



Harmony Roof Tiles Site Safety Manual

Release Sheet

Issue/Revision Number: Revision 2

Issue/Revision Date: 31/10/13

Please incorporate the pages contained in this revision pack, as described in the table below, into your copy of the Harmony Roof Tiles Site Safety Manual. This will update your copy to the latest version.

Remove and destroy:	Insert:
All	All



Harmony Roof Tiles Site Safety Manual

Receipt Acknowledgement

Issue/Revision Number: Revision 2

Issue/Revision Date: 31/10/13

I hereby acknowledge, as an authorised representative of the company or organisation stated below, that I have been provided with the latest issue or revision (as identified above) of the Harmony Roof Tiles Site Safety Manual.

I further acknowledge that I have incorporated the issue or revision into my copy of the Harmony Roof Tiles Site Safety Manual.

Manual Number:

Name (please print):

Signed:

Date:

Company/Organisation:



Harmony Roof Tiles

Site Safety Manual

© 2013 BGC (Australia) Pty Ltd.

No part of this manual may be copied without the permission of Harmony Roof Tiles.

This manual is provided for use by any person who is visiting or working on a commercial or residential building site in the business of Harmony Roof Tiles.

This manual is issued to individuals and organisations but remains the property of BGC. Replacement copies for damaged/lost manuals may incur a charge. Updates will be issued when new information is available.

If you have any questions or enquiries, please contact Harmony Roof Tiles.

PO Box 1408
Canning Vale
Western Australia 6970

Ph: (08) 9334 4626
Fax: (08) 9334 4501
Web: www.harmonyrooftiles.com.au

Revision Register

The revision register records the incorporation of updated pages issued by BGC for this manual.

Revision	Revision Date	Reason for Change
0	01 July 2006	Initial Issue
1	30 June 2010	Updates to the Site Safety Manual
2	31 Oct 2013	To update the Harmony Roof Tiles Site Safety Manual with changes to the following sections: <div style="display: flex; justify-content: space-between;"> <div style="width: 45%;"> <p>Section 11.Hazardous Materials</p> </div> <div style="width: 45%;"> <p>Sub-section Update to MSDS for Concrete Roof Tile and Roof Tile Accessories</p> </div> </div>

List of Effective Pages

This list identifies the update status of each page in the manual. You can use this list to confirm that each page is updated to the correct revision. On each page in this manual, text affected by the most recent revision is indicated by a thick vertical line in the margin of the page.

	Page	Revision		Page	Revision
Revision Register			Section 5		
	ii	2	Consultative Mechanisms		
				5-1	0
List of Effective Pages				5-2	0
	iii	2		5-3	0
	iv	1	Section 6		
Contents			Site Deliveries		
	v	1		6-1	0
	vi	1		6-2	0
				6-3	0
Section 1			Section 7		
Introduction			Site Visits		
	1-1	0		7-1	0
	1-2	0		7-2	0
Section 2			Section 8		
Overview of Occupational Safety and Health Act 1984, and Regulations 1996			Site Safety Inspections		
	2-1	1		8-1	0
	2-2	0		8-2	0
	2-3	1	Section 9		
	2-4	0	Emergency Procedures		
Section 3				9-1	0
BGC Policies				9-2	0
	3-1	0		9-3	0
	3-2	0	Section 10		
	3-3	0	Job Safety Analyses		
	3-4	0		10-1	0
	3-5	0		10-2	0
	3-6	0	Section 11		
Section 4			Hazardous Materials		
Structure and Responsibilities				11-1	0
	4-1	0		11-2	0
	4-2	0	Section 12		
	4-3	0	Accident Notification and Investigation		
	4-4	0		12-1	1
	4-5	0		12-2	0
	4-6	0		12-3	0
	4-7	0		12-4	0
	4-8	0		12-5	1
				12-6	1

Section 13
Induction and Competency Training

13-1	0
13-2	0

Section 14
Forms

14-1	0
14-2	0
14-4	0
14-6	0
14-8	0
14-12	0

Section 15
Additional Safety Information

15-1	1
15-2	1
15-3	1
15-4	1
15-5	1
15-6	1

Contents

Section 1	Introduction	
	1.1 Introduction	1-2
Section 2	Overview of Occupational Safety and Health Act 1984, and Regulations 1996	
	2.1 Overview of the Act	2-2
	2.2 Overview of General Duty or Care	2-2
	2.3 Overview of General Duties Towards Subcontractors	2-2
	2.4 Overview of General Duties Towards Labour Hire Personnel	2-2
	2.5 Overview of Construction Induction Training Requirements	2-3
	2.6 WorkSafe Inspectors.....	2-4
	2.7 Penalties under the Occupational Safety and Health Act	2-4
Section 3	BGC Policies	
	3.1 Safety and Health Policy	3-2
	3.2 Equal Employment Opportunity and Harassment Policy	3-3
	3.3 Workplace Bullying Policy	3-4
	3.4 Fitness for Work Policy.....	3-5
	3.5 Industrial Relations Policy	3-6
Section 4	Structure and Responsibilities	
	4.1 Structure	4-2
	4.2 Responsibilities	4-3
	4.2.1 The Site Principal	4-3
	4.2.2 Harmony Roof Tiles	4-3
	4.2.3 Individual Responsibilities	4-4
Section 5	Consultative Mechanisms	
	5.1 Consultative Mechanisms.....	5-2
	5.1.1 General	5-2
	5.1.2 Matters of Dispute on Site	5-2
	5.1.3 The Unsafe Site	5-2
Section 6	Site Deliveries	
	6.1 Site Deliveries.....	6-2
	6.1.1 Arrival at Site.....	6-2
	6.1.2 Offloading Process	6-2
	6.1.3 Completion of Task	6-3
Section 7	Site Visits	
	7.1 Site Visits	7-2
Section 8	Site Safety Inspections	
	8.1 Site Safety Inspections.....	8-2

Section 9	Emergency Procedures	
	9.1 Emergency Procedures.....	9-2
	9.1.1 General	9-2
	9.1.2 Medical	9-2
	9.1.3 Fire	9-2
	9.1.4 Chemical Spill	9-2
	9.1.5 Threat	9-3
	9.1.6 Useful Telephone Numbers	9-3
Section 10	Job Safety Analyses	
	10.1 Job Safety Analysis (JSA)	10-2
	10.1.1 Hazard Management	10-2
	10.1.2 Generic JSA.....	10-2
Section 11	Hazardous Materials	
	11.1 Hazardous Substances	11-2
Section 12	Accident Notification and Investigation	
	12.1 Accident Notification and Investigation	12-2
	12.1.1 Requirement Under the Act.....	12-2
	12.1.2 Accident Reporting Procedure	12-2
	12.1.3 Forms.....	12-4
	12.1.4 Workers Compensation	12-6
Section 13	Induction and Competency Training	
	13.1 Inductions	13-2
	13.2 Competency Training	13-2
	13.3 Labour Hire Personnel.....	13-2
	13.3.1 Induction Documentation for Labour Hire Personnel	13-2
Section 14	Forms	
	14.1 Site Inspection for Deliveries Form.....	14-2
	14.2 Site Safety Inspection Form	14-4
	14.3 Employee/Subcontractor Statement	14-6
	14.4 Accident/Incident Investigation Form	14-8
	14.5 Site Induction Form for Labour Hire Personnel	14-12
Section 15	Additional Safety Information	
	15.1 Working at Heights.....	15-2
	15.1.1 Tiling Safety	15-2
	15.2 Working Alone	15-3
	15.3 Electricity	15-5

Section 1	Introduction
1.1 Introduction 1-2	

1.1 Introduction

This Site Safety Manual is designed for use by BGC employees, subcontractors and contract labour visiting or working on a commercial or residential building site in the business of Harmony Roof Tiles.

All following general references to BGC in this Manual apply to Harmony Roof Tiles.

This Site Safety Manual is designed to be used in conjunction with BGC's Safety & Health Management System. The purpose of the Site Safety Manual is to clearly define the strategies, systems and responsibilities for effectively managing safety and health for our employees, subcontractors and contract labour on a commercial or residential building site.

This Manual is intended as a reference for all BGC personnel and subcontractors who are required to visit or operate on a commercial or residential building site, and is to be used as a management tool for achieving the safety targets and objectives.

The primary sources leading to the development of this Manual include the Occupational Safety and Health Act 1984 (and amendments), Occupational Safety and Health Regulations 1996, relevant Australian Standards, Codes of Practice and Guidance Notes.

The development of this Manual has also drawn on the knowledge of experienced trades personnel to ensure practical application of occupational safety and health requirements on commercial or residential building sites.

BGC's primary objective is to create an environment which shall ensure the safety, health and welfare of all personnel associated with BGC activities.

This shall be achieved through the provision of resources, training and demonstrated commitment to approved policies.

BGC shall:

1. Provide and maintain workplaces, plant and systems of work that do not expose employees to hazards.
2. Provide information, instruction, training and supervision to personnel so that they can perform their work safely.
3. Achieve best practice through consultation and co-operation.
4. Ensure the correct use of protective clothing and equipment where required.
5. Ensure safe use, cleaning, maintenance, transportation and disposal of substances and plant used in the workplace.



Our aim is to have no accidents and injuries.

Section 2

Overview of Occupational Safety and Health Act 1984, and Regulations 1996

2.1 Overview of the Act.....	2-2
2.2 Overview of General Duty or Care.....	2-2
2.3 Overview of General Duties Towards Subcontractors.....	2-2
2.4 Overview of General Duties Towards Labour Hire Personnel ..	2-2
2.5 Overview of Construction Induction Training Requirements...	2-3
2.6 WorkSafe Inspectors	2-4
2.7 Penalties under the Occupational Safety and Health Act	2-4

2.1 Overview of the Act

The Occupational Safety and Health Act 1984 sets objectives to promote and improve occupational safety and health standards. General duties are laid down in the Act, and are supported by other requirements in the Act and Regulations.

The Act describes the behaviour required of persons who can affect safety and health at work. It imposes a General Duty Of Care to protect persons from hazards and maintain safe and healthy workplaces.

2.2 Overview of General Duty or Care

- Employers must provide a workplace where employees are not exposed to hazards
- Employers must provide a safe system of work
- Employees must take reasonable care for their own safety and health and that of others affected by their work
- Employers and Self Employed persons must as far as practicable, look after their own safety and health and ensure that their work does not affect the safety and health of others
- Designers, manufacturers, importers and suppliers must provide plant that is safe to install, maintain and use in workplaces
- All plant must be installed so it can be used safely
- Safety and health information must be supplied with all plant and substances used at work
- Employees and safety and health representatives must consult and co-operate in matters relating to safety and health at work
- Employees must be provided with information, instruction and supervision to allow them to work in a safe manner

2.3 Overview of General Duties Towards Subcontractors

When in the course of business, BGC engages a subcontractor to carry out work, BGC has the responsibility of an employer towards the subcontractor and any employees of the subcontractor (or other persons engaged by the subcontractor). This applies as if the subcontractor and his or her employees were employees of BGC. However, BGC's duty applies only in relation to matters over which BGC has control, or the capacity to have control.

Subcontractors having their own employees retain the duties of employers towards those employees. The duties of the Act overlap in these circumstances. Both the subcontractor and BGC have duties to the subcontractor's employees.

2.4 Overview of General Duties Towards Labour Hire Personnel

When a Labour Hire worker is engaged in a BGC business, whether directly or through a contractor, BGC has the responsibility of an employer towards the worker. However, BGC's duty applies only in relation to matters over which BGC has control, or the capacity to have control.

2.5 Overview of Construction Induction Training Requirements

The following extract is taken from Part 3 Workplace Safety Requirements, Division 11 Construction Industry Induction Training (formally Safety Awareness Training), of the Occupational Safety and Health Regulations 1996:

3.136 Construction induction training requirements

- (1) An employee or self-employed person must not do construction work at a workplace unless he or she holds a construction induction training certificate.

Penalty: the regulation 1.15 penalty

- (2) A person who is an employer, the main contractor or a person having control of the workplace must not permit an employee or self-employed person to do construction work at the workplace unless that other employee or self-employed person holds a construction induction training certificate.

Penalty: the regulation 1.16

- (3) For the purpose of this regulation, a person who, immediately before this regulation came into operation, held a current safety awareness training certificate (as defined in regulation 3.135 as in force at that time) is to be taken to hold a construction induction training certificate.

3.135 Terms Used

Construction induction training certificate means a certificate, card or other document that -

- a) was issued by the provider of a construction industry training course that is, or was at the time the document was issued, a recognised construction induction training course; and
- b) contains information to the effect that the person named in the document satisfactorily completed the course on the date specified in the document.

Construction induction training course means a course or training program that includes instruction in -

- a) the rights and responsibilities under the Act and these regulations of persons who do construction work or employ people do such work; and
- b) the hazards to which a person is likely to be exposed while doing construction work at a workplace; and
- c) how to apply risk management principles when doing construction work at the workplace;

2.6 WorkSafe Inspectors

In Western Australia, WorkSafe inspectors have the power to:

- enter and inspect any workplace
- take samples, photographs and copies of any document
- interview any employee in private and require them to answer questions

An inspector may visit a workplace:

- when the employer, the occupational safety and health representative or an employee (if there is no safety and health representative) has notified the inspector after unsuccessfully attempting to resolve a safety and health issue according to the Act, and where there is risk of imminent and serious injury or harm to health
- to investigate incidents involving death, injuries or dangerous situations involving possible breach of the Act and Regulations or non-compliance with an improvement notice, prohibition notice, prosecution action or verbal direction
- as part of other prevention and workplace assessment programs

2.7 Penalties under the Occupational Safety and Health Act

Penalty Level	Offenders					
	Employees		Individuals who are not employees (e.g. employers)		Corporate non-employees (e.g. employers)	
	First Offence	Subsequent Offence	First Offence	Subsequent Offence	First Offence	Subsequent Offence
Level 1 (General Penalty)	\$5,000	\$6,250	\$25,000	\$31,250	\$50,000	\$62,500
Level 2 (General Duty Breach)	\$10,000	\$12,500	\$100,000	\$125,000	\$200,000	\$250,000
Level 3 (General Duty Breach resulting in serious harm or injury)	\$20,000	\$25,000	\$200,000	\$250,000	\$400,000	\$500,000
Level 4 (General Duty Breach involving gross negligence resulting in serious harm or death)	\$25,000	\$31,250	\$250,000 and imprisonment for two years	\$312,500 and imprisonment for two years	\$500,000 director / officer may be imprisoned	\$625,000 director / officer may be imprisoned

Table 2.1 Penalties under the Occupational Safety and Health Act 1984

Section 3	BGC Policies
3.1 Safety and Health Policy	3-2
3.2 Equal Employment Opportunity and Harassment Policy.....	3-3
3.3 Workplace Bullying Policy	3-4
3.4 Fitness for Work Policy	3-5
3.5 Industrial Relations Policy.....	3-6

3.1 Safety and Health Policy

Safety and Health Policy

BGC recognises it has a moral and legal responsibility to ensure that all work activities undertaken will achieve and maintain a high standard of occupational safety and health for all employees, subcontractors and visitors. All employees have a reciprocal responsibility to ensure that they assist management in achieving an injury free workplace.

Senior Management have authorised the development of an Occupational Safety and Health Management System to be integrated into management across the Group of Companies. The goal of the Occupational Safety and Health Management System is to eliminate work related injuries and illnesses by achieving measurable objectives and targets.

We are committed to achieving these objectives and targets through:

- Proactively seeking to eliminate unacceptable risks through a systematic risk identification and assessment process that is an integrated part of day to day operations.
- Providing a level of leadership and training to ensure that work is managed to achieve a safe, efficient and productive outcome.
- Gaining the total involvement and commitment of all BGC employees to achieving an accident free and healthy workplace.
- The provision of adequate funding and resources to ensure that the requirements of the Safety Management System are implemented.
- Comply with all applicable legislation, acts, regulations, codes of practice and standards.
- Internally and externally auditing safety performance in all areas.
- To provide effective injury management and rehabilitation for all employees.
- Ensuring the Safety and Health Policy is available to all BGC employees, contractors, visitors and interested parties, and that they are informed of and understand their obligations in respect to the policy.

Through implementation of this policy and the total commitment of BGC management and employees our Safety and Health objectives and targets will be achieved.

Eric Thomson
General Manager

February 2006

3.2 Equal Employment Opportunity and Harassment Policy

Equal Employment Opportunity and Harassment Policy

BGC is committed to maintaining a professional standard of conduct in all of our business practices and ensuring that all personnel (employees and the public) are treated in a fair and equitable manner.

Discrimination is defined as when a person or group of people receives less favourable treatment than another person in same or similar circumstances on any of the grounds covered in the Equal Opportunity Act (Direct) or when a person is adversely impacted by an apparently neutral rule, policy or practice which is not reasonable (Indirect).

Harassment is defined as unwelcome and unacceptable behaviour directed to a person or group of people, where such behaviour offends, humiliates, intimidates or annoys the recipient(s).

Grounds for unlawful discrimination and harassment include: age, family responsibility, gender history, impairment, marital status, political conviction, pregnancy, race, religious conviction, sex, sexual orientation and spent convictions.

BGC complies with the relevant equal employment opportunity and discrimination legislation including all state and federal acts and regulations. To that extent, all employees, contractors, suppliers and the general public will be treated equally and are assured that management will not tolerate people being subjected to any form of workplace harassment or discrimination. We are also committed to providing a pleasant working environment for all employees and encouraging good working relationships between employees.

The undersigned is responsible for overall management of the program, supported by the EEO Committee to assist with its co-ordination. BGC has established a grievance procedure under which absolute confidentiality can be assured and which is available from an Equal Opportunity Officer or your Manager.

Eric Thomson
General Manager

February 2006

3.3 Workplace Bullying Policy

Workplace Bullying Policy

BGC considers bullying an unacceptable workplace behaviour and will not tolerate it under any circumstances.

Workplace bullying is *'repeated, unreasonable behaviour directed to an employee, or group of employees, that creates a risk to health and safety'*. Examples include:

- verbal abuse, yelling, screaming, inappropriate language
- excluding or ignoring someone
- singling someone out to do unpleasant tasks
- humiliating or belittling someone through sarcasm, teasing or insults
- intimidating, threatening abuse, physically abusing someone
- initiation practices
- ridiculing someone's professional or personal opinions
- excessive supervision or monitoring of an individual's work
- blocking applications for training, leave or promotion without valid reason
- threatening job security without valid reason
- setting impossible work targets and deadlines
- spreading malicious rumours or gossip
- unexplained job changes, removing key areas of responsibility without valid reason
- sabotaging someone's work
- unwanted practical jokes

Workplace bullying may cause the loss of trained and talented employees, reduce productivity, adversely impact on health and morale, and create legal and financial risks under statute and common law.

BGC expects all employees to behave in an appropriate manner and to treat other employees, clients and customers with dignity and respect.

BGC shall ensure that all employees are aware of their rights and obligations under this policy through awareness and knowledge training.

Under the Western Australia Occupational Safety & Health Act 1984, BGC has a legal obligation to provide a safe and healthy workplace. Where BGC becomes aware of bullying, the matter shall be investigated even if no complaint has been received.

