AUSTRALIAN CAPITAL TERRITORY

OCCUPATIONAL HEALTH AND SAFETY ACT 1989

APPROVAL OF A CODE OF PRACTICE

INSTRUMENT NO. 185 OF 1999

Pursuant to subsection 87(1)(a) of the *Occupational Health and Safety Act 1989* (the Act) I approve the Code of Practice which is titled "Safe Working on Roofs - Part 2 Code of Practice" for the purposes specified in subsection 87(1) of the Act.

The said Code of Practice will take effect on the on the day a notice is published in the Gazette.

Dated this second day of July 1999

BRENDAN MICHAEL SMYTH
Minister for Urban Services

SAFE WORK ON ROOFS
Part 2 Residential Buildings

CODE OF PRACTICE

Authorised by the ACT Parliamentary Counsel–also accessible at www.legislation.act.gov.au

July 1999

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1. INTRODUCTION

1.1 Title

This Code of Practice is the *Code of Practice for Work on Roofs, Part 2, Single Storey Residential Buildings, 1999.*

1.2 Purpose

This Code of Practice sets out guidelines to prevent injury to persons engaged in work on roofs.

1.3 Scope

This Code applies to the planning, preparation and conduct of work for the installation, maintenance and removal of roof coverings and the movement of persons working on roofs of single storey residential buildings.

This Code does not apply to emergency service personnel, including the state emergency service, fire, police and ambulance personnel during emergency operations.

1.4 Commencement

This Code of Practice commenced in July 1999.

1.5 Authority

This Code of Practice is approved as an Industry Code of Practice pursuant to Section 87 of the Occupational Health and Safety Act, 1989, by the Minister for Urban Services on the recommendation of the Occupational Health and Safety Council of the ACT.

2. CONSULTATION

The principal contractor, contractor doing the work, self-employed persons, employers, employees and their representatives should consult with each other when observing the recommendations of the Code and determining the provision of safeguards.

The consultation process should be used to determine safe systems of work based on an assessment of the risk. The designer should be involved in the consultative process when appropriate.

The consultation process should consider at least the following:

- type of roof
- pitch of the roof
- type of roofing materials
- condition of the roof
- nature of work
- interaction with other trades
- access to and from the workplace.

3. PLANNING AND PREPARATION

Careful planning and preparation is the first essential step in ensuring that work is done safely. Planning and preparation should involve consultation with all those engaged in the work and include the risk assessment and control process.

3.1 Planning by designer

Architectural and engineering designs of roofs and roof framing should take into account whether the work practices necessary to carry out the installation and maintenance of the designs are safe.

Matters to be considered should include at least the following:

a. the use of fall prevention equipment, such as guardrails or guardrail attachments at the perimeter, where appropriate.
b. provision of anchorage points for a fall arrest system, where required for use during installation and maintenance. To determine where these are required see Section 6 of this code.
c. the strength of roof members to which guardrails are attached and/or which act as an anchorage points for a fall arrest system.
d. the distribution of materials on the structure.

3.2 Planning by principal contractor

The principal contractor, whether as an employer or as the person in control of the workplace, has a statutory duty imposed by the *Occupational Health and Safety Act 1989*. This duty is to provide and maintain, in relation to those matters over which he or she has control, a workplace that is safe and without risks to health for their employees and any other person present at the workplace or affected by the work. To fulfil these obligations the principal contractor should plan for the work to be done safely.

When planning the site layout and sequence of work the principal contractor should prepare and document a health and safety management plan which is based on the consultation with the contractors and their employees or representatives. It should include a documented work method statement, provided by the contractor describing how the work is to be done safely.

Before roof operations start, the principal contractor in consultation with the contractor doing the work should at least consider:

a. an assessment of the risks involved in carrying out the work (see 3.4 and 3.5).
b. the most appropriate method of controlling the risk of falls and injury (see section 4)
c. using building methods to reduce work at heights as much as possible.
d. that the roof framing is complete and braced.
e. that the strength of the roof members are adequate to support guardrails and/or anchorage points for a fall arrest system.
f. providing suitable and safe access to and from the construction site including the place of work.

g. placing roofing materials being delivered in the most favourable position at the site to access the roof.
h. electrical safety, including the location of nearby overhead power lines or electrical service cables and providing systems of work which comply with the recommendations in the *Australian Standard 3012 Electrical Installations- Construction and Demolition Sites.*
i. that all persons carrying out the work have received appropriate training and instruction **(see section 8)**.

3.3 Planning by contractor

The contractor doing the work has an obligation under the OHS Act to provide and maintain a workplace that is safe and without risk to health in relation to those matters over which he or she has control.

In addition to consultation with the principal contractor in the overall job planning the contractor doing the work should at least consider:

a. an assessment of the risk involved in carrying out the work. (see 3.4 and 3.5)
b. the most appropriate method of controlling risk of falls and injury. (see section 4)
c. providing a documented work method statement, where appropriate, describing how the work is to be done safely. This work method statement should take into account an assessment of the risk involved in carrying out the work.
d. providing suitable and safe access to and from the roof.
e. an assessment of manual handling tasks which could cause back strains and other injuries and providing systems of work which comply with the *ACT Manual Handling Regulations1997 and the Manual Handling Code of Practice 1998.*
f. placing roofing materials in the most appropriate position to assist manual handling.
g. the distribution of materials or other equipment to avoid excessive point loading on the roof structure.
h. duties of the crew:- the more hazardous tasks should be allocated to experienced persons in order to minimise the risks.
i. electrical safety, including the location of nearby overhead power lines or electrical service cables and providing systems of work for the safe use of electrical equipment which comply with the recommendations of the *Australian Standard 3012 Electrical Installations- Construction and Demolition Sites.*
j. the use of personal protective equipment (PPE) such as safety harnesses, safety footwear, sun and eye protection; (see section 6 and 7)
k. special health and safety issues if slippery, brittle or fragile roofing materials are encountered or the work involves removal of asbestos cement sheets.
l. transferring old roofing material from point of removal to the ground.
m. preventing persons entering the area below the roof where there is a danger they may be struck by falling objects.
n. that all persons carrying out the work are provided with appropriate training and instruction. (see section 8)

3.4 Risk assessment and control measures

A hazard identification and risk assessment process should be carried out at the planning and preparation stage by the contractor doing the work in consultation with the principal contractor to determine if persons are at risk. Safe systems of work should then be put in place to control the risk.

