life of, the system.

System Certifier or Re-certifier
The competent person who inspects and re-certifies the system and takes responsibility for the system conformance into the next period of certification.

System User
The competent person that will use the system.

System Owner
The PCBU responsible for safety on the site.

Top fixed Anchor
An anchor point, for attachment of a fall arrest lanyard or lifeline, used on a metal deck roof. It may be fixed to the roof sheeting or structure and may also be fixed through to the purlin, on the underside of the roof sheeting.

Vertical Lifeline or Vertical Rail
Vertical anchorages which allow users of fall arrest equipment the flexibility of vertical movement, without having to disconnect from the anchorage.

Workplace Manager
A Person Conducting a Business or Undertaking (PCBU) or a person who is in charge of a site on which work activity is being completed.

APPENDIX 3 - CORE COMPETENCIES - SYSTEM DESIGNER

The System Designer ensures the works are safe to install and are suitable for the intended end use (e.g. that the anchor will actually work for the needs of the users). Where possible the anchor or lifeline system should be designed for restraint technique use.

The System Designer should ensure that:-

- That the installation can be carried out in a safe manner so as not to place the installers, users or public at risk;
- That the structure is assessed prior to the installation to determine if engineering assistance is required;
- That suitable drawings, specifications and other documentation is produced to ensure site personnel understand how the installation is to be carried out;
- That suitable materials (anchors, fixings , paints, sealants etc.) are specified to ensure suitability for use, safety and durability;
- An ability to assess the structure against design specifications and read drawings;
- To ensure that the installation is suitable for use, have an understanding of how to use a harness based system of work and concepts such as:-
    - Ensuring there is always safe passage to, from and around anchor and lifeline installation. This may require the addition of AS 1657 solutions.
    - Ensuring that elements of the building such as glass façade elements are protected and ensure that operators and their equipment are not placed at risk by these elements.
    - Ensure that anchors and lifelines are not placed too close to fall potentials such as roof edges.
    - Ensuring there are no pendulum falls in harness based work.
    - Documenting how a person could be rescued from the system.
    - Limiting the ability of a person to fall over an edge.
    - Where a potential of a fall over an edge seems inevitable, to make some allowance for this thus preventing lanyard damage.
    - How to deal with surrounding hazards such as Laser-lite, skylights, asbestos roofing, and plant in the way of anchors or lanyard runs etc.
    - Limiting fall distances.
    - How to assess and deal with steep inclines such as steep roofs.
    - Understanding the tasks to be performed, and the purpose of the system.
    - Note for rope access works the designer may need to seek expert guidance to assist in this task.
    - Access to the system and access between levels.
    - Understand this Industry Code, relevant Australian Standards, work instructions and manufacturer’s instructions.
    - An understanding of the range of suitable products in the marketplace.
    - Demonstrate ability to understand how the products are installed and be able to effectively transmit this information to site personnel.

To ensure that the designer has suitable experience, the following minimum qualifications are expected to be held by this person:-

- Safe working at heights course (AS/NZS 1891.4, Appendix E);
- Manufacturers training on product, fixing, structure and design layout;
- Demonstrate an ability to design a system that protects a person whilst they are connected to the system carrying out particular tasks.

Demonstration of suitable experience is suggested as follows:-

Designing at least 5 complex systems.

APPENDIX 4 - CORE COMPETENCIES - INSTALLER

As pointed out previously in this document the term “installation” can mean as little as drilling holes or as much as undertaking a wide range of engineering, testing and certification functions.

To be competent, Qualified Installers shall demonstrate the ability to:-

- Use the correct tools;
- Work in a safe manner so as not to place themselves or the public at risk;
- Have a practical working knowledge of Australian Standards, work instructions and manufacturer’s instructions;
- Demonstrate ability to install equipment and document the installation details;
- An ability to assess the structure against design specifications and read drawings.

Minimum training requirements:-

- Safe working at heights, including rescue (AS/NZS 1891.4, appendix. E);
- Construction induction training;
- Manufacturers training on installing specific product;
- Use of specific access equipment that may be required – e.g. Elevating work platform.

Installation experience:-

Installers should work under the supervision of an experienced operator who should be able to demonstrate a minimum level of experience in relevant works.

The Workplace Manager should ensure that senior installation personnel have a recommended relevant competency of at least 50 hours general installation works, with10 hours directly related to each product that is to be installed.

There should be regular assessment of the person’s competency by instruction and observation. This experience must include working in similar environments with the specific product.

As the senior installer will generally be supervising other personnel, it must be ensured that the skills held are suitable to do this. He must be able to demonstrate experience in ability to do the work by way of demonstrating hours on the work under someone else’s supervision by way of a log book, or some other way.

The work experience recorded shall be related to the task, and related activities.

The installer shall be trained and accredited by the manufacturer of the anchor in the specific product installation with training updated every 24 months to take into account changes in Australian standards and product development. Training shall
be specific to that product and the manufacturer shall certify the installer, designer and certifier as competent to perform those tasks.

APPENDIX 5 - CORE COMPETENCIES - CERTIFIER

This person has the responsibility to review and inspect the final installed system and documentation and to provide a certificate of conformance to this Industry Code for the entire system, which includes documentation.

This person shall demonstrate competency as follows:-

- An ability to assess the structure against design specifications and read drawings;
- Common installation errors;
- That the anchor is installed to the designer requirements, structural requirements, and the manufacturer's installation instructions;
- The ability to overview testing (where necessary) and verify pass / fail criteria;
- An understanding of suitable layouts and task appropriate for the works required.
- Manufacturer's training and accreditation on product, fixing, structure and design layout.

The certifier should possess the following minimum training/qualifications:-

- Safe working at heights or equivalent rope access course (AS/NZS 1891.4 Appendix E, ARAA, IRATA), the choice of which should be relevant to the system design/function;

Certifier's experience:-

The certifier should demonstrate at least 2 years relevant industry experience (e.g. . Designing, installing or using anchor based systems systems).

APPENDIX 6 - CORE COMPETENCIES - RE-CERTIFIER

A Re-Certifier shall be able to demonstrate competency as follows:-

- A practical working knowledge of the relevant and codes of practice and standards;
- An ability to identify defects and deterioration in anchor installations and to record the findings;
- Ability to assess changes to the structure that affect the system being used as intended;
- Ability to use an anchor based system;
- Ability to review the system documentation;
- Ability to make judgemental assessments where existing anchor system may not have all expected documentation and labelling information available;
- Be a manufacturer accredited/certified inspector for each particular system that they are re-certifying.

The re-certifier should possess the following minimum training/qualifications:-

- Safe working at heights or equivalent rope access course (AS/NZS 1891.4 Appendix E, ARAA, IRATA), the choice of which should be relevant to the system design/function.

Re-Certifier's experience:-

The re-certifier should demonstrate at least 2 years relevant industry experience (e.g. a combination of designing, installing, inspecting or using anchor based systems systems).