BGC has grievance and investigation procedures to deal with workplace bullying. Anyone who is bullied or witnesses bullying should report it as soon as possible. When bullying is reported, it shall be treated seriously and investigated promptly, confidentially and impartially in accordance with our procedures.

Disciplinary action shall be taken against anyone who is found to have bullied an employee.

Managers and supervisors shall ensure that employees who make complaints, or who are witnesses to a complaint, are not victimised. Employees shall not victimise complainants, witnesses or an alleged bully. Victimisation shall be regarded as a serious breach of discipline and incur disciplinary action.

False or malicious complaints of bullying shall be regarded as a serious offence and shall incur disciplinary action.

Eric Thomson
General Manager

February 2006

3.4 Fitness for Work Policy

Fitness for Work Policy

BGC is committed to the safety of its employees and subcontractors in their performance of work activities, and has a duty of care to provide a safe working environment. Employees and subcontractors have a reciprocal duty of care for their own safety and the safety of their fellow workers and the public. BGC recognises that the misuse of drugs and alcohol is a significant community problem that can have an impact upon the safety, health and decision making capabilities of its employees and thereby upon the safety of the company's operations.

In line with BGC's commitment to providing a safe place of work and to protecting the safety and health of employees and subcontractors, the management has put in place stringent controls to manage the misuse of drugs and alcohol in all areas of the company's operations.

Random screening in the workplace of personnel and subcontractors for substance abuse is company policy and, at its discretion, BGC may make a favourable result to pre-employment substance abuse screening a necessary condition for engagement as an employee or subcontractor. An initiative to provide information regarding education and rehabilitation programs, outside of working hours, to access counselling services will be made available to all employees and subcontractors.

BGC is committed to fostering a fitness for work behaviour amongst our employees and subcontractors whereby it is unacceptable to present for work under the influence of drugs or alcohol.

Eric Thomson
General Manager

February 2006

3.5 Industrial Relations Policy

Industrial Relations Policy

BGC is committed to maintaining sound employee and industrial relations throughout all operations. Managerial decisions will be made with the ethical approach of being fair, honest and consistent with all parties.

Underlying this policy are the following objectives:

- compliance with all relevant Employee and Industrial legislation
- employing suitably qualified and competent personnel
- the implementation of Safety and Health policies and supporting procedures to provide a safe work environment for all
- the provision of leadership and innovation in the management of industrial relations
- the support of Freedom of Association

Eric Thomson
General Manager

February 2006

Section
4

Structure and Responsibilities

4.1 Structure.....	4-2
4.2 Responsibilities	4-3
4.2.1 The Site Principal	4-3
4.2.2 Harmony Roof Tiles.....	4-3
4.2.3 Individual Responsibilities.....	4-4

4.1 Structure

A commercial or residential building site is a workplace and as such requires an organisational structure for the safety and health of all persons employed on the site. The structure of Harmony Roof Tiles for site operations is as follows:

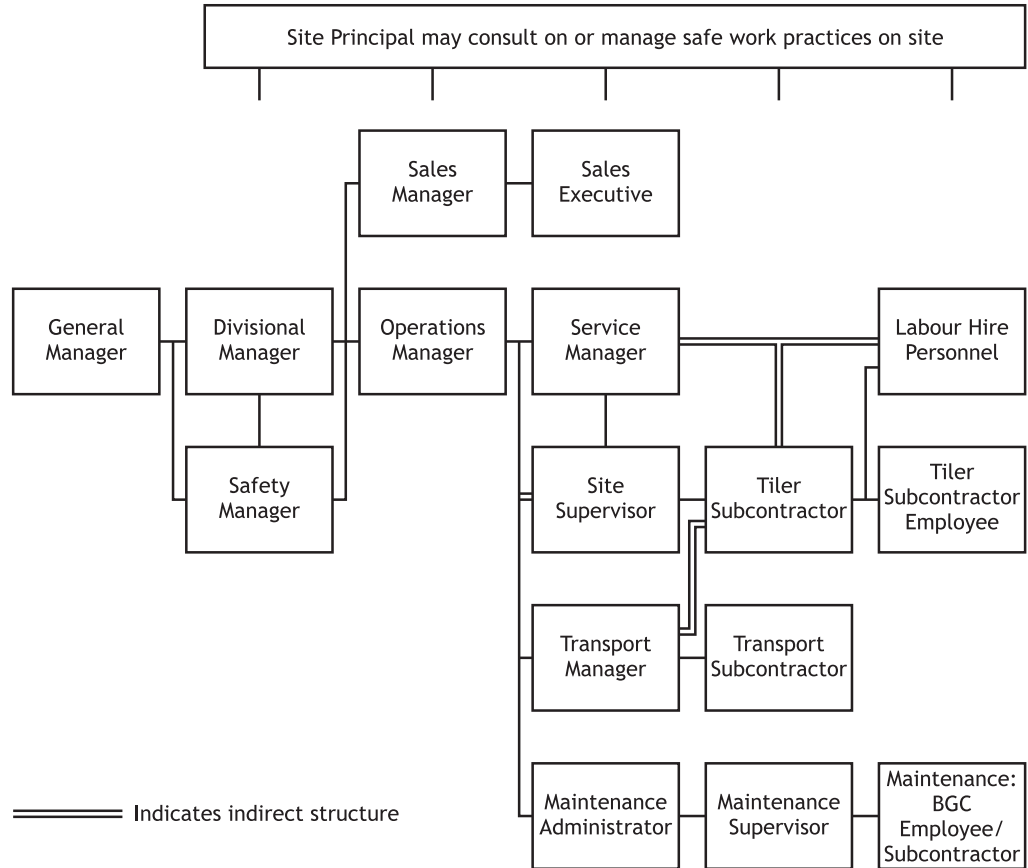


Figure 4.1 Harmony Roof Tiles Site Organisation Structure

4.2 Responsibilities

4.2.1 The Site Principal

The Site Principal may be the owner of the site, or the principal building contractor who has overall control of the site. The Site Principal may appoint a site manager or supervisor as his representative.

Under the provisions of the Occupational Safety and Health Act (1984), the responsibilities of the Site Principal as primary employer are:

- To provide and maintain workplaces, plant, and systems of work such that, so far as is practicable, employees, subcontractors and other site visitors are not exposed to hazards
- To implement and maintain a management system for the safety and health of employees, subcontractors and other site visitors
- To communicate the requirements of the safety and health management system to employees, subcontractors and other site visitors
- To provide adequate resources for the implementation of the safety and health management system
- To ensure through supervision that all employees, subcontractors and other site visitors comply with the safety and health management system for the site
- To ensure competency training of all employees and subcontractors
- To ensure safe working procedures are determined through Job Safety Analyses and implemented through supervision
- To facilitate consultation on matters of safety and health on site as required
- To report and investigate any accident or incident occurring on site as required by legislation
- To provide feedback on matters of safety and health to employees, subcontractors and other site visitors
- To review site safety and health audits
- To monitor the implementation of the safety and health management system and manage change as appropriate

4.2.2 Harmony Roof Tiles

BGC manufactures, delivers and installs roofing tiles to a wide range of customers. In the course of this, managers and supervisors, sales personnel, delivery personnel, installation and maintenance personnel may have to enter a building site to ensure that the business of BGC is completed to the highest standard of the industry.

BGC directly employs and subcontracts for the supply and installation of building materials. BGC recognises that by legislation it is considered to be the employer of any subcontractor or labour hire personnel it has engaged.

Under the provisions of the Occupational Safety and Health Act (1984), the responsibilities of BGC are:

- To provide and maintain workplaces, plant, and systems of work such that, so far as is practicable, employees, subcontractors and labour hire personnel attending a construction or building site are not exposed to hazards

- To implement and maintain a management system for the safety and health of employees, subcontractors and labour hire personnel attending a construction or building site. This requires a consultative procedure between BGC and the Site Principal to ensure an agreed cohesive safety and health management system operates for all BGC employed personnel.
- To communicate the requirements of the safety and health management system to employees, subcontractors and labour hire personnel
- To provide adequate resources for the implementation of the safety and health management system including personal protective equipment
- To ensure through supervision that all employees, subcontractors and labour hire personnel comply with the safety and health management system for the site
- To ensure competency training of all employees, subcontractors and labour hire personnel
- To ensure safe working procedures are developed through Job Safety Analyses and implemented
- To facilitate consultation on matters of safety and health on site as required
- To report and investigate any accident or incident occurring on site as required by legislation
- To provide feedback on matters of safety and health to employees, subcontractors and labour hire personnel
- To mediate in any dispute concerning safety and health on a construction or building site involving employees, subcontractors or labour hire personnel
- To review site safety and health audits
- To monitor the implementation of the safety and health management system and manage change as appropriate

4.2.3 Individual Responsibilities

4.2.3.1 General Manager

- Prescribed responsibility as an employer under the OSH Act for the provision and practice of safety and health for all employees, including subcontractors, wherever located.
- Determines policies and procedures relating to the BGC safety and health management system
- Monitors and reviews all safety and health management policy and procedures

4.2.3.2 Divisional Manager

- Reports to General Manager
- Co-ordinates with Site Principal in the development of a cohesive safety and health management system for all BGC employees, subcontractors and labour hire personnel who will attend a site on behalf of BGC
- Monitors and reviews the safety and health management system for the site
- Approves contract agreements with subcontractors

4.2.3.3 Safety Manager

- Reports to General Manager

- Identifies and applies legislation appropriate to the construction industry and advises managers of legislative changes
- Implements the BGC safety and health management system including incident management, audit and record keeping

4.2.3.4 Operations Manager

- Reports to Divisional Manager
- Manages subcontractors in accordance with contract agreements
- Engages labour hire personnel as required
- Supervises Site Supervisors, maintenance employees and subcontractors in the implementation and working of the agreed safety and health management system for a site
- Consults with Site Principal in matters of dispute

4.2.3.5 Sales Manager

- Reports to Divisional Manager
- Manages sales and estimator employee visits to site where required
- Supervises sales and estimator employees in the implementation and working of the safety and health management system for site visits

4.2.3.6 Sales Executive

- Reports to Sales Manager
- Customer liaison ensuring correct specification for Harmony Roof Tile orders

4.2.3.7 Transport Manager

- Reports to Operations Manager
- Manages delivery of Harmony Roof Tile products to site
- Supervises transport employees and transport subcontractors in the implementation and working of the safety and health management system for site deliveries
- Co-ordinates deliveries with subcontractor schedules

4.2.3.8 Transport Subcontractor

- Reports to Transport Manager
- Delivers Harmony products to site
- Co-ordinates a safe laydown area with Site Principal (or representative), subcontractor or Transport Manager

4.2.3.9 Service Manager

- Reports to Operations Manager
- Manages Site Supervisors in the implementation and working of the safety and health management system for site visits
- Co-ordinates subcontractor schedules
- Supervises subcontractors in the implementation and working of the safety and health management system for a site

4.2.3.10 Site Supervisor

- Reports to Operations Manager
- Assesses site readiness for Tiling subcontractors
- Monitors progress of Harmony Roof Tile product installation
- Monitors quality of Harmony Roof Tile product installation

4.2.3.11 Maintenance Administrator

- Reports to Operations Manager
- Co-ordinates the maintenance of Harmony Roof Tile product installation
- Customer liaison
- Direct subcontractors

4.2.3.12 Maintenance Supervisor

- Reports to Maintenance Administrator
- Assesses site readiness for Maintenance employees / subcontractors
- Monitors progress of maintenance
- Monitors quality of maintenance
- Conducts site inspections (roofs) as required

4.2.3.13 Maintenance Employee / Subcontractor

- Reports to Maintenance Supervisor /Coordinator
- Works as an employee under the provisions of the Occupational Safety and Health Act

4.2.3.14 Subcontractor (General)

- Reports to Site Supervisor
- Works in accordance with contractual conditions relating to safety and health in the workplace
- Works under the provisions of the agreed safety and health management system for site
- Responsible for supervising subcontractor employees and labour hire employees in matters of safety and health on site

4.2.3.15 Subcontractor (Sole Operator)

- Reports to Site Supervisor
- Works in accordance with contractual conditions relating to safety and health in the workplace
- Works under the provisions of the agreed safety and health management system for the site
- Takes reasonable care to ensure his own safety and health at work and avoid adversely affecting the safety and health of any other person in the workplace

- Complies, as far as he is reasonably able, with instructions given by his employer for his own safety and health or for the safety and health of others in the workplace. This requires working in accordance with the safety and health management system, including any Job Safety Analyses, agreed between the Site Principal and BGC
- Uses personal protective equipment as provided in a manner he has been instructed to use it
- Reports any situation on site that he believes is a hazard to safety or health and that he cannot correct himself. This report may be to the site manager or supervisor, or, if none present, to the BGC Site Supervisor
- Reports to the BGC Site Supervisor any injury or harm to health of which he is aware that arises in the course of, or in connection with, his work
- Ensures that all site-required competencies are current
- Ensures all equipment used on site is constructed, maintained and used according to regulation for industrial use - this includes vehicles, ladders, hoists, electrical tools and cables
- Supervises any labour hire employees in matters of safety and health on site

4.2.3.16 Subcontractor (Employer)

- Reports to Site Supervisor
- Works in accordance with contractual conditions relating to safety and health in the workplace
- Works under the provisions of the agreed safety and health management system for site
- Responsible for supervising subcontractor employees and labour hire employees in matters of safety and health on site
- Provides and maintains workplaces, plant, and systems of work such that, so far as is practicable, employees and labour hire personnel attending a construction or building site are not exposed to hazards
- Implements and maintains a management system for the safety and health of employees and labour hire personnel attending a construction or building site. This requires a consultative procedure between subcontractor and BGC to ensure an agreed cohesive safety and health management system operates for subcontractor employees and labour hire personnel
- Communicates the requirements of the safety and health management system to employees and labour hire personnel
- Provides adequate resources for the implementation of the safety and health management system including personal protective equipment
- Ensures through supervision that all employees comply with the safety and health management system for the site
- Ensures competency training of all employees and labour hire personnel
- Ensures all equipment used on site is constructed, maintained and used according to regulation for industrial use - this includes vehicles, ladders, hoists, electrical tools and cables
- Ensures safe working procedures are determined through Job Safety Analyses and implemented through supervision

- Facilitates consultation on matters of safety and health on site as required
- Reports to WorkSafe and BGC Site Supervisor and investigates any accident or incident occurring in the course of his work as prescribed by legislation
- Provides feedback on matters of safety and health to employee and labour hire personnel

4.2.3.17 Subcontractor (Supervisor)

Where a subcontractor has labour hire personnel allotted to him by BGC, the subcontractor as a supervisor:

- Reports to Site Supervisor
- Ensures that workplaces, plant, and systems of work are such that, so far as is practicable, labour hire employees attending a construction or building site are not exposed to hazards
- Inducts labour hire employees to the construction or building site safety requirements
- Ensures training is provided to enable labour hire employees complete their task in a manner that does not expose them to hazards
- Confirms the currency of any competency required by labour hire personnel
- Ensures that all plant, tools and equipment required by labour hire personnel are maintained and operated according to legislative requirements
- Reports to the BGC Subcontractor Manager any injury or harm to health of which he is aware that arises in the course of, or in connection with his work
- Is available for consultation on matters of safety and health on site

4.2.3.18 Subcontractor Employee

- Reports to Subcontractor
- Works as an employee under the provisions of the Occupational Safety and Health Act

4.2.3.19 Labour Hire Personnel

- Reports to Subcontractor
- Works as an employee under the provisions of the Occupational Safety and Health Act

Section
5

Consultative Mechanisms

5.1 Consultative Mechanisms.....	5-2
5.1.1 General.....	5-2
5.1.2 Matters of Dispute on Site.....	5-2
5.1.3 The Unsafe Site	5-2

5.1 Consultative Mechanisms

5.1.1 General

Within its manufacturing divisions BGC has a structure for consultation on matters of occupational safety and health as follows:

- Safety and Health Management Committee

A monthly meeting of management and employees which consults on all matters relating to safety and health. The agenda for this meeting now includes a section on subcontractor issues. Subcontractors are encouraged to list matters for consideration.

- Toolbox Meetings

A monthly meeting of small groups of employees to discuss matters of safety and health that arise in the course of their work. Matters that cannot be resolved directly are referred to the Management Committee.

Subcontractors are encouraged to participate in a toolbox meeting whenever possible, either joining a group within the manufacturing divisions, or by agreement with other subcontractors. Minutes of any toolbox meeting will be recorded and forwarded to the Safety Manager for action.

- Safety and Health Representatives

Safety and Health Representatives are elected from the employees, are available to consult at any time and to represent the employees in matters of safety and health in the Management Committee.

Subcontractors are encouraged to consult with the manufacturing plant Safety and Health Representatives or to elect a Safety and Health Representative from among their own numbers. This is a legislated position which requires registration and specific training.

- Safety and Health Manager

BGC has appointed a Safety and Health Manager who is available at any time for consultation and as a resource in matters of safety and health.

5.1.2 Matters of Dispute on Site

Any matter of dispute with the Site Principal or his representative which arises in the course of a subcontractor's work must be referred immediately to the BGC Site Supervisor for resolution.

5.1.3 The Unsafe Site

When a subcontractor considers that a site is unsafe to work on, and cannot effect the changes necessary to correct the unsafe conditions, the subcontractor must immediately consult with the BGC Site Supervisor.

The subcontractor must remain at the site until the BGC Site Supervisor resolves the matter, or advises the subcontractor to leave.