The process of risk assessment and control measures is made up of the following steps:-

1. Identify the hazards.
2. Assess the risk(s) from the hazards.
3. Use appropriate control measures to eliminate or reduce the risk.
4. Review the control measures from time to time, as appropriate to the control measures.

3.5 Hierarchy of control measures

Use the following hierarchy of control in order to develop each control measure.

1. Eliminate the hazard. *{eg discontinue the activity or use of the item of plant}*

2. Minimise the risks, by:

- substituting the systems of work or plant (with something safer)
- modifying the system of work or plant. (to make it safer)
- isolating the hazard. (eg introduce a restrictive work area)
- introducing engineering controls. (eg guardrails or scaffolding)

1. Other controls.

- adopt administrative controls such as hazard warning signs. (eg "persons working above", "nail gun in use") and specific training and work instructions (eg for brittle or fragile roofs).
- use personal protective equipment (PPE). (eg fall arrest equipment, eye protection)

The control measures at level 1 give the best results and should be adopted. The measures at the lower levels are less effective and they require more frequent reviews of the hazards and systems of work. In some situations a combination of control measures may need to be used.

The control measures recommended by the contractor doing the work should be considered by the principal contractor as part of the health and safety management plan. Any new control measures should be evaluated to ensure that they are effective and safe and that new hazards are not created by them (see Appendix A for a typical risk assessment checklist).

3.6 Preparation

When preparing for the commencement of work the principal contractor and the contractor doing the work should ensure that the workplace is safe, based on the health and safety management plan. They should also check to ensure that all controls identified by the risk assessment have been put in place and that no new hazards exist.

Preparation should also at least include:

a. an assessment of climatic/environmental conditions. (such as whether it is windy or raining)
b. fall prevention equipment. (guardrails, scaffolding etc)
c. access to and from the workplace.
d. PPE (see section 6 and 7)
e. specific instructions for employees.
f. earth leakage devices (safety switches) protecting the user of portable electric powered tools.
g. emergency and rescue procedures in the event of an accident, injury or other emergency (including the means of rescuing persons from safety harnesses following arrested falls).

4. WORK SYSTEMS AND CONTROL MEASURES

Control measures to prevent injury to persons working at heights should be established as part of a safe system of work.

The systems of work and control measures selected are generally determined by individual job factors discussed in consultation, and other factors identified by the risk assessment process.

4.1 Prevention of falls

A system to control risks should be provided for persons exposed to a risk of falling:

a. from the perimeter, including the gable end, of a new or existing roof, or
b. through the roof where the spacing between rafters exceeds 900mm, or
c. through the roof where the following material covers the roof or is being used to cover the roof:

- asbestos cement sheets,
- fibreglass skylights,
- other brittle or fragile material;

Accordingly, a risk assessment should be conducted for all work, irrespective of height, and appropriate control measures implemented.

A system of edge protection should be provided, irrespective of height, if the risk assessment identifies the following;

- an increased risk of falling eg. where slippery roofing materials such as highly glazed tiles may cause slips and falls, or
- where the pitch of the roof exceeds 25 degrees, or
- where the pitch of the roof exceeds 15 degrees and the roofing material is asbestos cement sheets or fibreglass, or
- a hazardous situation such as where the surface condition below the roof, onto which a person may fall, would cause injury; eg. a fall onto reinforcing steel starter bars, building materials (bricks, timber, tiles etc.) or a concrete surface or a trench.

In addition, where a person is exposed to a risk of falling 3 metres or more from the roof perimeter, a system of edge protection should always be provided to prevent falls.
The edge protection system, as discussed above, should include guardrails or scaffolding or a combination of these safeguards.

Other safeguards, including fall arrest systems, may be used to arrest falls through the roof but should only be used to arrest falls from the roof perimeter where the risk assessment or the provisions of this code do not require edge protection. Systems of fall protection should also be provided for persons installing and removing safeguards.

4.2 Access

Access to the work area and to the roof should be safe and without risks to health.

Access requirements should take into account any tools and equipment the person may be required to carry to and from the roof.

If ladders are used for access:

- the ladder should have non - slip feet and be secured against displacement.
- Persons should have a safe landing place when stepping off the ladder.
- The stiles of the ladder should extend at least one metre above the landing place.
- The clearance between metal or wire reinforced ladders and any electrical conductor wires (powerlines) should be at least 4 metres. Otherwise non - conducting ladders should be used.

For further information on the safe use of ladders, reference should be made to *AS 1892 Portable ladders - Part 4: Selection, safe use and care.*

4.3 Mechanical lifting equipment

Mechanical lifting equipment such as elevators and hoists should be provided where appropriate. Where elevators and hoists are used the following should be considered:

- the risk of manual handling injuries during installation and removal
- the risk of injury during use. For example the drive mechanisms nip points on elevator belts should be guarded.
- the area around the equipment should be barricaded to prevent access and risk of injury to persons below from falling objects.
- the method of installation that maintains the effectiveness of any edge protection that is in place.
- edge protection should be restored immediately after removal of lifting equipment.