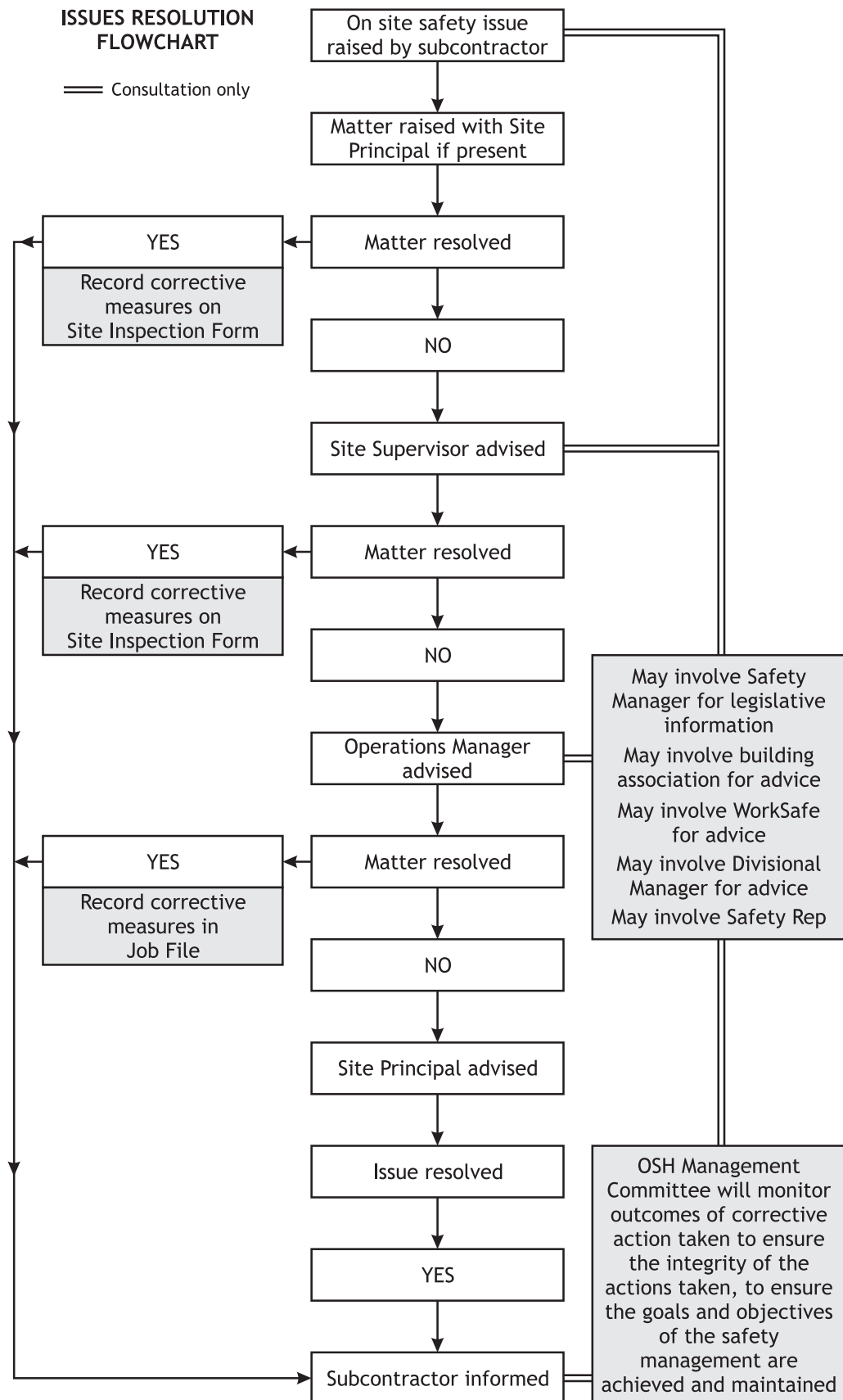


Figure 5.1 Issues Resolution Flowchart

Section
6

Site Deliveries

6.1 Site Deliveries	6-2
6.1.1 Arrival at Site	6-2
6.1.2 Offloading Process	6-2
6.1.3 Completion of Task	6-3

6.1 Site Deliveries

BGC employed drivers or subcontracted drivers delivering building products to a commercial or residential site will follow an established procedure to ensure that their own safety and health is maintained, and the safety and health of any other person who will be in the proximity of either the offloading process, or the offloaded materials.

6.1.1 Arrival at Site

- Before entering site, the delivery driver will look for any displayed safety information, particularly with reference to Personal Protective Equipment which is mandated for the site. This PPE shall be worn at all times on site by the delivery driver and any associate.
- Where the Site Principal, his representative or associated tradesperson is present, the delivery driver will identify himself and request direction about where the delivered materials will be offloaded.
- The delivery driver will assess the designated area for access, ground surface condition and adequacy of area for operation.

Where there is no Site Principal, representative or associated tradesperson, the following shall apply:

- Before entering the site, the delivery driver will look for any displayed safety information, particularly with reference to Personal Protective Equipment which is mandated for the site. This PPE shall be worn at all times on site by the delivery driver and any associate.
- Unless the delivery driver has received prior instruction about the offloading location on site, he will contact his Transport Manager for instruction.
- Where there is no specific instruction, the delivery driver will conduct a site safety inspection and select a location for offloading that will not obstruct the safe access of other vehicles or personnel onto the site or impede other site activity.
- Where the site is unsecured and where no lock-up facility has been provided, the delivery driver will not offload any hazardous substances and will report this to his Transport Manager.

Where there is no suitable or available access to the site, the following shall apply:

- The delivery driver will confirm through his Transport Manager that he can offload onto a public area, a verge or sidewalk.
- The delivery vehicle will be kerb or verge parked according to local council requirements
- The delivery driver will clearly demarcate, by signage and / or barricade, the operational area of the offloading process warning other vehicles or pedestrians of the hazard.
- The delivery driver will not offload any hazardous substance onto a public area, verge or sidewalk unless a suitable lock-up facility has been provided by the Site Principal, his representative or associated tradesperson. The delivery driver will report this non delivery to his Transport Manager.

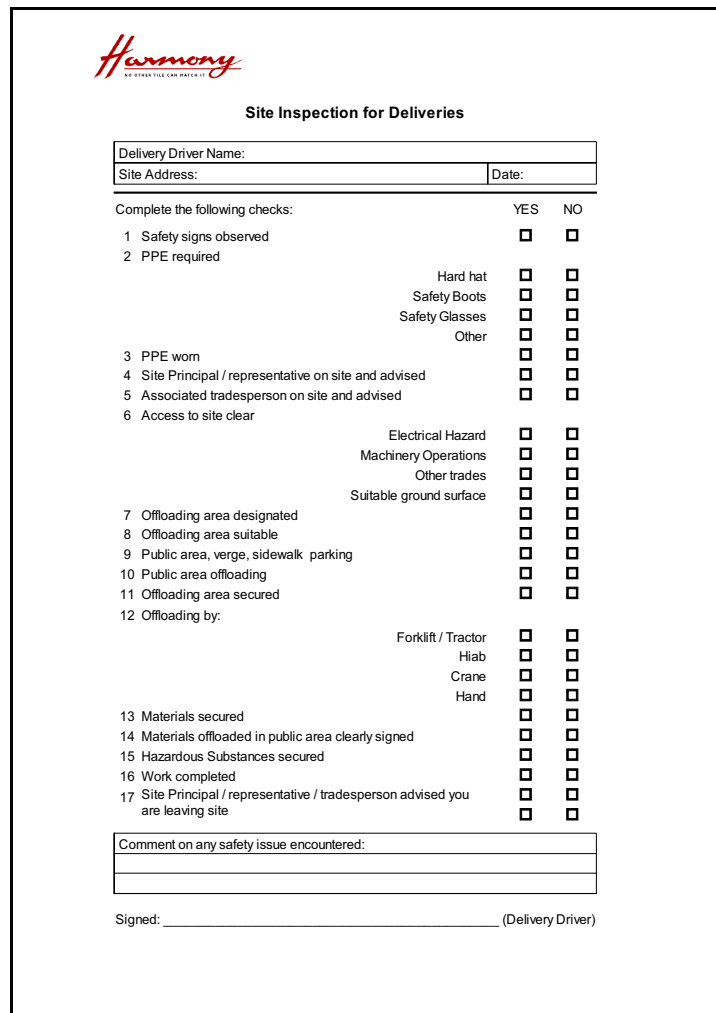
6.1.2 Offloading Process

- The delivery driver will ensure that the operational area for offloading is restricted to essential personnel and machinery for the duration of the operation.

6.1.3 Completion of Task

- The delivery driver will ensure that all offloaded materials are stored and / or stacked in such a manner that they do not pose a hazard to other persons, plant or equipment.
- Any offloaded material that may shift by wind movement will be firmly secured.
- Any material offloaded onto a public area will be made as safe as practicable and clearly marked to advise pedestrians and / or other vehicles of the hazard.
- On completion of task the delivery driver will advise the Site Principal, his representative, or tradesperson (if present) that he, and any associate, is leaving the site.
- The driver will finalise a site safety inspection list and return it to his Transport Manager.

The full version of this form, to be photocopied and completed as necessary, can be found on page 14-2 of Section 14 Forms.



Harmony
NO OTHER TILE CAN MATCH IT

Site Inspection for Deliveries

Delivery Driver Name:		
Site Address:		Date:

Complete the following checks:

	YES	NO
1 Safety signs observed	<input type="checkbox"/>	<input type="checkbox"/>
2 PPE required		
Hard hat	<input type="checkbox"/>	<input type="checkbox"/>
Safety Boots	<input type="checkbox"/>	<input type="checkbox"/>
Safety Glasses	<input type="checkbox"/>	<input type="checkbox"/>
Other	<input type="checkbox"/>	<input type="checkbox"/>
3 PPE worn	<input type="checkbox"/>	<input type="checkbox"/>
4 Site Principal / representative on site and advised	<input type="checkbox"/>	<input type="checkbox"/>
5 Associated tradesperson on site and advised	<input type="checkbox"/>	<input type="checkbox"/>
6 Access to site clear		
Electrical Hazard	<input type="checkbox"/>	<input type="checkbox"/>
Machinery Operations	<input type="checkbox"/>	<input type="checkbox"/>
Other trades	<input type="checkbox"/>	<input type="checkbox"/>
Suitable ground surface	<input type="checkbox"/>	<input type="checkbox"/>
7 Offloading area designated	<input type="checkbox"/>	<input type="checkbox"/>
8 Offloading area suitable	<input type="checkbox"/>	<input type="checkbox"/>
9 Public area, verge, sidewalk parking	<input type="checkbox"/>	<input type="checkbox"/>
10 Public area offloading	<input type="checkbox"/>	<input type="checkbox"/>
11 Offloading area secured	<input type="checkbox"/>	<input type="checkbox"/>
12 Offloading by:		
Forklift / Tractor	<input type="checkbox"/>	<input type="checkbox"/>
Hiab	<input type="checkbox"/>	<input type="checkbox"/>
Crane	<input type="checkbox"/>	<input type="checkbox"/>
Hand	<input type="checkbox"/>	<input type="checkbox"/>
13 Materials secured	<input type="checkbox"/>	<input type="checkbox"/>
14 Materials offloaded in public area clearly signed	<input type="checkbox"/>	<input type="checkbox"/>
15 Hazardous Substances secured	<input type="checkbox"/>	<input type="checkbox"/>
16 Work completed	<input type="checkbox"/>	<input type="checkbox"/>
17 Site Principal / representative / tradesperson advised you are leaving site	<input type="checkbox"/>	<input type="checkbox"/>

Comment on any safety issue encountered:

Signed: _____ (Delivery Driver)

Figure 6.1 Sample Form: Site Inspection for Deliveries

Section
7

Site Visits

7.1 Site Visits	7-2
-----------------------	-----

7.1 Site Visits

BGC employees, sales representatives, estimators and other personnel ensure that customer orders are manufactured and installed to specification and satisfaction. These persons may be required to make a site visit in the course of their customer service, and the following safety procedures will apply.

Where there is a prior arrangement to meet a customer or customer representative on site:

- The site visitor will not enter the site until the representative is present.
- Before entering the site, the site visitor will look for any displayed safety information, particularly with reference to Personal Protective Equipment which is mandated for the site. This PPE will be worn at all times on the site by the site visitor.
- As far as it is practicable, the site visitor will be accompanied by the customer or customer representative at all times.
- As is required by legislation, the site visitor will report to the customer any situation he believes is a hazard.
- The site visitor will not leave the site without first advising the customer or customer representative.

Where there is no prior arrangement to meet a customer on an active site:

- Before entering the site, the site visitor will look for any displayed safety information, particularly with reference to Personal Protective Equipment which is mandated for the site. This PPE will be worn at all times on the site by the site visitor.
- The site visitor will advise the Site Principal, his representative, or tradesperson of his presence and purpose of visit.
- The site visitor will not work in an area of the site where he will be exposed to trip, knock, fall, electrical or machinery / plant hazards, nor will his presence and work cause a hazard to others on site.
- As is required by legislation, the site visitor will report to the Site Principal, his representative or tradesperson, any situation he believes is a hazard.
- On completion of work the site visitor will advise the Site Principal, his representative or tradesperson of his intention to leave the site.

Where the site is vacant or unattended:

- Before entering the site, the site visitor will look for any displayed safety information, particularly with reference to Personal Protective Equipment which is mandated for the site. This PPE will be worn at all times on the site by the site visitor.
- The site visitor will advise his supervisor / manager of his intention to enter the vacant or unattended site.
- The site visitor will not work in an area of the site where he will be exposed to trip, knock, fall, electrical or machinery / plant hazards.
- As is required by legislation, the site visitor will report to his supervisor / manager any situation he believes is a hazard.
- On completion of work, the site visitor will advise his supervisor / manager that he has left the site.

Section
8

Site Safety Inspections

8.1 Site Safety Inspections	8-2
-----------------------------------	-----

8.1 Site Safety Inspections

As an integral part of the safety management system, a site safety inspection is to be completed by the subcontractor before commencing work on any site. The inspection will cover the key areas of site safety as listed in the Site Safety Inspection form.

A BGC supervisor may have already visited the site and completed a Site Safety Inspection. However, as conditions may have changed by the time the subcontractor is ready to commence work, the subcontractor is required to complete a further inspection.

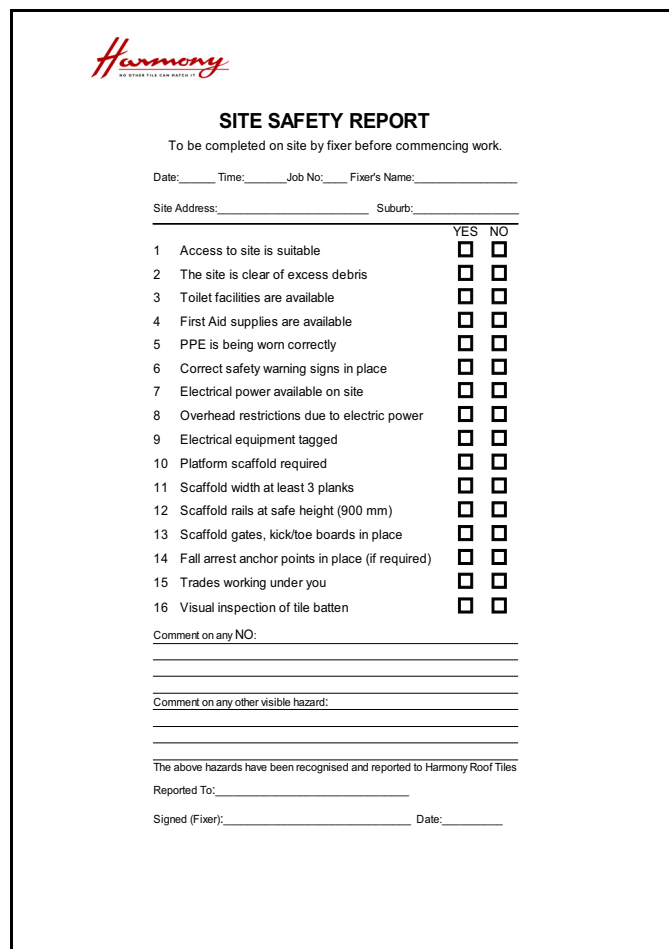
Where an unsafe condition is present, the subcontractor will attempt to remove the unsafe condition either through the actions of other on-site personnel, or by his own corrective measures.

If an unsafe condition persists on site and cannot be corrected, the subcontractor must immediately contact the BGC Site Supervisor for further direction.

A sample of the Site Inspection Form follows.

THIS FORM MUST BE COMPLETED AND RETURNED WITH JOB PAPERWORK

The full version of this form, to be photocopied and completed as necessary, can be found on page 14-4 of Section 14 Forms.



Harmony
NO OTHER TILE CAN MATCH IT

SITE SAFETY REPORT

To be completed on site by fixer before commencing work.

Date: _____ Time: _____ Job No: _____ Fixer's Name: _____

Site Address: _____ Suburb: _____

	YES	NO
1 Access to site is suitable	<input type="checkbox"/>	<input type="checkbox"/>
2 The site is clear of excess debris	<input type="checkbox"/>	<input type="checkbox"/>
3 Toilet facilities are available	<input type="checkbox"/>	<input type="checkbox"/>
4 First Aid supplies are available	<input type="checkbox"/>	<input type="checkbox"/>
5 PPE is being worn correctly	<input type="checkbox"/>	<input type="checkbox"/>
6 Correct safety warning signs in place	<input type="checkbox"/>	<input type="checkbox"/>
7 Electrical power available on site	<input type="checkbox"/>	<input type="checkbox"/>
8 Overhead restrictions due to electric power	<input type="checkbox"/>	<input type="checkbox"/>
9 Electrical equipment tagged	<input type="checkbox"/>	<input type="checkbox"/>
10 Platform scaffold required	<input type="checkbox"/>	<input type="checkbox"/>
11 Scaffold width at least 3 planks	<input type="checkbox"/>	<input type="checkbox"/>
12 Scaffold rails at safe height (900 mm)	<input type="checkbox"/>	<input type="checkbox"/>
13 Scaffold gates, kick/toe boards in place	<input type="checkbox"/>	<input type="checkbox"/>
14 Fall arrest anchor points in place (if required)	<input type="checkbox"/>	<input type="checkbox"/>
15 Trades working under you	<input type="checkbox"/>	<input type="checkbox"/>
16 Visual inspection of tile batten	<input type="checkbox"/>	<input type="checkbox"/>

Comment on any NO: _____

Comment on any other visible hazard: _____

The above hazards have been recognised and reported to Harmony Roof Tiles

Reported To: _____

Signed (Fixer): _____ Date: _____

Figure 8.1 Sample Form: Site Safety Inspection

Section 9

Emergency Procedures

9.1 Emergency Procedures	9-2
9.1.1 General	9-2
9.1.2 Medical	9-2
9.1.3 Fire.....	9-2
9.1.4 Chemical Spill	9-2
9.1.5 Threat	9-3
9.1.6 Useful Telephone Numbers	9-3

9.1 Emergency Procedures

9.1.1 General

It is against the Occupational Safety and Health Act for an individual to be working alone in a workplace - including a building site. If you do go on site as an individual worker, notify either the site foreman or other personnel of your presence and establish a means of communication in the event of an emergency.

9.1.2 Medical



If someone is injured:

- immediately notify a colleague with First Aid experience
- apply First Aid where possible
- notify the Site Principal (or representative if present)
- transport the injured person to an emergency health centre or hospital
- if there is any doubt about moving the injured person, call for an ambulance
- notify the BGC Site Supervisor

9.1.3 Fire



If a fire breaks out:

- control the fire - but only if it is safe to do so
- identify the source of the fire - but only if it is safe to do so
- notify the Fire Brigade
- inform all site personnel
- leave the site by the safest exit route

9.1.4 Chemical Spill



If a chemical spills:

- inform all site personnel and check for injuries
- isolate and ventilate spill area if possible
- try to identify chemical
- seek advice from Fire Brigade or EPA
- put on protective clothing as advised and clean spill if possible
- if not, exit area and await arrival of Fire Brigade

9.1.5 Threat



If someone telephones a bomb or other threat:

- keep the person talking and note down as many details as possible
- if a bomb threat, ask when the bomb is set to go off
- if possible, advise police immediately on another phone
- advise the Site Principal or his representative if present
- advise all site personnel and exit the site
- advise Site Supervisor and await further instruction

IF IN DOUBT - EVACUATE THE SITE

DIAL 000 TO CALL THE POLICE, FIRE OR AMBULANCE

9.1.6 Useful Telephone Numbers

Prime Health Centre
(Canning Vale) 9455 2403

Fire Brigade
(for advice) 9323 9300

Police
(for advice) 9222 1111

CALM (EPA) 9334 0333



**REMEMBER - IF YOU ARE USING A MOBILE PHONE
OUTSIDE YOUR SERVICE PROVIDER'S AREA YOU
MAY CALL EMERGENCY SERVICES ON**

112

Section
10

Job Safety Analyses

10.1 Job Safety Analysis (JSA)	10-2
10.1.1 Hazard Management	10-2
10.1.2 Generic JSA	10-2

10.1 Job Safety Analysis (JSA)

A Job Safety Analysis is the process of reviewing job methods, uncovering hazards and redesigning the job to eliminate those hazards. A Job Safety Analysis may be performed as part of an initial survey, or form part of an ongoing process.