4.4 Brittle and fragile roofs

If a roof or part of a roof covering comprises fragile or brittle material, the owner or occupier of any building must maintain a warning sign at any place provided as an access to the roof.

The sign should be at least 375mm by 330mm and made of a strong and rigid material. It should be securely fixed in an upright position where it can be seen clearly by persons wanting to gain access to the roof.

The warning sign should incorporate the symbol; shown in Figure 1 and display the following words:

DANGER - KEEP OFF
BRITTLE AND FRAGILE ROOF

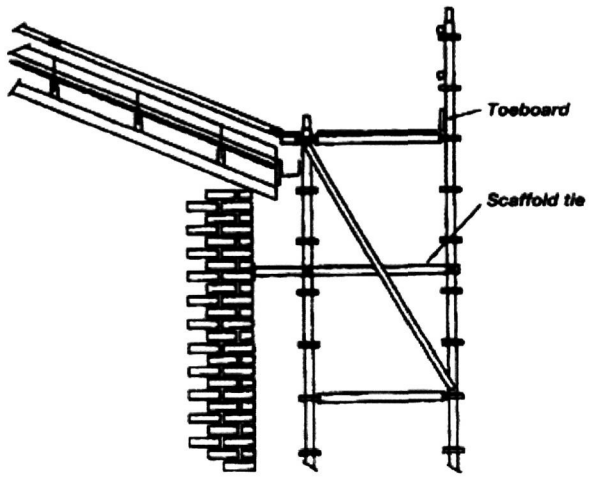
Figure 1

Before carrying out any work on a roof covered with brittle or fragile materials, the following should be provided:

- scaffolding (see figure 2) and/or fall arrest systems including anchorage's for any person working on any roof covered with brittle or fragile material.
- temporary roof ladders for any person working on any part of a sloping roof covered with brittle or fragile material.

If the work involves removal of all or part of a roof covered with brittle or fragile material a fall arrest system should be used.

If any of the brittle or fragile material contains asbestos, all work practices and procedures should be in accordance with the *ACT Code of Practice on Asbestos and Guidance Notes on Asbestos*.



Scaffolding for the decking out of a brittle roof. (End guardrail omitted for clarity).

Figure 2

4.5 Asbestos cement roof removal

Fall protection

Procedures to prevent falls during the removal of asbestos cement roofing should be in accordance with section 4.1 and 6.

Handling of materials containing asbestos

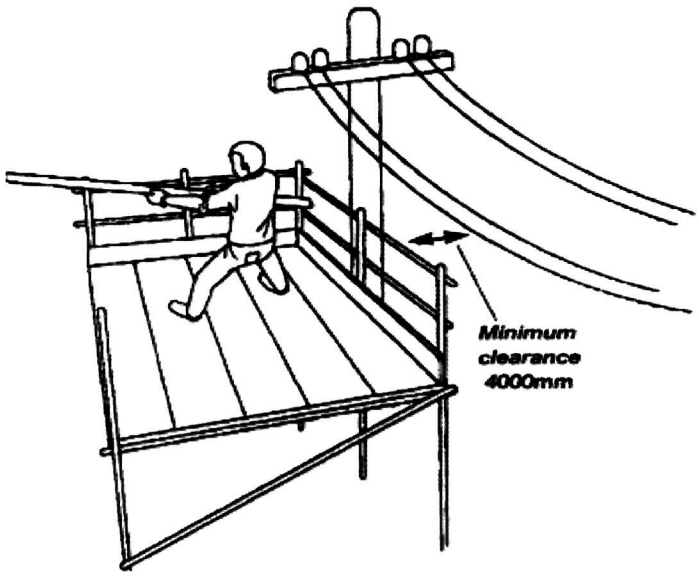
All work practices and procedures adopted for the handling of materials containing asbestos should be in accordance with the *ACT Code of Practice on Asbestos and Guidance Notes on Asbestos*.

4.6 Electrical Safety

Overhead power lines located nearby are a potential hazard to persons working on roofs. Where power lines are in close proximity the following clearances should be observed:

- 4.0 metres where any metal material is being handled (see figure 3).
- 1.5 metres where any non-conductive material such as dry timber battens is being handled.

However guidance should be obtained from the local electricity supply authority where there is a risk that the above clearances may not be maintained eg accidental contact with ling conductive materials being used such as guttering, scaffold or guardrail poles etc. Power lines or service lines (connecting the power supply to the building) may need to be disconnected or insulated. Overhead powerlines insulating covers such as tiger matting may be used.



Minimum clearance between scaffolding and electrical powerlines. (End guardrail omitted for clarity)

Figure 3

5. Edge Protection

5.1 Guardrails

Where guardrails are used they should be in place prior to any work on roofs commencing and should not be removed until all work on roofs is complete.

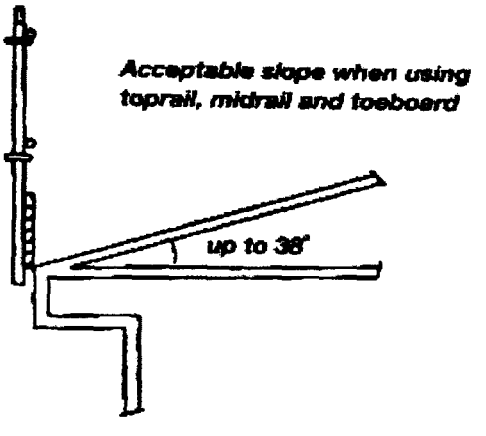
Guardrails should be erected by certified scaffolder and constructed in accordance with *AS 1576 Scaffolding and AS 1657 Fixed platforms, walkways, stairways and ladders - Design, construction and installation.* These standards require the system to withstand a force of 550 N (56 kg). However, as the forces of persons falling from steep pitches vary, guardrail systems should be designed and constructed to effectively withstand any anticipated load that they may be required to support during use.

A risk assessment should be used to determine anticipated loads and should consider factors which influence the load on the guardrail system. These include factors such as the:

- force applied from the momentum of a falling person
- roof pitch
- length of the rafter to which guardrails are attached.

Guardrails at the perimeter of the building or openings in the roof should be at least 900mm in height above the working surface and have a top rail, mid-rail and a toeboard.

Figures 4 & 5 indicate the use of guardrail systems.

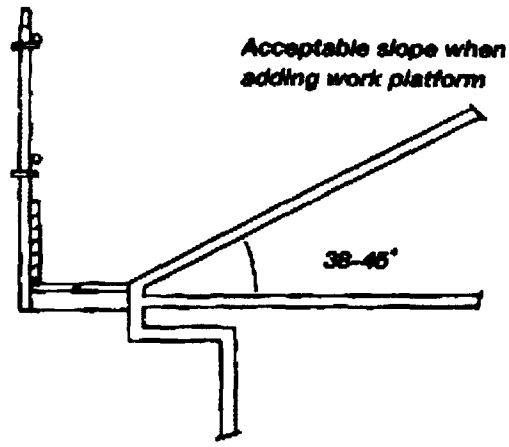


A guardrail system on a roof with a slope of up to 38° should consist of a toprail, midrail and toeboard.

Figure 4

Where the pitch of the roof exceeds 38 deg. a working platform should be constructed in order to minimise the likelihood of a person falling onto the top rail or over the guardrailing system. The working platform should be a minimum of 450mm wide (2 planks) and include guardrails on the outside perimeter of the platform. The working platform should be used solely as a catch

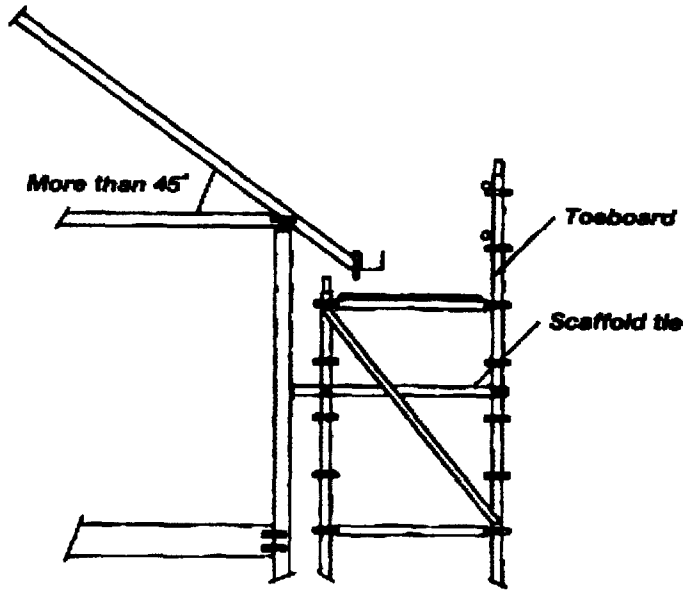
platform and should not be used to stack materials or equipment. Misuse of working platforms may lead to the creation of additional hazards in relation to trips and slips, persons falling onto materials or collapse of the platform.



A roof with a slope greater than 38° and up to 45° requires a guardrailing system consisting of a toprail, midrail, toeboard and two plank work platform.

Figure 5

Where the pitch of the roof exceeds 45 degrees a risk assessment should be used to determine additional safeguards required. Additional safeguards that should be considered include the use of wider platforms, higher guardrails, mesh infill panels, fall arrest systems, perimeter scaffolding (see figure 6) or the use of Elevating Work Platforms EWP such as cherrypickers.

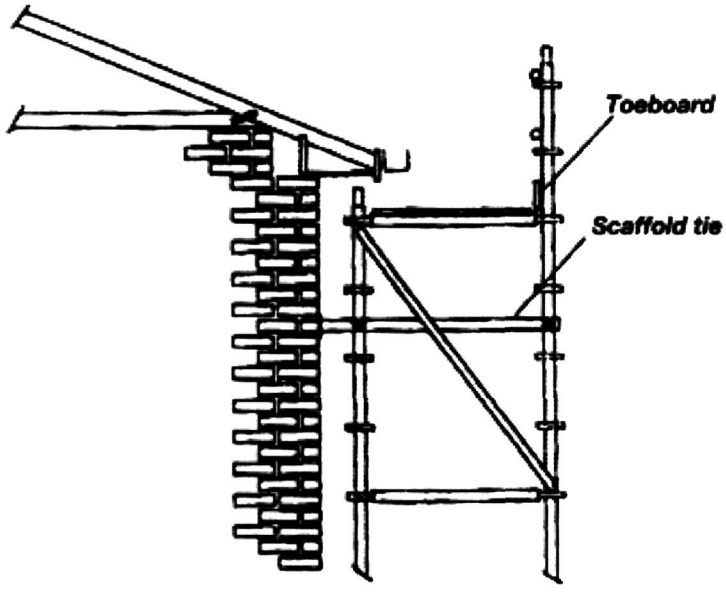


Scaffolding for house construction other than brick for roofs greater than 45° pitch. (End guardrail omitted for clarity).

Figure 6

5.2 Scaffolding

Scaffolding complete with guardrails and toeboards can provide effective protection against falls at the perimeter of a building, providing the guardrail of the scaffolding extends at least 900 mm in height above the perimeter of roof. The scaffold platform should be as close to the eaves as reasonably practicable (see figure 7). All scaffolding over 4 (four) metres in height should be erected by a certificated scaffolder. Scaffolding should be erected in accordance with AS/NZS 1576 *Scaffolding* and AS/NZS 4576 *Guidelines for Scaffolding.*



Brick construction (End guardrail omitted for clarity).