A Job Safety Analysis breaks down the job tasks into simple steps and identifies the hazards or potential injuries in each step. Control methods are determined that will remove the hazard or lessen the likelihood of an injury outcome.

The key questions in deciding if a JSA is to be completed are:

1. What is the potential for an incident to occur
2. At what frequency could the incident occur
3. What is the probable outcome - what loss or damage

Job Safety Analyses are monitored and reviewed by the Divisional Manager and amended as required for increased safety.

10.1.1 Hazard Management

Hazards which are identified are managed under a hierarchy of control as follows:

1. Eliminate the hazard completely
2. Substitute an alternative piece of machinery or tool or substance
3. Engineer change by modifying machinery or tool
4. Administer change through signage or alternative work practices to reduce exposure to hazard
5. Wearing Personal Protective Equipment as appropriate

10.1.2 Generic JSA

A generic Job Safety Analysis has been prepared for each trade subcontracted by BGC. However, in certain instances, a Builder may require a JSA specific to a particular job. This JSA will be produced by the Operations Manager in consultation with the BGC Site Supervisors (if applicable) and trade subcontractor.

The generic Job Safety Analysis is as follows:

JOB/TASK: Roof Tiling a Residential Building			DATE: 03.08.05
No	TASK STEP	POTENTIAL HAZARDS	SAFE WORK / CONTROL MEASURES
2	<p>Arrival on site</p> <ul style="list-style-type: none"> - Site Safety Assessment Personal Protective Equipment requirement Amenities First Aid Blocked entry or egress Rubbish or Building materials lying around Electrical Supply Plant or machinery Working at height Signage / Barricades 	<ul style="list-style-type: none"> a) May block emergency services if required on site May slow down emergency evacuation from site b) Trip hazard May require additional manual handling to avoid c) Overhead cables slung too low may prevent the use of cranes or other lifting machinery d) Unprotected supply may cause electric shock e) If not properly installed, maintained or operated may cause physical injury f) A potential fall of 3 Metres or more requires the installation and use of fall protection g) Warning to other trades working in area of tiling activity 	<p>All mandated PPE will be worn</p> <ul style="list-style-type: none"> a) A Site Safety assessment will be carried out by the trade supervisor on arrival at site. b) Any non-compliance with the OSH Act, OSH Regulations, Australian Standards, Codes of Practice, or general Duty of Care, shall be reported to the building site supervisor. c) Work will not commence until the trade supervisor is assured of full compliance. d) All electrical leads will be inspected and tagged according to regulation and connected to a supply fitted with a Residual Current Device e) f) g)

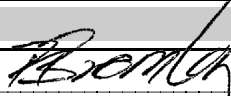
JOB HAZARD ANALYSIS







JOB/TASK: Roof Tiling a Residential Building			DATE: 03.08.05
No	JOB/TASK STEP	POTENTIAL HAZARDS	SAFE WORK / CONTROL MEASURES
3	Setting Up Barricades Signage Means of access to work area Plant or machinery Electrical Supply to Roof	a) Must not prevent the access or egress of any other trade working on the site b) Warning to other trades working in area of tiling activity c) Risk of fall from ladder d) Manual handling risk e) Danger of cable damage and electrical shock f) Trip or slip hazard on roof area	a) Coordinate all barricading with building site supervisor b) Ladder will be securely fixed in accordance with Code of Practice Work area will be clear. c) Mechanical means used wherever practicable d) All electrical cables shall be RCD protected e) All electrical tools will be inspected and tagged as required by regulation f) Wherever practicable, self powered tools shall be used

JOB/TASK: Roof Tiling a Residential Building			DATE: 03.08.05
No	JOB/TASK STEP	POTENTIAL HAZARDS	SAFE WORK / CONTROL MEASURES
4	Batten Fixing - marking out on roof - loading battens - cutting battens - nailing off battens	a) Fall risk, especially where roof trusses are greater than 600 mm apart. b) Manual handling risk c) If cut by chain saw, danger of laceration d) If cut by a power saw - danger of laceration e) Operation of nail gun f) Trip hazard from gun air supply	a) Area will be kept clear for the duration of this task. If the roof truss gap is greater than 900 mm, a safety mesh shall be used b) Batten lengths will be handled individually if raised or moved by hand. c) A chain saw shall only be used by a trades person or assistant who has been assessed as competent in the use of a chain saw A chain saw will not be used by any trainee or labourer under 18 years of age d) A power saw shall only be used by a trades person or assistant who has been assessed as competent in the use of a power saw A power saw shall not be used by any trainee or labourer under 18 years of age e) A nail gun shall only be used by a trades person or assistant who has been assessed as competent in the use of a nail gun A nail gun shall not be used by any trainee or labourer under 18 years of age f) Supply pipe shall be clearly visible against work surface

JOB/TASK: Roof Tiling a Residential Building			DATE: 03.08.05
No	JOB/TASK STEP	POTENTIAL HAZARDS	SAFE WORK / CONTROL MEASURES
5	<p>Tiling</p> <ul style="list-style-type: none"> - loading tiles - sheeting tiles - cutting valleys and hips - oxidising of edges 	<p>a) Manual handling risk</p> <p>b) Fall risk</p> <p>c) Finger crush</p> <p>d) Use of tile cutting machine or angle grinder</p> <p>e) Use of oxidising paint</p>	<p>a) Wherever practicable, tiles will be raised and transported by mechanical means</p> <p>b)</p> <p>c)</p> <p>d) Eye protection will be worn Dust mask will be worn when cutting tiles Grinder will be electrically inspected and tagged according to regulation Grinder will have automatic cutout in the event of being dropped Grinder will operate from an RCD protected power source Grinder shall be guarded according to manufacturers specification Ground area will be barricaded and signed in case power tool should fall from roof</p> <p>e) Non hazardous, but MSDS available</p>
6	<p>Ridging</p> <ul style="list-style-type: none"> - loading ridges - laying ridges - bedding ridges - pointing ridges 	<p>a) Manual handling risk</p> <p>b) Raising and transporting of cement product poses a manual handling risk.</p>	<p>a) Wherever practicable, ridges will be raised and transported by mechanical means</p> <p>b) Wherever practicable, cement product will be raised and transported by mechanical means.</p>

JOB HAZARD ANALYSIS

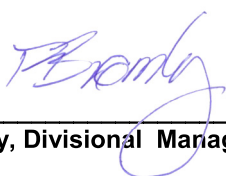
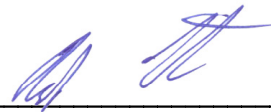
JOB/TASK: Roof Tiling a Residential Building			DATE: 03.08.05
No	JOB/TASK STEP	POTENTIAL HAZARDS	SAFE WORK / CONTROL MEASURES
7	Roof Clean up - removal of all tools - removal of all scrap material - blow down of roof surface - blow down of all valleys - cleaning of all gutters		
8	Site Clean up - removal of barricades - removal of plant and equipment - removal or disposal of rubbish or scrap material - removal of pallets - removal of signage		
9	Site Exit - advise site supervisor		
SIGNATURE : 		DATE: 3-10-05	
NAME:(PRINT) <u>RICHARD KENNEDY</u>		Divisional Manager	

JOB/TASK: Roof Tiling a Residential Building. - Single Story, 2 Story, Multiple Story			DATE REVISED: 04/05/2010	
PERMITS REQUIRED (PLEASE SPECIFY): N/A				
LOCATION / DEPARTMENT:			Analysis by : Rod Fancote	
EQUIPMENT/TOOLS REQUIRED: First Aid Kit, Nail Gun, Extension Leads, Hammer Nail Bag, Ruler, Cutting Saw, Hi Tile Machine Tile Cutter & Tray, Ridging Racks, Cement Mixer Trowels, Buckets, Shovel, Ladder and Gutter Guard, Nails to suit tile profile, Warning Signs. - Roof Tilers Working Above - Nail Gun in Use			PERSONAL PROTECTIVE EQUIPMENT REQUIRED:      	
RISK LEVEL H = high M = med L = low N = negligible				
No	JOB/TASK STEP	POTENTIAL HAZARDS	RISK LEVEL	SAFE WORK / CONTROL MEASURES
STAGE 1 -				
1	Storage of materials on site	<ul style="list-style-type: none"> Trip hazard for others on site 	L	1. Store tiles and battens in area allotted for this purpose. Inform other trades. 2. Site inspections by supervisor
2	Unloading and storing battens and tiles using a forklift	<ul style="list-style-type: none"> Collision with pedestrian or other vehicle or rollover of forklift. 	M	1. Ensure area is well signposted 2. Ensure ground to be driven on is firm and driver knows of any uneven surface 3. Qualified Forklift Operator 4. Daily Pre-Start check of fork lift. Include reverse beepers and flashing light 5. Keep speed to a minimum. 6. Supervision by experienced tradesmen.

JOB/TASK: Roof Tiling a Residential Building. - Single Story, 2 Story, Multiple Story			DATE REVISED: 04/05/2010	
3	Moving around Site	<ul style="list-style-type: none"> • Being struck by machines or equipment on site or trips and falls. • Inadequate response to emergencies 	M	<ol style="list-style-type: none"> 1. The fixer shall complete a written Site Safety Report sheet before work commences. 2. All site personnel to have completed a Construction Industry Training Course. 3. All site personnel to wear hi-visibility clothing and safety footwear. 4. All personnel to be aware of and comply with additional site specific PPE requirements. 5. Trades supervisor to ensure that all site personnel are aware of site emergency evacuation procedures, location of first aid kits and other amenities. 6. Trades supervisor to ensure that all sufficient supervision is given to young workers and people who are new to the job.
4	Vehicle entry to site	<ul style="list-style-type: none"> • Obstruction of emergency vehicles,. Collision with other site vehicles 	L	<ol style="list-style-type: none"> 1. Only park in site approved parking areas. 2. Avoid parking on roadways 3. Observe site speed limits 4. Trades supervisor to carry out a Site Safety Assessment on arrival on site
5	Working with or near electrical supplies	<ul style="list-style-type: none"> • Electric Shock from damaged or faulty equipment or leads • Contact with overhead power lines resulting in electrical shock 	M	<ol style="list-style-type: none"> 1. All electrical leads and portable equipment must be inspected and tagged every 3 months and connected to a Residual Current device. 2. All leads must be visually checked and suspended on approved hooks. 3. All ladders, people and equipment must be kept at least 4 metres from overhead power lines.
6	Use of plant or machinery	<ul style="list-style-type: none"> • Getting caught in unguarded machinery or failure of machinery resulting in injury 	M	<ol style="list-style-type: none"> 1. No site personnel are to operate any machine which they have not been trained to use. 2. All machinery is to be inspected before use. 3. No machine is to be operated with any guard or safety device missing or inoperable.

JOB/TASK: Roof Tiling a Residential Building. - Single Story, 2 Story, Multiple Story			DATE REVISED: 04/05/2010	
7	Working at heights	<ul style="list-style-type: none"> • Falls • Dropping objects 	M	<ol style="list-style-type: none"> 1. All working at heights to be carried out in accordance with Worksafe Code of Practice. Prevention of Falls at the work place. 2. Signs saying Roof Tilers Working above shall be clearly displayed. 3. Appropriate non-slip footwear shall be worn. 4. Rubbish shall not be dropped from roofs.
8	Batten fixing General	<ul style="list-style-type: none"> • Falls 	M	<ol style="list-style-type: none"> 1. Area to be kept clear for duration of the task 2. If the roof truss gap is greater than 900mm a safety mesh shall be used. 3. Batten lengths will be handled individually if raised or moved by hand. 4. When working on roofs feet should be placed at the intersection of battens and rafters.
9	Batten Fixing Use of power tools Chain Saws, Power Saws, Angle Grinders and Nail guns	<ul style="list-style-type: none"> • Lacerations • Electric shock • Trip hazards from air lines resulting in potential fall. 	M	<ol style="list-style-type: none"> 1. Eye protection shall be used when using power tools. 2. A chain saw shall only be used by a trades person or assistant who has been assessed as competent in the use of a chain saw. 3. A chain saw shall not be used by any trainee trainee or labourer under the age of 18. 4. Only chain saws with chain brakes fitted are to be used. 5. A power saw shall only be used by a trades person or assistant who has been assessed as competent in the use of a chain saw. 6. A power saw shall not be used by any trainee trainee or labourer under the age of 18. 7. An Angle Grinder shall only be used by a trades person or assistant who has been assessed as competent in the use of a chain saw. 8. An Angle Grinder shall not be used by any trainee trainee or labourer under the age of 18. 9. Grinders shall have "auto cut out" to prevent run on if dropped. 10. A Nail Gun shall only be used by a trades person or assistant who has been assessed as competent in the use of a chain saw. 11. A Nail Gun shall not be used by any trainee trainee or labourer under the age of 18. 12. Air supply lines shall be clearly visible and kept clear of power tools

JOB/TASK: Roof Tiling a Residential Building. - Single Story, 2 Story, Multiple Story			DATE REVISED: 04/05/2010	
10	Tiling	<ul style="list-style-type: none"> • Manual handling (Muscle strain) • Fall from roof • Pinch points (crushed fingers) • • 	M	<ol style="list-style-type: none"> 1. Tiles to be raised using mechanical means. 2. Carry no more than 4 tiles when walking on a roof 3. Warning signs to be erected and maintained. 4. Dust masks to be worn when cutting tiles 5. Ground area will be barricaded to prevent person walking under tiling operations. 6. Care shall be taken to avoid pinch points.
11	Ridging	<ul style="list-style-type: none"> • Manual handling (Muscle strain) • Fall from roof • Pinch points (crushed fingers) 	M	<ol style="list-style-type: none"> 1. Ridges to be raised using mechanical means. 2. Carry no more than 4 tiles when walking on a roof 3. Warning signs to be erected and maintained. 4. Dust masks to be worn when cutting tiles 5. Ground area will be barricaded to prevent person walking under tiling operations. 6. Care shall be taken to avoid pinch points. 7. Wherever practical cement shall be raised and transported by mechanical means.
12	Roof Clean up	<ul style="list-style-type: none"> • Trip hazards. • Falling objects. 	L	<ol style="list-style-type: none"> 1. Clean as you go. Remove tools and equipment which is not required from roof. 2. Tools shall be stored carefully in tool boxes. 3. Items shall be lowered rather than dropped from roofs.
13	Site Clean up	<ul style="list-style-type: none"> • Trip hazards 	L	<ol style="list-style-type: none"> 1. Clean as you go. Site Employees shall place tools not required in site boxes. 2. Site Employees shall visually check and tidy up regularly and before leaving the site.

JOB/TASK: Roof Tiling a Residential Building. - Single Story, 2 Story, Multiple Story			DATE REVISED: 04/05/2010	
14	Leaving the site	<ul style="list-style-type: none"> Inappropriate response to emergencies. 	L	1. Site employees shall notify their supervisor before leaving site. 2. Site employees shall notify their supervisor of any injury or near miss accident. 3. Where a significant hazard is observed it shall either be controlled or reported to the supervisor
Approved by: <div style="display: flex; justify-content: space-between; align-items: flex-end;"> <div style="text-align: center;">  Richard Bromley, Divisional Manager </div> <div style="text-align: center;"> DATE: 01/06/2010 </div> <div style="text-align: center;">  Rod Fancote, OHS </div> <div style="text-align: center;"> DATE: 01/06/2010 </div> </div>				









I, hereby confirm that I have read and been instructed on the Job Safety Analysis and
(print name)

understand how the safe work / control measures are used in this task.

Signed:

Date:

JOB/TASK: SITE SUPERVISION PRIOR TO DELIVERY			DATE: 6-11-09. DATE REVISED: 04/05/2010	
PERMITS REQUIRED (PLEASE SPECIFY): blue card, Site safety manual, current drivers license,			Work completed by a Supervisor	
LOCATION / DEPARTMENT:			Analysis by : Rod Fancote, John Smart, Richard Bromley	
EQUIPMENT/TOOLS REQUIRED:			PERSONAL PROTECTIVE EQUIPMENT REQUIRED:      	
RISK LEVEL H = high M = med L = low N = negligible				
No	JOB/TASK STEP	POTENTIAL HAZARDS	RISK LEVEL	SAFE WORK / CONTROL MEASURES
1	Arrive to site	<ul style="list-style-type: none"> Documents to confirm site First Aid Kit available 	M	1. Confirm document and site sign for correct address 2. Ensure you have correct PPE (a) A risk assessment to be done in order to establish hard hat requirement (b) Hard hats to be worn on all mandatory sites 3. High viz clothing, safety boots in good condition, suncream 4. Confirm that you have access to first aid
2	Site inspection	<ul style="list-style-type: none"> Trips/slips Falls cuts Sprains/Strains Impalement Environmental conditions 	L	1. Complete a site hazard identification sheet to identify hazards 2. Check job perimeter for potential hazards i.e Objects you may fall on 3. Check weather conditions prior to assessment i.e raining, windy, lightning 4. Do NOT get on the roof if the weather is not conducive to safe work practices.