Figure 7

6 Methods of fall arrest

The function of a fall arrest system is to arrest a persons fall and to minimise injury if a fall occurs. Fall arrest systems may be used in conjunction with higher levels of control measures, such as perimeter guardrails or scaffolding. Where it is not practicable to provide higher levels of control fall arrest systems may be used. When fall arrest systems are used in a system of work they should be evaluated to ensure that they are effective and safe and that no new hazards are created (such as trip hazards or a persons movements being restricted.

6.1 Fall arrest systems

Industrial fall arrest systems and devices are designed to arrest an accidental fall and consist of some or all of the following;

- Anchorage point
- Energy absorber
- Fall arrest device
- Fall arrest harness (safety harness)
- Inertia reel
- Lanyard
- Lanyard assembly
- Static line

For further information, the terms used in industrial fall arrest systems and devices are explained in Appendix B.

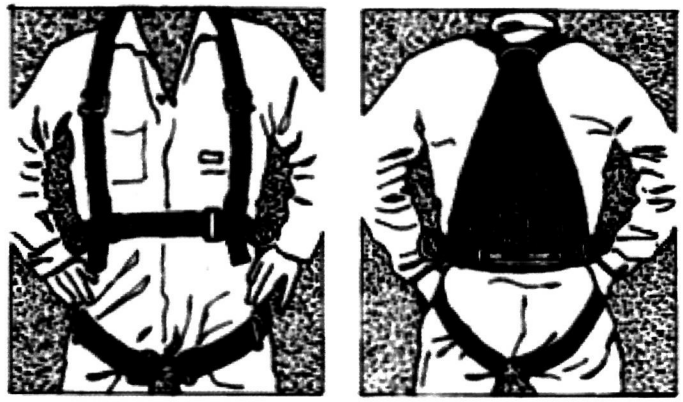
Industrial fall arrest systems and devices should be used in accordance with the manufactures instructions.

Fall arrest systems devices such as harnesses and lanyards can be used as travel restriction system to prevent workers moving from safe to unsafe areas on the roof. Industrial fall arrest systems and devices should be used in accordance with the manufacturers instructions. The various components of fall arrest systems and harnesses should be compatible. It is therefore essential for the user to check that all components are compatible and fit safely together. Components of fall arrest systems and safety harnesses from different manufacturers should not be mixed as they may be unsafe when used together and can lead to failure of the fall arrest system.

6.2 Harnesses and lanyards

Fall arrest systems should be designed so that a person equipped with a harness cannot fall more than 1.8 metres;

Full body harnesses ("parachute" type see figure 8) complying with *AS 1891.1 Industrial Safety Belts and Harnesses* should be used. The harness should be connected to the lanyard or line at the top dorsal position. If a line and rope-grab device is used on steeply sloping roofs, the user needs the device in front in order to manually operate the mechanism. In this case the user should consider a harness with a front D-ring connection.



Do not use waist type belts for roof work.

Figure 8
Do not use waist type belts for roof work.

There should be a minimum of slack in the lanyard or safety line between the person and attachment to the anchorage.

Use lanyards with a minimum tensile strength of 15kN complying with *AS 1891.1 Industrial Safety Belts and Harnesses*;

Energy absorbers should be used as part of the lanyard assembly to reduce shock to the body and anchorage point by absorbing some of the fall energy.

The use of lanyards in conjunction with inertia reels should be avoided as they will reduce the effectiveness of the inertia reel. Where the use a short lanyard is necessary for ease of connection to the rear harness connection for an inertia reel, it should be no greater than 450mm in length.

Persons using a fall arrest system must be attached to the system at all times where there is a risk of a fall. If transferring from one anchorage or secure point to another a second lanyard attached to the safety harness may be used. Connect the second lanyard to the anchorage or secure point before disconnecting the first.

Do not connect snaphooks to each other;

Persons using fall arrest systems should not work alone. In the event of a fall it is vital that the person be rescued as soon as possible and within 20 minutes of the arrested fall. This is necessary to prevent further injury being caused by the safety harness restricting the blood flow.

6.3 Inertia reel systems

Inertia reel systems can be used to prevent falls where persons are required to carry out their work near an unprotected edge (see figure 9b). They should comply with *AS1891.3 Industrial Fall-arrest Systems and Devices.*

Inertia reels are not designed for continuous support but become effective in the event of a fall. They should not be used as working supports by locking the system and allowing it to support the user during normal work. Inertia reels may be less effective for certain applications such as stopping a person falling down the inclined surface of a pitched roof.

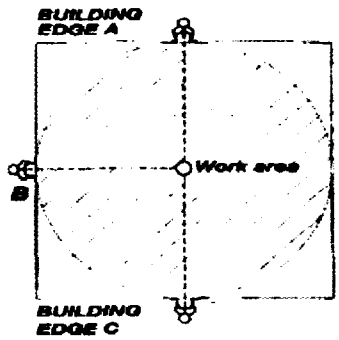


Figure 9 (a)

Suitable application at points A, B and C and within perimeter of defined circle

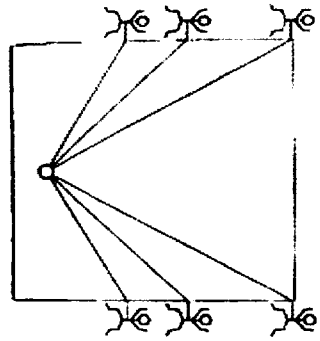


Figure 9 (b)

Unsafe application at all points

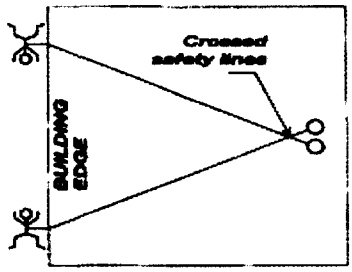


Figure 9 (c)

Unsafe application at both points

6.4. Static Lines

The installation of safety line systems should be carried out in accordance with the manufacturer's or designer's specifications by a competent person such as a rigger, scaffolder or specialist installer,

The static line to be used should be located as high as practicable. It is dangerous to work above the static line as the person could fall more than 1.8 metres;

Static lines should have a minimum tensile strength of 22kN and their anchorages should have a design capacity of 22kN,

Intermediate supports for static lines should not exceed 6.0-metre spacing unless specifically designed to do so (see Appendix C for design guidelines for static lines used with fall arrest systems).

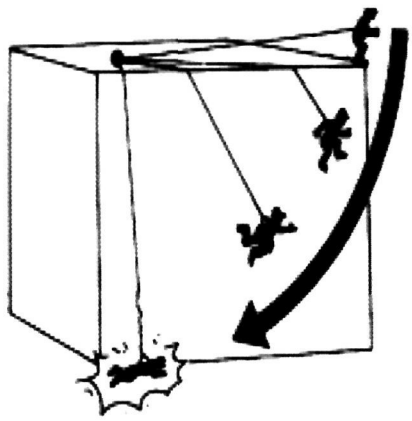
6.5 Pendulum effect

The 'pendulum effect' is a potential hazard associated with the use of fall arrest systems. It can occur during 'swing down' and 'swing back'. The pendulum effect may also occur within the interior of the roof if the positioning of the inertia reel allows for a significant length of unsupported line connected to the user.

Swing down

Swing down can occur if an inertia reel is extended out diagonally so that the line makes an extreme angle with the roof's perimeter edge. In this situation, the forces generated in an arrested fall over the edge will cause the line to rotate back along the roof perimeter until it reaches a position directly in line with the anchorage point of the inertia reel and at right angles with the roof edge.

As the line moves back in this way, its unsupported section lengthens, thus dropping the attached worker further than the original (arrested) fall distance. If the length of the unsupported line equals the height of the building then the worker will hit the ground (see figure 10).

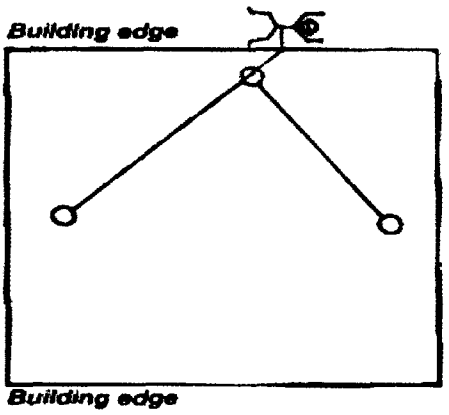


Pendulum effect: Following an arrested fall at this extreme diagonal, the inertia line moves back along the roof, dropping the worker dangerously down to the ground.

Figure 10

To eliminate the pendulum effect:

- a secondary anchorage point and lanyard or line should be used (See figure 11)
- place the inertia reel anchorage point more or less perpendicular to the position of the line at the perimeter edge. A mobile anchorage helps here.
- a perimeter guardrail should be used to prevent any falls over the perimeter edge.



Use of a secondary anchorage and lanyard or lifeline removes or reduces the pendulum effect

Figure 11

b. Swing back

In an arrested outward fall, particularly from a perimeter edge, a person will swing back into the building structure and collide with any obstructions in the path of the swing. If this situation could arise, the use of an fall arrest system should be re-assessed.

7. PERSONAL PROTECTIVE EQUIPMENT (PPE)

7.1 Provision of PPE

Before commencing work on roofs, the contractor doing the work should assess any conditions likely to affect the health and safety of the employees or themselves, as identified during the risk assessment procedure and arrange for the provision and use of appropriate PPE. A fall arrest system is a form of PPE. The following PPE should be provided where required:

Safety harnesses - In the selection of a safety harness for work on roofs ensure that the equipment gives the wearer the maximum degree of comfort, freedom and movement and the greatest possible security against injury. For further information refer to *AS 2626 Selection, Use and Care of Industrial Safety Harnesses.*

Footwear - To reduce the risk of falls resulting from slips, rubber soled shoes with herring bone or similar non-slip tread pattern, and with or without a steel toe cap, are recommended for work on roofs.

Eye protection - To reduce the risk of eye injury, eye protection complying with *AS1337 Eye protectors for Industrial Applications* should be provided and used.

Protection from sun - Workers should be protected from sunlight/ UV radiation by using a sunscreen with a SPF(sun protection factor) rating of at least 15+ and wearing hats, long sleeves and long trousers. If short sleeved shirts and shorts are worn in very hot weather, the exposed parts of the body should be protected by using the appropriate sunscreen. Even with protection, there should be sufficient supervision and monitoring conducted to ensure that workers do not have overlong exposure to strong sunlight, including reflection from glazed tiles and metal roofing material

Clothing - Clothing should be comfortable in all positions and be suitable for the work being done and the weather conditions. Loose clothing or equipment which may snag or create a trip hazard should be avoided

7.2 Maintenance of PPE

All PPE used by persons working on roofs should be regularly inspected and replaced as necessary.

7.3 Special situations

Before carrying out work on roofs involving hazardous materials or near hazardous materials (such as asbestos removal or exposure to toxic fumes), the contractor should consult an appropriate organisation such as the manufacturers or suppliers of PPE to determine the most suitable PPE and any other control measures. In planning work in these situations, the contractor should refer to the appropriate Regulations, Australian Standards and Codes of Practice relating to the specific situation or hazard or contact WorkCover for further information.

8. TRAINING AND INSTRUCTION

8.1 Training

Employers have a duty under Section 27.2(d) of the OHS Act to provide training and instruction, including information and supervision to ensure the health and safety at work of their employees.