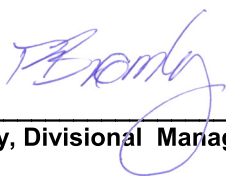
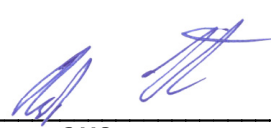
JOB/TASK: SITE SUPERVISION PRIOR TO DELIVERY			DATE: 6-11-09. DATE REVISED: 04/05/2010	
3	Check site for clear access for deliveries.	<ul style="list-style-type: none"> • Blockage by rubbish piles or materials 	L	<ol style="list-style-type: none"> 1. Contact builder supervisor to get site clean of rubbish 2. Do not proceed with delivery if deemed unsafe. 3. Safe storage of battens so as not to create a hazard for other trades.
4	Check that the building is correctly numbered	<ul style="list-style-type: none"> • Wrong materials delivered to wrong site. 	L	<ol style="list-style-type: none"> 1. Contact builder to clearly label the site 2. Do not proceed with delivery if deemed unsafe.
5	Obstacles	<ul style="list-style-type: none"> • Trips/slips • Falls • cuts • Sprains/Strains • Impalement 	L	<ol style="list-style-type: none"> 1. Record the hazard identified 2. Notify builder/supervisor 3. Do not proceed if deemed unsafe
6	Pipes / stakes sticking out of the ground	<ul style="list-style-type: none"> • Trips/slips • Falls • cuts • Sprains/Strains • Impalement 	L	<ol style="list-style-type: none"> 1. Record the hazard identified 2. Notify builder/supervisor 3. Do not proceed if deemed unsafe
7	Check Fence lines	<ul style="list-style-type: none"> • Trips/slips • Falls • cuts • Sprains/Strains • Impalement 	L	<ol style="list-style-type: none"> 1. Record the hazard identified 2. Notify builder/supervisor 3. Do not proceed if deemed unsafe

JOB SAFETY ANALYSIS: SITE SUPERVISION PRIOR TO DELIVERY

Ref: 00.00

JOB/TASK: SITE SUPERVISION PRIOR TO DELIVERY			DATE: 6-11-09. DATE REVISED: 04/05/2010	
8	Check Rubbish piles	<ul style="list-style-type: none"> • Trips/slips • Falls • cuts • Sprains/Strains • Impalement 	L	<ol style="list-style-type: none"> 1. Record the hazard identified 2. Notify builder/supervisor 3. Do not proceed if deemed unsafe
9	Check site Toilet	<ul style="list-style-type: none"> • Site specific toilet available and operational 	N	<ol style="list-style-type: none"> 1. Record the hazard identified 2. Notify builder/supervisor
10	Check power and power source	<ul style="list-style-type: none"> • Site power (electrical) is available • Unprotected supply may result in electric shock 	M	<ol style="list-style-type: none"> 1. Record the hazard identified 2. Notify builder/supervisor immediately 3. Do not proceed if deemed unsafe
11	Check site for Low overhead power lines	<ul style="list-style-type: none"> • Overhead cables slung too low may prevent the use of cranes or other lifting machinery • Electric shock 	M	<ol style="list-style-type: none"> 1. Record the hazard identified 2. Notify builder/supervisor immediately 3. do not proceed with work if deemed unsafe
12	Water	<ul style="list-style-type: none"> • Dehydration of workers • burns • fires 	L	<ol style="list-style-type: none"> 1. Record the hazard identified 2. Notify builder/supervisor

JOB/TASK: SITE SUPERVISION PRIOR TO DELIVERY			DATE: 6-11-09. DATE REVISED: 04/05/2010	
13	Fall protection	<ul style="list-style-type: none"> • Falls from height • check for multiple story • check for steep pitch 	L	<ol style="list-style-type: none"> 1. Record the hazard identified 2. Notify builder/supervisor 3. Refer code of practice prevention of falls at the workplace
14	Rubbish bins	<ul style="list-style-type: none"> • Overflowing rubble 	L	<ol style="list-style-type: none"> 1. Record the hazard identified 2. Notify builder/supervisor
15	Trade issues	<ul style="list-style-type: none"> • All Neighboring trades, i.e. plumbing, carpentry is complete • Timber still on the ground and in the way of deliveries 	M	<ol style="list-style-type: none"> 1. Record the hazard identified 2. Notify builder/supervisor 3. Do not proceed if deemed unsafe
16	Site damage	<ul style="list-style-type: none"> • Dangerous property damage 	L	<ol style="list-style-type: none"> 1. Record the hazard identified 2. Notify builder/supervisor
17	Inside of building checked	<ul style="list-style-type: none"> • Impalement from spikes • Trips/slips • Falls • cuts • Sprains/Strains 	L	<ol style="list-style-type: none"> 1. Record the hazard identified 2. Notify builder/supervisor 3. Do not proceed if deemed unsafe

JOB/TASK: SITE SUPERVISION PRIOR TO DELIVERY			DATE: 6-11-09. DATE REVISED: 04/05/2010	
18	Leave site	<ul style="list-style-type: none"> Record checks are completed, documented and issues noted 	N	Audit to be conducted by the service manager
<p>Approved by:  DATE: 01/06/2010</p> <p>Richard Bromley, Divisional Manager</p> <p> DATE: 01/06/2010</p> <p>Rod Fancote, OHS</p>				









I, hereby confirm that I have read and been instructed on the Job Safety Analysis and
(print name)

understand how the safe work / control measures are used in this task.

Signed:

Date:

JOB/TASK: SITE SUPERVISION PRIOR TO TILING			DATE: 6-11-09. DATE REVIEWED 04/05/2010	
PERMITS REQUIRED (PLEASE SPECIFY): blue card, Site safety manual, current drivers license,			WORK COMPLETED BY HARMONY ROOF TILES SUPERVISOR	
LOCATION / DEPARTMENT:			Analysis by : Rod Gorringe, Rod Fancote, John Smartt, Richard Bromley	
EQUIPMENT/TOOLS REQUIRED:			PERSONAL PROTECTIVE EQUIPMENT REQUIRED:      	
RISK LEVEL H = high M = med L = low N = negligible				
No	JOB/TASK STEP	POTENTIAL HAZARDS	RISK LEVEL	SAFE WORK / CONTROL MEASURES
1	Arrive to site	<ul style="list-style-type: none"> Documents to confirm correct site address 	M	<ol style="list-style-type: none"> Confirm document and site sign for correct address Ensure you have correct PPE <ol style="list-style-type: none"> A risk assessment to be done in order to establish hard hat requirement Hard hats to be worn on all mandatory sites High viz clothing, safety boots, suncream Read site safety signs
2	Site inspection	<ul style="list-style-type: none"> Trips/slips Falls cuts Sprains/Strains Impalement Environmental conditions ladder erected incorrectly 	L	<ol style="list-style-type: none"> Complete a site hazard identification sheet to identify hazards Check job perimeter for potential hazards i.e Objects you may fall on Check weather conditions prior to assessment i.e raining, windy, lightning Do NOT get on the roof if the weather is not conducive to safe work practices. Ladder to conform to AS/NZS 1892.1. Ladder to be used for access and egress only. Ladder is to extend 1 M past the working platform entrance. Ladder is to be secured. You must maintain a 3 point contact with the ladder at all times. All issues to be recorded and reported to the builder.

JOB SAFETY ANALYSIS: SITE SUPERVISION PRIOR TO TILING

Ref: 16.00

JOB/TASK: SITE SUPERVISION PRIOR TO TILING			DATE: 6-11-09. DATE REVIEWED 04/05/2010	
3	Check site for MATERIALS ON SITE	<ul style="list-style-type: none"> • Delivery of wrong materials e.g. correct batten size 	L	1. Stop job proceeding if wrong materials arrived to site.
4	Check that the building is correctly numbered	<ul style="list-style-type: none"> • Wrong materials delivered to wrong site. 	L	1. Contact builder to clearly label the site 2. Stop job proceeding if materials arrived to wrong site.
5	Check site for Dangerous injury threatening obstacles on site	<ul style="list-style-type: none"> • Trips/slips • Falls • cuts • Sprains/Strains • Impalement 	L	1. Record the hazard identified 2. Notify builder/supervisor 3. Do not proceed if deemed unsafe
6	Check site for Pipes/ stakes sticking out of the ground	<ul style="list-style-type: none"> • Trips/slips • Falls • cuts • Sprains/Strains • Impalement 	L	1. Record the hazard identified 2. Notify builder/supervisor 3. Do not proceed if deemed unsafe
7	Check Fence lines	<ul style="list-style-type: none"> • Trips/slips • Falls • cuts • Sprains/Strains • Impalement 	L	1. Record the hazard identified 2. Notify builder/supervisor 3. Do not proceed if deemed unsafe

JOB SAFETY ANALYSIS: SITE SUPERVISION PRIOR TO TILING



Ref: 16.00

JOB/TASK: SITE SUPERVISION PRIOR TO TILING			DATE: 6-11-09. DATE REVIEWED 04/05/2010	
8	Check Rubbish piles	<ul style="list-style-type: none"> • Trips/slips • Falls • cuts • Sprains/Strains • Impalement 	L	<ol style="list-style-type: none"> 1. Record the hazard identified 2. Notify builder/supervisor 3. Do not proceed if deemed unsafe
9	Check site Toilet	<ul style="list-style-type: none"> • Site specific toilet available and operational 	N	<ol style="list-style-type: none"> 1. Record the hazard identified 2. Notify builder/supervisor
10	Check power and power source	<ul style="list-style-type: none"> • Site power (electrical) is available • Protection of cables etc 	M	<ol style="list-style-type: none"> 1. Record the hazard identified 2. Notify builder/supervisor immediately 3. Do not proceed if deemed unsafe
11	Check site for Low overhead power lines	<ul style="list-style-type: none"> • Too close to workers posing injury threat 	M	<ol style="list-style-type: none"> 1. Record the hazard identified 2. Notify builder/supervisor 3. do not proceed with work if deemed unsafe
12	Water	<ul style="list-style-type: none"> • Fresh running water is available during hot working conditions • Hydration of workers • burns • fires 	L	<ol style="list-style-type: none"> 1. Record the hazard identified 2. Notify builder/supervisor
13	Fall protection	<ul style="list-style-type: none"> • Falls from height • check for multiple story • check for steep pitch • Edge protection required 	L	<ol style="list-style-type: none"> 1. Record the hazard identified 2. Notify builder/supervisor 3. Refer code of practice prevention of falls at the workplace 4. Do not proceed if non compliant

JOB SAFETY ANALYSIS: SITE SUPERVISION PRIOR TO TILING

Ref: 16.00

JOB/TASK: SITE SUPERVISION PRIOR TO TILING			DATE: 6-11-09. DATE REVIEWED 04/05/2010	
14	Rubbish bins	<ul style="list-style-type: none"> Full of rubbish 	L	<ol style="list-style-type: none"> Record the hazard identified Notify builder/supervisor Do not proceed if bins found to be full.
15	Trade issues	<ul style="list-style-type: none"> All Neighboring trades, ie plumbing, carpentry is complete 	M	<ol style="list-style-type: none"> Record the hazard identified Notify builder/supervisor Do not proceed if found to be non compliant
16	Site damage	<ul style="list-style-type: none"> Identify any damage sighted 	L	<ol style="list-style-type: none"> Record the hazard identified Notify builder/supervisor Do not proceed if deemed unsafe
17	Inside of building checked	<ul style="list-style-type: none"> Trips/slips Falls cuts Sprains/Strains Impalement 	L	<ol style="list-style-type: none"> Record the hazard identified Notify builder/supervisor Do not proceed if deemed unsafe
18	Complete site safety check prior to sending a tiling contractor to site	<ul style="list-style-type: none"> Record checks are completed, documented and issues noted 	N	<ol style="list-style-type: none"> Record the hazard identified Notify builder/supervisor Do not proceed if deemed unsafe records audited by service manager prior to allocation
19	Leave site			

JOB/TASK: SITE SUPERVISION PRIOR TO TILING	DATE: 6-11-09. DATE REVIEWED 04/05/2010
<p>Approved by:</p> <div style="display: flex; justify-content: space-between; align-items: flex-end; margin-top: 20px;"> <div style="width: 45%;">  _____ Richard Bromley, Divisional Manager </div> <div style="width: 45%; text-align: right;"> DATE: 01/06/2010 </div> </div> <div style="display: flex; justify-content: space-between; align-items: flex-end; margin-top: 20px;"> <div style="width: 45%; text-align: right;">  _____ Rod Fancote, OHS </div> <div style="width: 45%; text-align: left;"> DATE: 01/06/2010 </div> </div>	









I, hereby confirm that I have read and been instructed on the Job Safety Analysis and
(print name)

understand how the safe work / control measures are used in this task.

Signed:

Date:

JOB/TASK: Site Inspection and Roof Tile Maintenance Work to Residential Building			DATE: 6-11-09. REVIEWED 04/05/2010	
PERMITS REQUIRED (PLEASE SPECIFY): blue card, Site safety manual, current drivers license,			WORK COMPLETED BY:	
SITE:			completed by : John Smartt, Graham Vincent, Richard Bromley	
EQUIPMENT/TOOLS REQUIRED: ladder, hammer, trowel, mobile phone, tile cutter, Camera			PERSONAL PROTECTIVE EQUIPMENT REQUIRED:	
			     	
RISK LEVEL H = high M = med L = low N = negligible				
No	JOB/TASK STEP	POTENTIAL HAZARDS	RISK LEVEL	SAFE WORK / CONTROL MEASURES
ROOF TILE MAINTENANCE WORK				
1	Arrive to site	<ul style="list-style-type: none"> Documents to confirm site address Working alone 	N	1. Confirm document for correct address 2. Phone office to log in arrival to site.
2	Site safety assessment <ul style="list-style-type: none"> PPE first aid kit Read on site safety signs 		N	1. Wear high visibility clothing, appropriate footwear in good condition, suncream. 2. Ensure first aid kit is up to date. 3. Ensure you have correct PPE (a) A risk assessment to be done in order to establish hard hat requirement (b) Hard hats to be worn on all mandatory sites

JOB/TASK: Site Inspection and Roof Tile Maintenance Work to Residential Building			DATE: 6-11-09. REVIEWED 04/05/2010	
3	Site inspection for hazards	<ul style="list-style-type: none"> • Trips/slips • Falls • cuts • Sprains/Strains • Impalement • Environmental conditions 	N	<ol style="list-style-type: none"> 1. Complete a site hazard identification sheet to identify hazards 2. Check job perimeter for potential hazards i.e Objects you may fall on 3. Check weather conditions prior to assessment i.e raining, windy, lightning 4. Do NOT get on the roof if the weather is not conducive to safe work practices. 5. 2 story work to be accompanied by another tiler 6. 2 story work refer to falls from height code of practice "Prevention of falls in the workplace".
4	Setting up <ul style="list-style-type: none"> • Signs • Erect ladder 	<ul style="list-style-type: none"> • Warning to others of tiling activity • Risk of fall from ladder 	L	<ol style="list-style-type: none"> 1. Use correct warning signs 2. Ladder to conform to AS/NZS 1892.1. Ladder to be used for access and egress only. Ladder is to extend 1 M past the working platform entrance. Ladder is to be secured. You must maintain a 3 point contact with the ladder at all times
5	Tiling- <ul style="list-style-type: none"> • Inspection of the roof • Loading tiles and removing • changing tiles cutting valleys and hips 	<ul style="list-style-type: none"> • Fall risk • Manual Handling risk of moving materials from the ground to the roof 	M	<ol style="list-style-type: none"> 1. Once on the roof carry a maximum weight that is relative to body strength. (up to a maximum of 4 tiles on shoulder) 2. Use approved mobile steps to carry tiles to the roof or mechanically lift tiles to the roof.
6	Ridging <ul style="list-style-type: none"> • Loading ridges • laying ridges • bedding ridges • pointing ridges 	<ul style="list-style-type: none"> • Manual handling risk of moving materials from the ground to roof 	M	<ol style="list-style-type: none"> 1. Once on the roof carry a maximum weight that is relative to body strength. (up to a maximum of 4 tiles on shoulder) 2. Use approved mobile steps to carry tiles/ridge/bedding/flexible pointing to the roof or 3. mechanically lift tiles to the roof

JOB/TASK: Site Inspection and Roof Tile Maintenance Work to Residential Building			DATE: 6-11-09. REVIEWED 04/05/2010	
7	Roof clean up <ul style="list-style-type: none"> ● Removal of tools ● removal of rubbish 	<ul style="list-style-type: none"> • Manual handling risk • slip trip hazards 	M	1. Lower safely down to the ground level 2. don't carry more than a safe limit across the roof 3. don't proceed if deemed unsafe
8	Site clean up <ul style="list-style-type: none"> ● removal of barracades ● removal of plant and equipment ● removal of signage 	<ul style="list-style-type: none"> • Dangerous debris left lying around 	L	1. Ensure all tools and scrap materials are stored in the vehicle and secured down 2. All rubbish to be deposited in the correct site rubbish location or bins provided.
9	Site exit <ul style="list-style-type: none"> ● Date and sign sticker in meter box 		N	
10	Leave site	<ul style="list-style-type: none"> • Working alone 	N	1. Phone office to log out of site visit

JOB/TASK: Site Inspection and Roof Tile Maintenance Work to Residential Building			DATE: 6-11-09. REVIEWED 04/05/2010	
	SITE INSPECTION ONLY			
1	Arrive to site	<ul style="list-style-type: none"> • Documents to confirm site address • Working alone 	N	1. Confirm document for correct address 2. Phone office to log in arrival to site.
2	Site safety assessment <ul style="list-style-type: none"> • PPE • first aid kit • Read on site safety signs 	<ul style="list-style-type: none"> • Hi visibility clothing • up to date appropriate first aid kit • site specific signs 	N	1. Wear high visibility clothing, appropriate protective footwear, suncream 2. ensure first aid kit is up to date 3. Ensure you have correct PPE (a) A risk assessment to be done in order to establish hard hat requirement (b) Hard hats to be worn on all mandatory sites 4. read and comply with site specific safety signs
3	Site inspection for hazards	<ul style="list-style-type: none"> • Trips/slips • Falls • cuts • Sprains/Strains • Impalement • Environmental conditions 	N	1. Complete a site hazard identification sheet to identify hazards 2. Check job perimeter for potential hazards i.e Objects you may fall on 3. Check weather conditions prior to assessment i.e raining, windy, lightning 4. Do NOT get on the roof if the weather is not conducive to safe work practices.

JOB/TASK: Site Inspection and Roof Tile Maintenance Work to Residential Building			DATE: 6-11-09. REVIEWED 04/05/2010	
4	Setting up <ul style="list-style-type: none"> Erect ladder 	<ul style="list-style-type: none"> Risk of fall from ladder 	L	<ol style="list-style-type: none"> Use approved ladder. Ladder to conform to AS/NZS 1892.1. Ladder to be used for access and egress only. Ladder is to extend 1 M past the working platform entrance. Ladder is to be secured. You must maintain a 3 point contact with the ladder at all times
5	Ascend roof <ul style="list-style-type: none"> conduct visual roofing inspection and document findings take digital photos 	<ul style="list-style-type: none"> Falls from height completion of reports 	L	<ol style="list-style-type: none"> Keep inspection away from the edge of roof Walk slowly and safely only write report in a stationery position away from the edge of the roof 2 story work use a fall arrest system at all times 2 story work to be accompanied by another tiler
6	Descend from roof	<ul style="list-style-type: none"> Fall from ladder 	L	<ol style="list-style-type: none"> Same as step 4.
7	Store equipment on vehicle	<ul style="list-style-type: none"> Equipment falling from vehicle during transit 		<ol style="list-style-type: none"> Secure loads with appropriate tie downs
	Exit the building site	<ul style="list-style-type: none"> Working alone 	L	<ol style="list-style-type: none"> Phone the office to log out of site visit

JOB/TASK: Site Inspection and Roof Tile Maintenance Work to Residential Building	DATE: 6-11-09. REVIEWED 04/05/2010
<p>Approved by:</p> <div style="display: flex; justify-content: space-between; align-items: flex-end; margin-top: 20px;"> <div style="width: 45%;"> <p>_____ Richard Bromley, Divisional Manager</p> </div> <div style="width: 45%;"> <p>_____ Rod Fancote, OHS</p> </div> </div> <div style="display: flex; justify-content: space-between; margin-top: 10px;"> DATE: 01/06/2010 DATE: 01/06/2010 </div>	









I, hereby confirm that I have read and been instructed on the Job Safety Analysis and
(print name)

understand how the safe work / control measures are used in this task.