All persons involved in any work on roofs should be trained to follow systems of work and work practices to enable them to perform their work in a manner that is safe and without risks to health. Only those persons who have received training and instruction should carry out the work.

The employer should monitor the systems of work and provide refresher training to ensure that safe systems and work practices are being followed, including the use of PPE.

a. The training provided and the instruction given should at least include:
b. the work method to be used in loading materials on the roof, handling, positioning and fixing of materials including the control measures based on the risk assessment, to prevent injury or falls.
c. the correct use, care and storage in accordance with the manufactures recommendations of PPE, fall arrest systems, safety nets and tools and equipment to be used
d. the use of plant and associated equipment including electrical safety and hazardous substances.
e. procedure to be adopted in the event of an accident, injury or other emergency.

9. LEGAL REQUIREMENTS

9.1 OCCUPATIONAL HEALTH AND SAFETY

Every person at the place of work has a duty under the *Occupational Health and Safety Act 1989*, whether as an employer, an employee, a self-employed person or a person in control of the workplace. While the obligation for each person is different, all persons must ensure that the way they carry out their work does not interfere with the health and safety of other persons who are present at the workplace.

9.2. Employers' responsibilities

Employers have an obligation to ensure the health, safety and welfare of employees and other persons at the place of work to comply with the OHS Act and the Regulations.

9.3 Employees' responsibilities

Employees have an obligation to take reasonable care for the health and safety of other persons in the workplace and to cooperate with their employer in the interests of health, safety and welfare.

Employees must use the appropriate protective equipment for the work being done.

9.4 Self-employed persons' responsibilities

Self-employed persons have an obligation to ensure that persons not in their employment are not exposed to risks to their health and safety arising from their conduct (the self employed conduct) while they are at a place of work.

9.5 Person in controls' responsibilities

Any person who has, to any extent, control of a work place, the means of access or egress, or plant or substance used, has an obligation which requires them to ensure health and safety regarding the workplace, the means of access or egress and the plant or substances used at the work place.

9.6 Manufacturer/Supplier responsibilities

Manufactures and suppliers have a obligation to ensure health and safety regarding plant or substances used at places of work. They are required to carry out all necessary research, testing and examination. They are also required to make available adequate information about the safe use of the plant or substances and of any conditions necessary to ensure the plant or substance will be safe and without risks to health when used properly.

Guardrail systems should be designed and installed to effectively withstand any anticipated load they may be required to support during use.

9.7 STATUTORY PROVISIONS

The following Acts, Regulations, Codes of Practice and standards apply to work on roofs:

- Occupational Health and Safety Act 1989 and Regulations,
- Scaffolding and Lifts Act 1957 and Regulations
- ACT Regulation and Code of Practice on Manual Handling
- National Code of Practice on Asbestos and Guidance Notes on Asbestos
- National Code of Practice for the Control of Workplace Hazardous Substances
- National Standard for Occupational Noise
- Australian Standards 1576 Pt 1-4 Scaffolding
- Australian Standards 1891 Industrial Fall Arrest Systems and Devices Scaffolding Pt 1-3
- Australian Standards 1657 Fixed Platforms, Walkways, Stairways and Ladders, Design, Construction and Installation
- Australian Standards 3012 Electrical Installations - Construction and Demolition Sites
- Australian Standards 2626 Industrial Safety Belts and Harnesses - Selection, Use and Maintenance,
- AS/NZS 4576 Guidelines for Scaffolding,
- Australian Standards 1337 Eye protectors for Industrial Applications
- Australian Standards 1892 Portable Ladders - Part 4: Selection, Safe Use and Care.

The documents listed above have been mentioned in this code of practice to provide assistance in directing readers to other legislative requirements which may have some application. The list is not exhaustive but is included in this code by way of assistance only.

DEFINITIONS

These definitions are for the purposes of this code:

Construction work includes:

a. building, including excavation, and the construction, alteration, renovation, repair, maintenance and demolition of all single storey residential buildings and structures;

b. the erection and dismantling of prefabricated buildings and structures as well as the manufacturing of prefabricated elements on the construction site.

Contractor means the person responsible for the installation, maintenance, repair or removal of the roof coverings and any other operation involving the movement of persons working on roofs on residential buildings. Depending on the contractual arrangements which are in place, the contractor doing the work may be an employer, self-employed person or a person in control within the terms of the OHS Act.

Employee means an individual who works under a contract of employment or apprenticeship.

Employer means a corporation which, or an individual who, employs persons under contracts of employment or apprenticeship.

Principal Contractor means the person with overall responsibility for the construction work and includes owner builder. Depending on the contractual arrangements which are in place, the principal contractor may be an employer, self-employed person or a person in control within the terms of the OHS Act.

Single Storey Residential Building means a dwelling used or adapted for use solely for habitation by not more than one family and includes a dwelling in a row of two or more dwellings attached to each other such as commonly known as semi detached, terrace buildings, row house, town house and villa.

Self-Employed Person means an individual who works for gain or reward otherwise than under a contract of employment or apprenticeship, whether or not they employ others.

Other Relevant Guidance Material

WorkCover NSW Publications

Codes of Practice - - Safety Line Systems.

Standards Australia Publications

The following information is issued by Standards Australia.

AS 1639	The Design and Installation of Corrugated Fibre - Reinforced Cement Roofing and Wall Cladding,
AS 1639	Corrugated Reinforced Cement Roofing,
AS 1716	Respiratory Protective Devices,
AS 1892	Portable Ladders - Part 4: Selection, safe use and care,
AS 2050	Installation of Roof Tiles,
AS 2424	Plastic Building Sheets - General installation requirements and design of roofing systems,
AS 2604	Sunscreen Products - Evaluation and Classification,
SAA HB39	Code of Common Practice for Steel Roofing,
BS 5062	Self Locking Safety Anchorage's for Industrial Use,
CP 93 B.S.I.	Code of Practice for the Use of Safety Nets on Constructional Works.