Signed:

Date:

JOB/TASK: Supervisor checking a roof for payment			DATE: 6-11-09. DATE REVIEWED 04/05/2010	
PERMITS REQUIRED (PLEASE SPECIFY): drivers license, Safety awareness training card				
LOCATION / DEPARTMENT:			Analysis by : Richard Bromley, John Smartt, Rod Fancote,	
EQUIPMENT/TOOLS REQUIRED: digital camera, mobile phone, first aid kit,			PERSONAL PROTECTIVE EQUIPMENT REQUIRED:      	
RISK LEVEL H = high M = med L = low N = negligible				
No	JOB/TASK STEP	POTENTIAL HAZARDS	RISK LEVEL	SAFE WORK / CONTROL MEASURES
STAGE 1 -				
1	Arrive to site	<ul style="list-style-type: none"> Documents to confirm site Empty first aid kit 	L	<ol style="list-style-type: none"> Confirm document for correct address Ensure you have correct PPE <ul style="list-style-type: none"> (a) A risk assessment to be done in order to establish hard hat requirement (b) Hard hats to be worn on all mandatory sites High viz clothing, safety boots, suncream First aid kit refilled
2	Site inspection- Visual walk around recording and taking pictures of the roof	<ul style="list-style-type: none"> Trips/slips Falls cuts Sprains/Strains Impalement Environmental conditions ladder erected incorrectly 	L	<ol style="list-style-type: none"> Complete a site hazard identification sheet to identify hazards Check job perimeter for potential hazards ie Objects you may fall on Check weather conditions prior to assessment ie raining, windy, lightning Do NOT get on the roof if the weather is not conducive to safe work practices. Ladder to conform to AS/NZS 1892.1. Ladder to be used for access and egress only. Ladder is to extend 1 M past the working platform entrance. Ladder is to be secured. You must maintain a 3 point contact with the ladder at all times

JOB SAFETY ANALYSIS: Supervisor Checking a Roof for Payment



Ref: 17.00

JOB/TASK: Supervisor checking a roof for payment			DATE: 6-11-09. DATE REVIEWED 04/05/2010	
3	Ascend roof for inspection	<ul style="list-style-type: none"> Visual check Roof tiling is Compliant to Australian standard 2050-2002 Installation of roof tiles inspect that the roof is free from dangerous debris check all gutters for rubbish 	L	<ol style="list-style-type: none"> Send tiler back to ensure roof compliant Remove dangerous debris from roof
4	Check the site for site damage (exterior of building)	<ul style="list-style-type: none"> Perimeter walk around Trips/slips Falls cuts Sprains/Strains Impalement 	L	<ol style="list-style-type: none"> Record hazards and advise builder/supervisor
5	Check the site for damage and cleanliness(interior of building)	<ul style="list-style-type: none"> Trips/slips Falls cuts Sprains/Strains Impalement 	L	<ol style="list-style-type: none"> Record hazards and advise builder/supervisor Send tiler back to rectify work that is his responsibility immediately
6	Check the site for rubbish piles (separation of timber off cuts)	<ul style="list-style-type: none"> Trips/slips Falls cuts Sprains/Strains Impalement 	L	<ol style="list-style-type: none"> Record hazards and advise builder/supervisor Send tiler back to rectify work that is his responsibility immediately
7	Check location and count roof tile pallets	<ul style="list-style-type: none"> Pallets in the way of other trades 	L	<ol style="list-style-type: none"> Record hazards and advise builder/supervisor if necessary Send tiler back to rectify work that is his responsibility immediately Arrange immediate collection of pallets

JOB SAFETY ANALYSIS: Supervisor Checking a Roof for Payment

Ref: 17.00

JOB/TASK: Supervisor checking a roof for payment			DATE: 6-11-09. DATE REVIEWED 04/05/2010	
8	Check the site for other trade issues that impact on the tiling job e.g. incomplete plumbing	<ul style="list-style-type: none"> Water ingress incomplete tiling 	L	<ol style="list-style-type: none"> Record hazards and advise builder/supervisor Send tiler back to rectify work that is his responsibility immediately or as soon as other trade work complete
9	Installs a sticker in the meter box <ul style="list-style-type: none"> Record date of inspection on the sticker 		N	<ol style="list-style-type: none">
10	Complete relevant safety records		N	<ol style="list-style-type: none"> Records are audited by service manager
11	Exits site	<ul style="list-style-type: none"> Ladder is secure to vehicle 	L	<ol style="list-style-type: none"> Secure down ladder appropriately

JOB/TASK: Supervisor checking a roof for payment	DATE: 6-11-09. DATE REVIEWED 04/05/2010
<p>Approved by:</p> <div style="display: flex; justify-content: space-between; align-items: flex-end; margin-top: 20px;"> <div style="text-align: center;">  _____ Richard Bromley, Divisional Manager </div> <div style="text-align: center;"> <p>DATE: 01/06/2010</p> </div> <div style="text-align: center;">  _____ Rod Fancote, OHS </div> <div style="text-align: center;"> <p>DATE: 01/06/2010</p> </div> </div>	



I, hereby confirm that I have read and been instructed on the Job Safety Analysis and
(print name)

understand how the safe work / control measures are used in this task.

Signed:

Date:

Section
11

Hazardous Materials

11.1 Hazardous Substances	11-2
---------------------------------	------

11.1 Hazardous Substances

The Occupational Safety and Health Regulations 1996 requires employees, main contractors and self-employed persons to obtain and provide information about hazardous substances used in the workplace.

5.11 Employers, main contractors and self-employed persons to obtain and provide information

- (1) If a hazardous substance is to be used at a workplace then a person who, at the workplace, is an employer, the main contractor or a self-employed person must -
 - (a) before, or upon, the first occasion on which the hazardous substance is supplied to the workplace -
 - (i) obtain from the supplier of the hazardous substance an MSDS for the hazardous substance; and
 - (ii) consult with all persons who might be exposed to the hazardous substance at the workplace and the safety method of using the hazardous substance;
 - (b) ensure that the MSDS for the hazardous substance is readily available to any person who might be exposed to the hazardous substance in the workplace; and
 - (c) ensure that no alteration is made to an MSDS except where -
 - (i) the person who is the employer, the main contractor or the self-employed person, as the case requires, is also the person who imported the hazardous substance; and
 - (ii) an overseas document described as an MSDS requires alteration in order to conform with the definition of MSDS in these regulations [r.5.11(1)]

BGC requires that all chemical substances to be used on a building site must have the supporting Material Safety Data Sheet (MSDS). Copies of the MSDS of any chemical substance to be used on a site may be required by the Site Principal.

A full catalogue of MSDS for the chemical substances required by subcontractors is retained by the Safety Manager.

MSDS for commonly used substances follow.



MATERIAL SAFETY DATA SHEET

Concrete Roof Tiles and Roof Tile Accessories

Australia

Harmony Roof Tiles

ABN 62 005 736 005

85 Vulcan Road,
CANNING VALE WA 6155

Tel: (08) 9334 4626

Fax: (08) 9334 4501

Important Notice: This Material Safety Data Sheet (MSDS) is issued by the Supplier in accordance with National Occupational Health and Safety Commission (NOHSC) guidelines. As such, the information in it must not be altered, deleted or added to. The Supplier will issue a new MSDS when there is a change in product specifications and/or NOSHC guidelines/regulations. The Supplier will not accept any responsibility for any changes made to its MSDS by any other person or organisation.

Product name:	Concrete Roof Tile and Roof Tile Accessories
Applicable in:	Australia
Other names:	Not Applicable
Manufacturers' Product Code:	Not Applicable
UN Number:	None Allocated
Dangerous goods class & Subsidiary Risk:	None Allocated
Hazchem Code:	None Allocated
Poisons schedule number:	None Scheduled
Use:	Roofing material for buildings

Physical Description / Properties:

Appearance:	A concrete tile with the exposed top surface coated with a colour and acrylic resin
Boiling Point: (°C)	Not Applicable
Melting Point: (°C)	Not Applicable
Vapour Pressure:	Not Applicable
Specific Gravity:(H₂O=1)	1.9-2.1
Flashpoint:	Not Flammable
Flammability Limits:	Not Flammable
Solubility in water:	Insoluble

Ingredients:

Chemical Name	CAS Number:	Proportion:	Exposure Limits
Hydrated Portland Cement	65997-15-1	<25%	100mg/m ³ TWA Inspirable Dust
Quarts/Quartzitic Sand	14808-60-7	>60%	Crystalline silica (quartz) 0.2 mg/m ³ Respirable Dust
Pigment	-	<10%	
Fatty Acid Soap	-	<1%	
Acrylic Copolymer	-	<1%	
Water	-	<10%	
Distillate	-	<1%	

HEALTH HAZARD INFORMATION

Note: Concrete roofing tiles in their intact state and as delivered do not release airborne dusts, but crystalline silica (quartz) dust may be produced by cutting or grinding and other machining of this product. The dust contains crystalline silica and repeated inhalation of crystalline silica may cause serious illness (see below – Health effects, chronic). Repeated inhalation of crystalline silica may add or multiply the serious health effects caused by tobacco smoking. Concrete dusts, in association with sweat and friction can lead to skin irritation and dermatitis, and the dust may be irritating to the eyes and upper respiratory system.

Acute:

- Swallowed: Unlikely under normal conditions of use, but swallowing dust / fragments may cause irritation of the mouth and throat and may result in abdominal discomfort.
- Eye: The dust and small fragments are irritating to the eyes causing watering and redness and may result in corneal inflammation and ulceration.
- Skin: The product is abrasive. Broken, damaged and cut tiles and fragments may have sharp edges and may cause lacerations. Dust, particularly in association with heat and sweat or rain may irritate the skin result in itching and occasionally a red rash.
- Inhaled: The dust may irritate the nose, throat and lungs, especially in people with upper respiratory tract or chest complaints such as asthma.

Chronic:

- Inhaled: Repeated exposure to the dust may result in increased nasal and respiratory secretions and coughing. Because of the presence of respirable quartz (crystalline silica). Repeated and prolonged exposure to high dust levels may result in silicosis and an increased risk of lung cancer. In 1997 the International Agency for Research on Cancer (IARC) evaluate crystalline silica as “Group 1 – Carcinogenic to humans”.
- Skin: Repeated skin contact with the dust may result in chronic skin irritation and dermatitis.

First Aid:

- Swallowed: Give plenty of water to drink to flush mouth and throat and do not induce vomiting.
- Eye: Flush thoroughly with flowing water for at least 15 minutes. If symptoms, irritation or redness persists, seek medical attention.
- Skin: Flush dust from skin with running water. Wash with soap and water. Clean abrasions and cuts and apply a sterile dressing. Seek medical attention if there is any rash or redness of the skin.
- Inhaled: Remove to fresh air. Seek medical attention in any respiratory symptoms.

First Aid Facilities: Eye wash station and washing facilities.

Advice to Doctor: Treat symptomatically.

PRECAUTIONS FOR USE

Exposure Standards: NOHSC Exposure Standard:

There is no specific standard for concrete tiles and accessories. Exposure of persons to concrete dust should be kept as low as practicable and the exposure standard for respirable crystalline silica must be observed.

Respirable crystalline silica: 0.2 mg/m³ time-weighted average (TWA).

Engineering Controls: During the laying of the product, no significant dust problem should occur. Cutting of roof tiles using powered tools should be carried out in a well ventilated area using wet processes, or using tools fitted with dust extraction. Note that respirable dust particles are invisible and may still be present even when wet processes or dust extraction are used. Work areas should be cleaned regularly (at least daily) and dust removed by vacuum cleaners fitted with HEPA filters, by sweeping after dampening or by hosing if approved wastewater collection systems are available.

Personal Protection:

Skin Protection: Loose comfortable clothing should be worn. Direct skin contact should be avoided by wearing long sleeved shirts and long trousers, industrial aprons and shoulder pads, a cap or hat, and light weight leather or equivalent gloves (AS/NZS 2161). To minimise risk of exposure to dust remove any contaminated work clothing at the end of the shift and wash them separately from other clothing.

After handling tiles, wash hands with mild soap and water. Do not scratch or rub the skin if it becomes irritated.

Eye Protection: Ventilated non-fogging dust resistant goggles (AS/NZS 1337) should be worn when working in a dusty environment or when working overhead.

Respiratory Protection: A class P1 or P2 replaceable filter or disposable half face-piece particulates respirator should be worn when using powered tools for wet or dry cutting, or other machining, or when dust is generated by other processes. Respirators should comply with AS/NZS 1716 and be selected, used and maintained in accordance with AS/NZS 1715.

Personal Hygiene: Wash face and hands before eating or drinking after handling this product.

Flammability: These products are non-flammable.

Fragility: The load capacity of tiles is low. When working on a tiled area, step only on that part of the tile directly supported by a batten.

SAFE HANDLING INFORMATION

Storage & Transport: No special storage or transportation requirements apply.

Spills and Disposal: Product should be disposed of as a solid fill trade waste at a registered site.

Fire/Explosion Hazard: None

CONTACT POINT

For further information about this product, please contact the following:
Harmony Roof Tiles, 85 Vulcan Road, Canning Vale WA 6155, Australia
Telephone: +61 8 9334 4626 Facsimile: +61 8 9334 4501

DISCLAIMER

Whilst the information contained in this document is based on data which, to the best of our knowledge, was accurate and reliable at the time of preparation, no responsibility can be accepted by us for errors and omissions. The provision of this information should not be construed as a recommendation to use any of our products in violation of any patent rights or in breach of any statute or regulation. Users are advised to make their own determination as to the suitability of this information in relation to their particular purposes and specific circumstances. Since the information contained in this document may be applied under conditions beyond our control, no responsibility can be accepted by us for any loss or damage caused by any person acting or refraining from action as a result of this information.

Issue date: 28.10.2013



Material Safety Data Sheet

GREY CEMENT

Statement of Hazardous Nature

This product is classified as hazardous according to criteria of Worksafe Australia

BGC Cement
77 Vulcan Road
Canning Vale
Western Australia
Telephone: (08 9334 4555

Product Name	BUILDERS CHOICE® Grey Cement
Other Names	General Purpose Grey Cement, GP Grey Cement, Ordinary Portland Cement, Hydraulic Cement
Manufacturer's Product Codes	GP20
U.N. Number	None allocated
CAS Number	<i>See Physical Description below</i>
Dangerous Goods Class	None allocated
Hazchem Code	None allocated
Poisons Schedule	Not scheduled
Uses	Grey Cement is used in a wide range of applications including concreting, mortaring and rendering.
PHYSICAL PROPERTIES	
Appearance	A fine, grey powder.
Boiling Point / Melt Point	Not applicable
Vapour Pressure	Not applicable
Per Cent Volatiles	Not applicable
Specific Gravity	3.0 to 3.4
Flash Point	Not applicable
Flammability/Combustibility	Non-flammable; Non-combustible
Autoignition Temperature	Not applicable
Other Properties	Not explosive. No odour. Hardens on mixing with water.

PHYSICAL DESCRIPTION

Physical characteristics of cements are that they are alkaline in nature. The pH of water solution (slurry of cements can be as high as 13.5

COMPONENT	CAS NUMBER	PROPORTION (%)
Type GP Cement	65997-15-1	100

HEALTH HAZARD INFORMATION

HEALTH EFFECTS

Swallowed: Mild corrosive action.

Eye: Short-term exposure - irritating. Long-term exposure - irritating may cause inflammation of the cornea.

Skin: Short-term exposure - irritating. Long-term exposure - wet cement, especially as an ingredient in plastic (un-hardened) concrete, mortar or slurry, is slightly caustic and can dry the skin. There are also trace amounts of water-soluble hexavalent chromium present in cement (0-20ppm) and in some individuals may cause allergic dermatitis.

Inhaled: Short-term exposure - irritating. Long-term exposure - repeated inhalation of cement dust containing crystalline silica can cause bronchitis or pneumoconiosis of the lungs. It is recommended that all storage and work areas should be smoke free zones. Inhalation of high levels of cement dust may result in severe inflammation of the small airways of the lung and asthma-like symptoms.

FIRST AID

Swallowed: Brush dry material from face and wash with copious amounts of clean water. Do not induce vomiting; give water containing sugar or milk to drink. Seek medical attention.

Skin: Wash thoroughly with clean running water and mild soap. A shower may be required.

Eyes: Immediately irrigate with copious amounts of clean running water for at least 15 minutes. Do not rub eyes. Seek medical attention.

Inhaled: Move to outside fresh air area, and seek medical attention if effects persist.

Advice to Doctor: Contact a poisons information centre. For Western Australia, telephone 13 11 26

PRECAUTIONS FOR USE

Exposure Limits: Cement is classified as an inert nuisance dust.

TLV: 5mg/m³ for respirable dust and 10mg/m³ for total dust.

Wet cement, particularly in plastic (un-hardened) concrete, mortar or slurry, can dry the skin and cause alkali burns. Continued exposure, for individuals who are allergic to chromium, may cause severe allergic dermatitis.

Ventilation: Avoid generating dust. Suitable means of dust collection or suppression should be applied as necessary in the working environment, to maintain acceptable levels of air-borne dust. For bulk deliveries, closed pumping systems are recommended. For bagged deliveries, follow personal protection instructions below if no local exhaust ventilation is available. Work areas should be cleaned regularly by vacuuming. Persons with a history of respiratory illness or reduced pulmonary function should avoid work places with high dust levels.

Personal Protection:

Skin: - Wear loose comfortable clothing. Wash work clothes regularly. Apply barrier cream to hands or wear cotton or light duty leather gloves or equivalent (AS 2161).

Eyes: - Safety spectacles with side shields or safety goggles (dust resistant: AS/NZS 1336) should be worn if dust likely to be generated.

Respiratory: - None required if engineering and handling controls are adequate. If dust is generated wear a suitable P1 or P2 particulate respirator (AS/NZS 1715). Use only respirators that bear the Australian Standards mark and are fitted correctly. Note that persons with facial hair will have difficulty in obtaining a satisfactory face seal. For alternatives see AS/NZS 1715: Selection, use and maintenance of respiratory protective devices.

Flammability/Combustibility: Cement is non-flammable and non-combustible.

SAFE HANDLING INFORMATION

Storage and Handling: Store in a dry place. Cement should be stored away from moisture, steam, acid or acid fumes, in containers that prevent ingress of moisture, as this will cause it to set and hardened in storage. Concrete or steel silos, FIBC's (bulker bags) lined with plastic, or plastic-lined paper sacks are the most usual forms of storage. Transportation is usually in bulk by means of pneumatic rail or road tankers, in FIBC's or in paper sacks on pallets.

Spills and Disposals: Spills may be cleaned up by any dry method such as broom, shovel or vacuum device, with care taken to minimise dust evolution into the worker environment. Clean up personnel should wear full cover clothing, gloves, boots, dust masks and goggles. Carefully dispose of excess product and packaging by collecting for disposal as a trade waste in accordance with local authority guidelines.

CONTACT POINT: BGC Cement (08) 9334 4555
BGC Cemtech (08) 9334 4548
77 Vulcan Road
Canning Vale
Western Australia

The information in this document is believed to be accurate at the date of publication. Please check the currency of this MSDS by contacting (08) 9334 4555.

The provision of this information should not be construed as a recommendation to use this product in violation of any patent rights or in breach of any statute or regulation. Users are advised to make their own determination as to the suitability of this information in relation to their particular purposes and specific circumstances. Users should read this MSDS and consider the information in the context of how the product will be handled and used in the workplace and in conjunction with other substances or products.

Issue Date: November 2004

Re-Confirmed: August 2009

STATEMENT OF HAZARDOUS NATURE

Not hazardous according to criteria of Worksafe Australia.

COMPANY DETAILS

Company	See your wood products supplier for manufacturers' details. Koppers Arch manufacture wood preservatives but do not supply the treated wood products. Wood products treated with Koppers Arch preservatives are supplied by many independent producers throughout Australia and New Zealand. This information is provided in good faith for the users of the treated wood products. However your supplier should confirm that the wood products supplied do contain Koppers Arch preservative and are appropriately described under this MSDS. If in doubt your supplier should provide their own MSDS.
Address	Supplier to provide
Telephone Number	Supplier to provide
Fax	Supplier to provide
Emergency Tel Number	Supplier to provide

IDENTIFICATION

Product Name	VACSOL T TREATED TIMBER
UN Number	Not applicable
Dangerous Goods Class	Not applicable
Hazchem Code	Not applicable
Poisons Schedule	Not applicable
Uses	Vacsol T treatment is used to protect timber from attack by termites and other insects. The treated timber is used for interior building and structural applications in above ground situations. Vacsol T treatment is not suitable for timber that will be used in exterior ground contact hazard situations.

Physical Description /Properties

Appearance & Odour	Sawn timber appearance with a slight pale yellow colouration. May have an oily organic odour fresh after treatment.
Specific Gravity	Typically 450 - 650 kg/m ³ depending on timber species and grade.
Flashpoint	Not applicable
Flammability Limits	Not applicable (for solvent - LEL 0.8%, UEL 6.0%)
Solubility in water	Insoluble
Auto-ignition Temperature	265 °C
Volatile content	Not determined

Ingredients

	Chemical Name	CAS Number	Proportion % w/w
Active ingredient/s	Commercial timbers such as radiata pine, slash pine, hoop pine etc. treated by vacuum/pressure impregnation method. *Permethrin 25:75 #Residual solvent (aliphatic hydrocarbons)	Not applicable 52645-53-1 64742-82-1	<98 <1 <10

* Actual levels from piece to piece may vary depending on the application intended and differences in the timber itself.

The level of residual solvent in the timber will vary considerably depending on the length of time after the treatment and the drying conditions. Levels of up to 10% by weight may be expected immediately after treatment however this falls to negligible levels within a few days at ambient conditions once the solvent is allowed to dry.

HEALTH HAZARD INFORMATION

Health Effects

Acute

Swallowed Wood fibres may cause abdominal pain, nausea or diarrhoea. Unlikely to be a significant route of over-exposure.

Eye May be an irritant. May cause conjunctivitis and dryness.

Skin May cause skin irritation. Contact with skin may result in allergic dermatitis.

Inhaled Wood dust may cause breathing difficulties. May irritate the mucous membranes of the upper respiratory tract. Inhalation of solvent vapours may cause headache, dizziness, nausea and confusion.

Chronic Wood dust may cause skin irritation and breathing difficulties. May aggravate asthma, eye infections or affect wearing of contact lenses. Exposure to air borne wood dust over long periods of time has been associated with the development of nasal cancer.

Once the treatment is dry, wood working and wood dust are not expected to be routes of overexposure to the active constituent or the solvent. In general, studies of wood workers using treated timbers have not shown increased risks of cancer or other health problems over wood workers using untreated timbers.

First Aid

Swallowed Do not induce vomiting. Give a glass of water. Seek medical attention.

Eye Hold eyes open and flush with plenty of water. If irritation or pain persists, seek medical attention.

Skin Wash affected area with soap and water.

Inhaled Remove affected person to fresh air.

First Aid Facilities Eye wash, hand wash, bandages and antiseptic.

Advice to Doctor

Treat symptomatically. Regular medical surveillance for skin and systemic effects is necessary for persons handling wet treated timber or who work in the treatment plant. Note: Health effects of exposure to untreated timber (dust/shavings) may be the same for dry treated timber.

PRECAUTIONS FOR USE

Exposure Standards Exposure limit standards for some of the constituents of this preparation are as follows:

<u>Constituent:</u>	<u>mg/m³ TWA</u>
Aliphatic hydrocarbons	480 (for turpentine)
Permethrin 25:75	See below
Wood dust (hardwoods)	1.0
Wood dust (softwoods)	5.0

Note: An exposure standard for permethrin has not been set. However, an exposure standard (TWA) of 5mg/m³ has been allocated for pyrethrum (or pyrethrins).

Engineering Controls Mechanical (general) ventilation is recommended if working in enclosed spaces or where wood dust is generated.

PRECAUTIONS FOR USE continued

Personal Protection For normal work on dry treated wood a dust mask and goggles should be worn as protection from wood dust when machining or sawing. Soft leather or cotton gloves should be worn to protect against splinters and cuts. Use good hygiene practices such as washing hands after handling timber and before eating, drinking and smoking. When working with timber wet immediately after treatment (before fixation), wear PVC or rubber gloves, an impervious work apron and work shoes. Wash hands and arms before eating, drinking, smoking or using the toilet and at the end of the day. Launder work clothes separately from the household laundry. Some individuals may experience some sensitisation or skin irritation from contact with the treated wood. The treatment solution itself may be irritating to the eyes and skin.

SAFE HANDLING INFORMATION

Storage and Transport Non-hazardous once timber is dried and chemical elements "fixed". treated timber should be held on the treatment plant premises for a sufficient period (at least two days) to ensure surface dryness and fixation of the preservative. Storage areas should be well ventilated while the timber is drying after treatment. Tests have shown that Vacsol T treated timber is not significantly more flammable than untreated timber after the solvent has evaporated. Avoid handling or sawing freshly treated wet timber.

Spills and Disposal No special clean up procedure required. Vacsol T treated wood waste is not a hazardous material. Dispose of treated wood waste in a normal landfill tip in accordance with local and state regulations. Do not use as cooking, BBQ or home heating fuel. Burning the wood waste may be done in industrial incinerators, open fires and other situations away from occupied areas, foodstuffs or animals. Avoid breathing the combustion fumes and bury any ash in approved landfill in accordance with local and state regulations.

Fire/Explosion Hazard Vacsol treatment does not contribute to increased flammability or energy release from the wood once dry after treatment. During combustion treated wood may emit toxic vapours (carbon dioxide, carbon monoxide, smoke). Wood dusts may form explosive mixtures with air. Full protective clothing and self-contained breathing apparatus should be worn for fire fighting. Extinguish fire with water, fog, foam, carbon dioxide or dry chemical. Disposed of ash and burnt waste in approved landfill in accordance with local and state regulations.

OTHER INFORMATION

Product Source **See your wood products supplier for manufacturers' details.**
Koppers Arch manufacture wood preservatives but do not supply the treated wood products. Wood products treated with Koppers Arch preservatives are supplied by many independent producers throughout Australia and New Zealand. This information is provided in good faith for the users of the treated wood products. However your supplier should confirm that the wood products supplied do contain Koppers Arch preservative and are appropriately described under this MSDS. If in doubt your supplier should provide their own MSDS.

Environmental
Protection

The preservative is toxic to fish and wildlife but treated timber is not considered a hazard as the preservative becomes fixed onto the timber. However timber treated with the preservative should not be used in situations where leaching is enhanced.

OTHER INFORMATION continued

Animal Toxicity Data

Animal toxicity data is not available for the product. Toxicity data for some of the constituents are as follows:

Permethrin

LD50 oral, male rat 1479 mg/kg

LD50 dermal, male rabbit > 5000mg/kg

LC50 (4 day) by inhalation (aerosol), rat >20 mg/m³

Chromosome aberration test in vivo negative

Ames test negative

Solvent (based on testing of similar products) -

Oral Toxicity, rat = slightly toxic

Dermal Toxicity, rabbit = slightly toxic

Genetic Toxicity, negative

Reproductive Toxicity, rat = negative (up to 400 ppm).

Ecotoxicity Data

Ecotoxicity data for permethrin 25:75:

LC50 (96 hour), rainbow trout - 9 g/L

LC50 (96 hour), catfish - 1 g/L

LC50 (96 hour), mosquito fish - 15 g/L

LC50, largemouth bass - 8.5 g/L

CONTACT POINT

Technical Manager,

Koppers Arch Wood Protection (Aust) Pty Limited, Station St, Trentham, 3458, Vic.

Tel (03) 5424 1350, Fax (03) 5424 1288.

Material Safety Data Sheet



Based on available information, not classified as hazardous according to criteria of NOHSC.

Not classified as Dangerous Goods by the criteria of the Australian Dangerous Goods Code (ADG Code) for transport by Road and Rail.

1. Identification of the substance/preparation and of the company/undertaking

Product Name: 194-85749 ROOF PRIMER

Supplier: Dulux Australia
ABN: 004 117 828
Street Address: McNaughton Road,
Clayton South, Victoria
Australia
Telephone Number: +61 3 9263 5678
Facsimile: +61 3 9543 4346

Emergency Telephone: 1 800 033 111 (ALL HOURS)

2. Composition/information on ingredients

Product Description: Surface coating. Milk liquid with an ammoniacal odour.

Synthetic polymer(s)	30-60%	-
Water	30-60%	-
7732-18-5		
Other ingredients determined not to be hazardous	to 100%	-

3. Hazards identification

Poisons Schedule: None allocated.

4. First-aid measures

If poisoning occurs, contact a doctor or Poisons Information Centre (Phone Australia 131 126; New Zealand 03 474 7000).

Inhalation: Remove victim from area of exposure - avoid becoming a casualty. Remove contaminated clothing and loosen remaining clothing. Allow patient to assume most comfortable position and keep warm. Keep at rest until fully recovered. Seek medical advice if effects persist.

Skin Contact: If skin contact occurs, remove contaminated clothing and wash skin. If irritation occurs seek medical advice.

Eye Contact: If in eyes, wash out immediately with water. In all cases of eye contamination it is a sensible precaution to seek medical advice.

Ingestion: Rinse mouth with water. If swallowed, do NOT induce vomiting. Give a glass of water. Seek immediate medical assistance.

Notes to physician: Treat symptomatically.

5. Fire-fighting measures

Specific Hazards: Non-combustible material.

Product Name: 194-85749 ROOF PRIMER
Substance No: 000013933805

Issued: 30/01/2002 **Version:** 2

Material Safety Data Sheet



Fire-fighting advice: Not combustible, however following evaporation of the water component of the material, the residual material can burn if ignited. Fire fighters to wear self-contained breathing apparatus and suitable protective clothing if risk of exposure to vapour or products of combustion.

Suitable Extinguishing Media: Not combustible, however, if material is involved in a fire use: Water fog (or if unavailable fine water spray), foam, dry agent (carbon dioxide, dry chemical powder).

6. Accidental release measures

Wear protective equipment to prevent skin and eye contact. Contain - prevent run off into drains and waterways. Use absorbent (soil, sand or other inert material). Collect and seal in properly labelled containers or drums for disposal. If contamination of sewers or waterways has occurred advise local emergency services.

7. Handling and storage

Handling advice: Avoid skin and eye contact.

Storage advice: Store in cool place and out of direct sunlight. Store away from incompatible materials described in Section 10. Keep containers closed when not in use - check regularly for leaks.

This material is a Scheduled Poison S6 and must be stored, maintained and used in accordance with the relevant regulations.

8. Exposure controls/personal protection

Occupational Exposure Limits:

No value assigned for this specific material by the National Occupational Health and Safety Commission. However, Exposure Standard(s) for constituent(s):

Oxalic acid: 8hr TWA = 1 mg/m³, 15 min STEL = 2 mg/m³

As published by the National Occupational Health and Safety Commission.

TWA - The time-weighted average airborne concentration over an eight-hour working day, for a five-day working week over an entire working life.

STEL (Short Term Exposure Limit) – the average airborne concentration over a 15 minute period which should not be exceeded at any time during a normal eight hour work day. According to current knowledge this concentration should neither impair the health or, not cause undue discomfort to, nearly all workers.

These Exposure Standards are guides to be used in the control of occupational health hazards. All atmospheric contamination should be kept to as low a level as is workable. These exposure standards should not be used as fine dividing lines between safe and dangerous concentrations of chemicals. They are not a measure of relative toxicity.

Engineering Control Measures:

Use in well ventilated areas. Keep containers closed when not in use.

Personal Protective Equipment:

Orica Personal Protection Guide No. 1, 1998: B - OVERALLS, SAFETY SHOES, SAFETY GLASSES, GLOVES (Short).

Wear overalls, safety glasses and impervious gloves. Always wash hands before smoking, eating, drinking or using the toilet. Wash contaminated clothing and other protective equipment before storage or re-use.

If risk of inhalation exists, wear organic vapour/particulate respirator meeting the requirements of AS/NZS 1715 and AS/NZS 1716.

Product Name: 194-85749 ROOF PRIMER
Substance No: 000013933805

Issued: 30/01/2002 **Version:** 2

Material Safety Data Sheet



9. Physical and chemical properties

Physical state:	Liquid
Colour:	Milky
Odour:	Ammoniacal
Solubility:	Miscible with water.
Specific Gravity:	1.06@20°C
Relative Vapour Density (air=1):	N Av
Vapour Pressure (20 °C):	N Av
Flash Point (°C):	N App
Flammability Limits (%):	N App
Autoignition Temperature (°C):	N App
% Volatile by Volume:	N Av
Solubility in water (g/L):	Complete
Melting Point/Range (°C):	N App
Boiling Point/Range (°C):	100(water)
Decomposition Point (°C):	N Av
pH:	8-9
Viscosity:	N Av
Evaporation Rate:	N Av

10. Stability and reactivity

Stability: No information available.

11. Toxicological information

No adverse health effects expected if the product is handled in accordance with this Safety Data Sheet and the product label. Symptoms or effects that may arise if the product is mishandled and overexposure occurs are:

Ingestion: No adverse effects expected, however, large amounts may cause nausea and vomiting.

Eye contact: May be an eye irritant.

Skin contact: Contact with skin may result in irritation.

Inhalation: Where this material is used in a poorly ventilated area, at elevated temperatures or in confined spaces, vapour may cause irritation to mucous membranes of the respiratory tract, headache and nausea.

Long Term Effects:

No information available for the product.

Toxicological Data:

No LD50 data available for the product.

The components in the proportions present are not considered to present a hazard under conditions of good occupational work practice.

12. Ecotoxicological information

Avoid contaminating waterways.

13. Disposal considerations

Refer to Waste Management Authority. Dispose of material through a licensed waste contractor. Normally suitable for disposal at approved land waste site.

14. Transport information

Product Name: 194-85749 ROOF PRIMER
Substance No: 000013933805

Issued:

30/01/2002

Version:

2

Material Safety Data Sheet



Road and Rail Transport

Not classified as Dangerous Goods by the criteria of the Australian Dangerous Goods Code (ADG Code) for transport by Road and Rail.

Marine Transport

Not classified as Dangerous Goods by the criteria of the International Maritime Dangerous Goods Code (IMDG Code) for transport by sea.

Air Transport

Not classified as Dangerous Goods by the criteria of the International Air Transport Association (IATA) Dangerous Goods Regulations for transport by air.

15. Regulatory information

Classification: Based on available information, not classified as hazardous according to criteria of NOHSC.

Poisons Schedule: None allocated.

All the constituents of this material are listed on the Australian Inventory of Chemical Substances (AICS).

16. Other information

This material safety data sheet has been prepared by SH&E Shared Services, Orica.

Reason(s) for Issue:

5 Yearly Revised Primary MSDS

This MSDS summarises to our best knowledge at the date of issue, the chemical health and safety hazards of the material and general guidance on how to safely handle the material in the workplace. Since Orica Limited cannot anticipate or control the conditions under which the product may be used, each user must, prior to usage, assess and control the risks arising from its use of the material.

If clarification or further information is needed, the user should contact their Orica representative or Orica Limited at the contact details on page 1.

Orica Limited's responsibility for the material as sold is subject to the terms and conditions of sale, a copy of which is available upon request.

Product Name: 194-85749 ROOF PRIMER
Substance No: 000013933805

Issued: 30/01/2002 **Version:** 2

Material Safety Data Sheet



Based on available information, not classified as hazardous according to criteria of NOHSC.

Not classified as Dangerous Goods by the criteria of the Australian Dangerous Goods Code (ADG Code) for transport by Road and Rail.

1. Identification of the substance/preparation and of the company/undertaking

Product Name: 194-LINE ACRATEX 962 ROOF MEMBRANE

Supplier: Dulux Australia
ABN: 004 117 828
Street Address: McNaughton Road,
Clayton South, Victoria
Australia
Telephone Number: +61 3 9263 5678
Facsimile: +61 3 9543 4346

Emergency Telephone: 1 800 033 111 (ALL HOURS)

2. Composition/information on ingredients

Product Description: Surface coating. Coloured viscous liquid. Applied by brush, roller or spray.

Components / CAS Number	Proportion	Risk Phrases
Synthetic polymer(s)	30-60%	-
-		
Water	30-60%	Non hazardous
7732-18-5		
Pigments	30-60%	-
-		
Ingredients determined not to be hazardous	to 100%	-
-		

3. Hazards identification

Poisons Schedule: None allocated.

4. First-aid measures

Inhalation: Remove victim from area of exposure - avoid becoming a casualty. Remove contaminated clothing and loosen remaining clothing. Allow patient to assume most comfortable position and keep warm. Keep at rest until fully recovered. Seek medical advice if effects persist.

Skin Contact: If skin contact occurs, remove contaminated clothing and wash skin with running water. If irritation occurs seek medical advice.

Eye Contact: If in eyes, wash out immediately with water. In all cases of eye contamination it is a sensible precaution to seek medical advice.

Ingestion: Rinse mouth with water. If swallowed, give a glass of water to drink. If vomiting occurs give further

Product Name: 194-LINE ACRATEX 962 ROOF MEMBRANE
Substance No: 000000010101

Issued:

04/07/2001

Version:

1

Material Safety Data Sheet



water. Seek medical assistance.
Notes to physician: Treat symptomatically.

5. Fire-fighting measures

Specific Hazards: Non-combustible material.
Fire-fighting advice: Not combustible, however following evaporation of the water component of the material, the residual material can burn if ignited. Fire fighters to wear self-contained breathing apparatus and suitable protective clothing if risk of exposure to vapour or products of combustion.

Suitable Extinguishing Media: Not combustible, however, if material is involved in a fire use: Water fog (or if unavailable fine water spray), foam, dry agent (carbon dioxide, dry chemical powder).

6. Accidental release measures

Slippery when spilt. Avoid accidents, clean up immediately. Wear protective equipment to prevent skin and eye contact. Contain - prevent run off into drains and waterways. Use absorbent (soil, sand or other inert material). Collect and seal in properly labelled containers or drums for disposal. If contamination of sewers or waterways has occurred advise local emergency services.

7. Handling and storage

Handling advice: Avoid eye contact and repeated or prolonged skin contact.