Appendix A Example of a typical risk assessment checklist.

The purpose of this checklist is to assist roofing contractors to identify hazards at the workplace and develop work procedures that are safe for persons working on roofs. On the following pages is a checklist to assist in identifying some of the common hazards and risks concerning work on roofs. The risk assessment is not confined to what is shown in the checklist and there may be other specific site hazards requiring attention. If the answer is "yes" to any one of the questions, attention is required and control measures need to be put in place.

Project: **Principal Contractor:**

Roofing Contractor: **Site Address:**

Type of Work:

Hazard Identification		**Control measures**
Is the working height at the perimeter of the roof more than 3.0 metres?	No	Yes Attach a guardrail system to the perimeter of the roof, or erect a perimeter scaffold to the eaves line with edge protection to at least 900mm above the roof.
Is the slope of the roof more than 25 degrees regardless of the working height at the perimeter?	No	Yes Attach a guardrail system to the perimeter of the roof, or erect a perimeter scaffold.
Is the surface condition below the roof, onto which a person may fall, hazardous?	No	Yes Attach a guard rail system to the perimeter of the roof.
Does the structure supporting the roof require modification to support safeguards?	No	Yes Notify the principal contractor Do not proceed until modifications are complete.
Does the roof require bracing?	No	Yes Notify the principal contractor Do not proceed until modifications are complete.
Is the spacing between the rafters more than 900mm?	No	Yes Use safeguards, including fall arrest systems, to prevent or arrest falls through the roof.
Are the surfaces of materials on which work is to be performed; • wet? • slippery? • glazed? • fragile or brittle?	No	Yes Use edge protection and / or fall arrest systems, as required by the code to prevent or arrest falls.

Is the access to and from the site unsuitable?	No	Yes Arrange safe access.
Is the access to and from the roof unsuitable?	No	Yes Arrange safe access.
Are there any electrical hazards within 4.0 metres of the roof	No	Yes Power should be disconnected, insulated or otherwise made safe before proceeding.
Are the weather conditions unsuitable for work on the roof?	No	Yes Discontinue work until weather conditions are more suitable.
Are there persons who have not received appropriate induction training to carry out the work?	No	Yes Provide appropriate induction training to carry out the work before proceeding.
Are there any manual handling issues?	No	Yes Provide systems of work which comply to the Recommendations of the ACT Code of Practice on Manual Handling.
Are there other persons/trades working at the site?	No	Yes Clearly display hazard warning signs as appropriate, such as: • PERSONS WORKING ABOVE • NAIL GUN IN USE • ELEVATOR OR HOIST IN USE
Are portable electric tools being used?	No	Yes Ensure that they are protected by a safety switch before proceeding
Are asbestos products being handled?	No	Yes Ensure that all necessary precautions have been taken before proceeding .
Are there any persons who have not been supplied with the appropriate PPE to do the work?	No	Yes Supply with the appropriate PPE before proceeding.
Are there any persons who have not been adequately trained and instructed in the use of PPE?	No	Yes Train and instruct all persons in the use of PPE.
Does the waste material need to be contained for safe removal from the roof?	No	Yes Contain waste material for safe removal from the roof before proceeding.

Appendix B Terms used in fall arrest systems

Anchorage point is a secure point of attachment on a structure to which a fall arrest device or anchorage line may be secured, or a secure point on a fall arrest device to which a lanyard may be secured.

Energy absorber (deceleration device) is an attachment designed to be used in connection with fall arrest equipment which reduces the shock to the body and anchorage point by absorbing some of the fall energy

Fall arrest device is a self-locking device whose function is to arrest a fall.

Type 1	A fall arrest device which travels along an anchorage line and, when loaded, locks to the line.
Type 2	A fall arrest device from which a spring-loaded anchorage line pays out, and which locks when loaded.

Fall arrest harness (safety harness) is an assembly of interconnected shoulder and leg straps designed for attachment to a lanyard or fall arrest device

Fall arrest System is any device designed to minimise the distance and severity of a fall.

Lanyard is a flexible line, rope or strap used, usually as part of a lanyard assembly, to connect a fall-arrest harness to an anchorage point or static line.

Lanyard assembly is the combination of a lanyard and a personal energy absorber.

Inertial reel is a retractable lifeline that has a fall arrester built into the feeding mechanism of the line.

Rope grab fall arrester reduces the potential free fall distance and may absorb much of the energy of a fall while allowing mobility along the line. The rope grab can be either manually moved along the line and locked in place, or it can be an automatic device.

Static line is a horizontal or substantially horizontal line in tension attached to two anchorage points to which a lanyard may be attached and designed to arrest a fall.

APPENDIX C Design guidelines for static lines used with fall arrest systems

1. Single span specifications

The following system specifications may be used instead of having to design a system for single spans of 4 to 6 metres, where no more than two people are on the line at any one time, and all persons are using lanyards with energy absorbers rated at 6kN or less.

The system specifications are:

- cable - 10mm diameter (minimum) flexible steel wire rope (6 x 24 galvanised).
- Sag - approximately 50mm per metre ie. 6m span = 300mm sag.
- Anchorage - capable of supporting an imposed load of 22 kN
- Tensioning turnbuckles - one tonne (minimum) working load limit (WLL).

2. Multiple-span specifications

The specification for a multi-span system is the same as a single system with the following exceptions:

- Sag for 2 -3 continuous spans - approximately 30mm per metre ie. 6m spans =180mm sag.
- Sag for 4 or more spans - no minimum sag required but the line should not over tensioned.
- Span length not to exceed 6m