Storage advice: Store in cool place and out of direct sunlight. Keep containers closed when not in use - check regularly for leaks.

8. Exposure controls/personal protection

Occupational Exposure Limits:
No value assigned for this specific material by the National Occupational Health and Safety Commission.

Engineering Control Measures:
Provide adequate ventilation. If using indoors, keep windows and doors open during use. Keep containers closed when not in use.

Personal Protective Equipment:
Orica Personal Protection Guide No. 1, 1998: B - OVERALLS, SAFETY SHOES, SAFETY GLASSES, GLOVES.

Wear overalls, safety glasses and impervious gloves. Always wash hands before smoking, eating, drinking or using the toilet. Wash contaminated clothing and other protective equipment before storage or re-use.
If risk of inhalation exists, wear organic vapour/particulate respirator meeting the requirements of AS/NZS 1715 and AS/NZS 1716.

9. Physical and chemical properties

Product Name: 194-LINE ACRATEX 962 ROOF MEMBRANE
Substance No: 000000010101

Issued:

04/07/2001

Version:

1

Material Safety Data Sheet



Physical state:	Viscous liquid
Colour:	Coloured
Solubility:	Miscible with water.
Specific Gravity:	1-1.9@20°C
Relative Vapour Density (air=1):	>1
Vapour Pressure (20 °C):	N Av
Flash Point (°C):	N App
Flammability Limits (%):	N App
Autoignition Temperature (°C):	N App
% Volatile by Volume:	N Av
Solubility in water (g/L):	Complete
Melting Point/Range (°C):	N App
Boiling Point/Range (°C):	100(water)
Decomposition Point (°C):	N Av
pH:	N Av
Viscosity:	N Av
Evaporation Rate:	N Av

10. Stability and reactivity

Stability: No information available.

11. Toxicological information

No adverse health effects expected if the product is handled in accordance with this Safety Data Sheet and the product label. Symptoms or effects that may arise if the product is mishandled and overexposure occurs are:

Ingestion: No adverse effects expected, however large amounts may cause nausea and vomiting.
Eye contact: May be an eye irritant.
Skin contact: Contact with skin may result in irritation.
Inhalation: Where this material is used in a poorly ventilated area, at elevated temperatures or in confined spaces, vapour may cause irritation to mucous membranes of the respiratory tract, headache and nausea.

Long Term Effects:

No information available for the product.

Toxicological Data:

No LD50 data available for the product.

The components in the proportions present are not considered to present a hazard under conditions of good occupational work practice.

12. Ecotoxicological information

Avoid contaminating waterways.

Product Name: 194-LINE ACRATEX 962 ROOF MEMBRANE
Substance No: 000000010101

Issued:

04/07/2001

Version:

1

Material Safety Data Sheet



13. Disposal considerations

Refer to Waste Management Authority. Dispose of material through a licensed waste contractor. Normally suitable for disposal at approved land waste site.

14. Transport information

Road and Rail Transport

Not classified as Dangerous Goods by the criteria of the Australian Dangerous Goods Code (ADG Code) for transport by Road and Rail.

Marine Transport

Not classified as Dangerous Goods by the criteria of the International Maritime Dangerous Goods Code (IMDG Code) for transport by sea.

Air Transport

Not classified as Dangerous Goods by the criteria of the International Air Transport Association (IATA) Dangerous Goods Regulations for transport by air.

15. Regulatory information

Classification: Based on available information, not classified as hazardous according to criteria of NOHSC.
Poisons Schedule: None allocated.

All the constituents of this material are listed on the Australian Inventory of Chemical Substances (AICS).

16. Other information

This material safety data sheet has been prepared by SH&E Shared Services, Orica.

Reason(s) for Issue:
Revised Primary MSDS

This MSDS summarises to our best knowledge at the date of issue, the chemical health and safety hazards of the material and general guidance on how to safely handle the material in the workplace. Since Orica Limited cannot anticipate or control the conditions under which the product may be used, each user must, prior to usage, assess and control the risks arising from its use of the material.

If clarification or further information is needed, the user should contact their Orica representative or Orica Limited at the contact details on page 1.

Product Name: 194-LINE ACRATEX 962 ROOF MEMBRANE
Substance No: 000000010101

Issued:

04/07/2001

Version:

1

Material Safety Data Sheet



Orica Limited's responsibility for the material as sold is subject to the terms and conditions of sale, a copy of which is available upon request.

Product Name: 194-LINE ACRATEX 962 ROOF MEMBRANE
Substance No: 000000010101

Issued:

04/07/2001

Version:

1



WA PTY LTD

Excellence in Product and Service

Material Data Sheet: OZ FLEX FLEXIBLE POINTING

PRODUCT INFORMATION:

Product Name: OzFlex Flexible Pointing

UN Number: None Allocated

Dangerous Goods Class: None Allocated

Subsidiary Risk: None Allocated

Hazchem Code: None Allocated

Poisons schedule number: Not Scheduled

Use: A flexible, acrylic-based mixture used for pointing roof tiles.

Physical Description/Properties:

Appearance: Coloured mixture with the consistency of wet sand

Odour: Slight acrylic odour

pH: 8-9

Melting Point: Non-volatile

Vapour Pressure: Non-volatile

Specific Gravity: 1.35 (approximately)
(water = 1)

Solubility in water: Miscible

Molecular weight: Not determined

Auto ignition temperature: Does not auto ignite

Ingredients:

Chemical Entity

Inert fillers

Acrylic Emulsion

Catalyst

Preservative

Pigment

Anti-foam

Water

DISCLAIMER

These suggestions and data are based on information we believe to be reliable. They are offered in good faith, but without guarantee, as conditions and methods of use of our products are beyond our control. We recommend that the prospective user determine the suitability of our materials and suggestions before adopting them on a commercial scale

27/4/04

7 KEEGAN STREET O'CONNOR WA 6163

TEL (08) 9337 4107 FAX (08) 9337 3300

Web: <http://www.ozflex.com.au> E-mail: info@ozflex.com.au

ABN 13104163313



Material Data Sheet: OZ FLEX FLEXIBLE POINTING (cont.)

HAZARD INFORMATION:

HEALTH EFFECTS: Acute

Swallowed: Unlikely under normal conditions of use, but swallowing the Pointing mixture will result in abdominal discomfort, nausea And diarrhea.

Eye: The pointing mixture particularly in association with heat and Sweat, may cause irritation

Skin: The pointing mixture particularly in association with heat and Sweat, may cause irritation

Inhaled: Inhalation is unlikely. The slight odour may irritate some people

Health Effects: Chronic
These are no known long-term health effects, though prolonged And repeated skin contact may result in chronic skin irritation

FIRST AID:

Swallowed: Give copious amounts of milk or water to drink

Eye: Flush thoroughly with flowing water for at least 15 minutes. If Symptoms persist, seek medical attention.

Skin: Wash thoroughly with soap and water.

Inhaled: Remove to fresh air.

Advice to Doctor: Treat symptomatically

DISCLAIMER

These suggestions and data are based on information we believe to be reliable. They are offered in good faith, but without guarantee, as conditions and methods of use of our products are beyond our control. We recommend that the prospective user determine the suitability of our materials and suggestions before adopting them on a commercial scale

27/4/04

7 KEEGAN STREET O'CONNOR WA 6163
TEL (08) 9337 4107 FAX (08) 9337 3300
Web: <http://www.ozflex.com.au> E-mail: info@ozflex.com.au
ABN 13104163313



Material Data Sheet: OZ FLEX FLEXIBLE POINTING (cont.)

PRECAUTIONS FOR USE:

- Exposure Standards:** Worksafe Australia Exposure Standard: There is no specific standard for Oz Flex Flexible Pointing. Recommendation: keep exposure to all materials as low as practicable.
- Engineering Controls:** Work practices should aim to minimize prolonged skin exposure to the Pointing Mixture. Work areas should be cleaned regularly by wet sweeping or vacuuming.
- Personal Protection Equipment:** Engineering controls and work practices should aim to minimize direct contact with the pointing mixture and the use of personal protection equipment is a desirable precaution.
- Skin Protection:** Loose comfortable clothing should be worn. Direct skin contact should be minimized by long sleeved shirts and long trousers, a Cap or hat, and gloves (AS2161). Gloves should be of neoprene. Work clothes should be washed regularly and separately from Other clothes.
- Eye Protection:** Ventilated non fogging goggles conforming to AS/NZS 1337 should be worn if a risk of eye contact exists.
- Respiratory Protection:** An approved organic vapour respirator conforming to Australian Standard AS/NZ 1715 and AS/NZS 1716 should be worn when working in a confined environment. Respirators should be correctly fitted, maintained in good condition, and kept in clean storage when not in use. Replaceable filters and cartridges should be replaced regularly in accordance with the manufacturers' guidelines and Australian Standards AS/NZS 1715 and AS/NZS 1716.
- Flammability and Thermal Decomposition:** Oz Flex Flexible pointing is non flammable. Avoid a build-up Of waste material and keep all storage and work areas well ventilated.

DISCLAIMER

These suggestions and data are based on information we believe to be reliable. They are offered in good faith, but without guarantee, as conditions and methods of use of our products are beyond our control. We recommend that the prospective user determine the suitability of our materials and suggestions before adopting them on a commercial scale

27/4/04

7 KEEGAN STREET O'CONNOR WA 6163
TEL (08) 9337 4107 FAX (08) 9337 3300
Web: <http://www.ozflex.com.au> E-mail: info@ozflex.com.au
ABN 13104163313



Material Data Sheet: OZ FLEX FLEXIBLE POINTING (cont.)

SAFE HANDLING INFORMATION:

- Storage and Transport:** The pointing mixture should be stored in its factory packaging in a dry area at a temperature of 5° – 30° C. Do not allow to freeze. no special transport requirements are necessary.
- Spills and Disposal:** The pointing mixture is thick enough to scrape and shovel up into containers for disposal as trade waste in landfill sites approved by the local waste authority.
- Fire/explosion hazard:** Not flammable under normal conditions of use. Use water jet or spray CO² or dry chemical extinguishers appropriate for the surrounding fire.
- Smoking:** OZFLEX recommends that all work and storage areas should be smoking free areas.

OTHER INFORMATION:

This MSDS summarises our best knowledge of the health and safety hazard information of the product and how to safely handle and use the product in the workplace. Each user should read this MSDS and consider the information in the context of how the product will be handled and used in the workplace including in conjunction with other products. If clarification or further information is needed to ensure that an appropriate risk assessment can be made, the uses should contact this company. Our responsibility for product sold is subject to our standard terms and conditions which are available upon request.

DISCLAIMER

These suggestions and data are based on information we believe to be reliable. They are offered in good faith, but without guarantee, as conditions and methods of use of our products are beyond our control. We recommend that the prospective user determine the suitability of our materials and suggestions before adopting them on a commercial scale

27/4/04

7 KEEGAN STREET O'CONNOR WA 6163
TEL (08) 9337 4107 FAX (08) 9337 3300
Web: <http://www.ozflex.com.au> E-mail: info@ozflex.com.au
ABN 13104163313

Section 1 - Identification of Chemical Product and Company

Distributed by Cathay Industries Australasia P/L.
103 Vanessa St
Kingsgrove, NSW 2208

Phone: (02) 9336 1000 (Business hours)
Fax: (02) 9150 6677

Substance: Iron oxide.
Trade Name: **Ferrotint Yellow Iron Oxide**
Other Names: Pigment Yellow
Product Code: F5000, F5010, F5100, F5300, F5400 & F5015
Product Use: Used for colouring in a wide variety of applications.
Creation Date: **August 2009**
This version Issued: **August 2009 and is valid for 5 years from this date.**

Section 2 - Hazards Identification**Statement of Hazardous Nature**

This product is classified as: Hazardous according to the criteria of NOHSC Australia.

Not a Dangerous Good according to the Australian Dangerous Goods (ADG) Code.

Risk Phrases: R36/37/38. Irritating to eyes, respiratory system and skin.

Safety Phrases: S22, S38, S24/25. Do not breathe dust. In case of insufficient ventilation, wear suitable respiratory equipment. Avoid contact with skin and eyes.

SUSDP Classification: None allocated.

ADG Classification: None allocated. Not a Dangerous Good.

UN Number: None allocated

Emergency Overview

Physical Description & colour: Yellow powder.

Odour: None.

Major Health Hazards: irritating to eyes, respiratory system and skin.

Potential Health Effects**Inhalation**

Short term exposure: Significant inhalation exposure is considered to be unlikely. Long term inhalation of high amounts of any nuisance dust may overload lung clearance mechanism. Available data indicates that this product is not harmful. However product is an inhalation irritant. Symptoms may include headache, irritation of nose and throat and increased secretion of mucous in the nose and throat. Other symptoms may also become evident, but they should disappear after exposure has ceased.

Long Term exposure: No data for health effects associated with long term inhalation.

Skin Contact:

Short term exposure: Available data indicates that this product is not harmful. It should present no hazards in normal use. However product is a skin irritant. Symptoms may include itchiness and reddening of contacted skin. Other symptoms may also become evident, but all should disappear once exposure has ceased.

Long Term exposure: No data for health effects associated with long term skin exposure.

Eye Contact:

Short term exposure: Exposure via eyes is considered to be unlikely. This product is an eye irritant. Symptoms may include stinging and reddening of eyes and watering which may become copious. Other symptoms may also become evident. If exposure is brief, symptoms should disappear once exposure has ceased. However, lengthy exposure or delayed treatment may cause permanent damage.

Long Term exposure: No data for health effects associated with long term eye exposure.

Ingestion:

Short term exposure: Significant oral exposure is considered to be unlikely. However, this product is an oral irritant. Symptoms may include burning sensation and reddening of skin in mouth and throat. Other symptoms may also become evident, but all should disappear once exposure has ceased.

Long Term exposure: No data for health effects associated with long term ingestion.

MATERIAL SAFETY DATA SHEET

Carcinogen Status:

NOHSC: No significant ingredient is classified as carcinogenic by NOHSC.

NTP: No significant ingredient is classified as carcinogenic by NTP.

IARC: No significant ingredient is classified as carcinogenic by IARC.

Section 3 - Composition/Information on Ingredients

Ingredients	CAS No	Conc, %	TWA (mg/m ³)	STEL (mg/m ³)
iron oxide	51274-00-1	99%	not set	not set
Silicon Dioxide	14808-60-7	1%	not set	not set

This is a commercial product whose exact ratio of components may vary slightly. Minor quantities of other non hazardous ingredients are also possible.

The TWA exposure value is the average airborne concentration of a particular substance when calculated over a normal 8 hour working day for a 5 day working week. The STEL (Short Term Exposure Limit) is an exposure value that should not be exceeded for more than 15 minutes and should not be repeated for more than 4 times per day. There should be at least 60 minutes between successive exposures at the STEL. The term "peak" is used when the TWA limit, because of the rapid action of the substance, should never be exceeded, even briefly.

Section 4 - First Aid Measures**General Information:**

You should call The Poisons Information Centre if you feel that you may have been poisoned, burned or irritated by this product. The number is 13 1126 from anywhere in Australia (0800 764 766 in New Zealand) and is available at all times. Have this MSDS with you when you call.

Inhalation: If irritation occurs, contact a Poisons Information Centre, or call a doctor. Remove source of contamination or move victim to fresh air. If breathing is difficult, oxygen may be beneficial if administered by trained personnel, preferably on a doctor's advice. In severe cases, symptoms of pulmonary oedema can be delayed up to 48 hours after exposure.

Skin Contact: Quickly and gently, blot or brush away excess chemical. Wash gently and thoroughly with water (use non-abrasive soap if necessary) for 20 minutes or until product is removed. Under running water, remove contaminated clothing, shoes and leather goods (e.g. watchbands and belts). Completely decontaminate clothing, shoes and leather goods before reuse or discard. If irritation persists, repeat flushing and obtain medical advice.

Eye Contact: Quickly and gently blot or brush away product. Immediately flush the contaminated eye(s) with lukewarm, gently flowing water until the product is removed or until a few minutes after irritation has ceased, while holding the eyelid(s) open. Take care not to rinse contaminated water into the unaffected eye or onto the face. Obtain medical advice if irritation becomes painful or lasts more than a few minutes.

Ingestion: If swallowed, do NOT induce vomiting. Wash mouth with water and contact a Poisons Information Centre, or call a doctor.

Section 5 - Fire Fighting Measures

Fire and Explosion Hazards: There is no risk of an explosion from this product under normal circumstances if it is involved in a fire. This product, if scattered, may form flammable or explosive dust clouds in air.

Fire decomposition products from this product may be toxic if inhaled. Take appropriate protective measures.

Extinguishing Media: Preferred extinguishing media are carbon dioxide, dry chemical, foam, water fog.

Fire Fighting: If a significant quantity of this product is involved in a fire, call the fire brigade. Do not scatter spilled material with high pressure water jets.

Flash point: Not flammable.

Upper Flammability Limit: No data.

Lower Flammability Limit: No data.

Autoignition temperature: No data.

Flammability Class: No data.

Section 6 - Accidental Release Measures

Accidental release: In the event of a major spill, prevent spillage from entering drains or water courses. Wear full protective clothing including eye/face protection. All skin areas should be covered. See above under Personal Protection regarding Australian Standards relating to personal protective equipment. No special recommendations for clothing materials. Eye/face protective equipment should comprise as a minimum, protective glasses and, preferably, goggles. If there is a significant chance that dusts are likely to build up in cleanup area, we recommend that you use a suitable Dust Mask.

Stop leak if safe to do so, and contain spill. Sweep up and shovel or collect recoverable product into labelled containers for recycling or salvage, and dispose of promptly. Consider vacuuming if appropriate. After spills, wash area preventing runoff from entering drains. If a significant quantity of material enters drains, advise emergency services. This material may be suitable for approved landfill. Ensure legality of disposal by consulting regulations prior to disposal. Thoroughly launder protective clothing before storage or re-use. Advise laundry of nature of contamination when sending contaminated clothing to laundry.

Section 7 - Handling and Storage

Handling: Keep exposure to this product to a minimum, and minimise the quantities kept in work areas. Check Section 8 of this MSDS for details of personal protective measures, and make sure that those measures are followed. The measures detailed below under "Storage" should be followed during handling in order to minimise risks to persons using the product in the workplace. Also, avoid contact or contamination of product with incompatible materials listed in Section 10.

Storage: Make sure that containers of this product are kept tightly closed. Keep containers of this product in a well ventilated area. Protect this product from light. Make sure that the product does not come into contact with substances listed under "Materials to avoid" in Section 10. Check packaging - there may be further storage instructions on the label.

Section 8 - Exposure Controls and Personal Protection

The following Australian Standards will provide general advice regarding safety clothing and equipment:

Respiratory equipment: **AS/NZS 1715**, Protective Gloves: **AS 2161**, Industrial Clothing: **AS2919**, Industrial Eye Protection: **AS1336** and **AS/NZS 1337**, Occupational Protective Footwear: **AS/NZS2210**.

Exposure Limits

TWA (mg/m³)

STEL (mg/m³)

Exposure limits have not been established by NOHSC for any of the significant ingredients in this product.

Ventilation: This product should only be used where there is local exhaust ventilation.

Eye Protection: Protective glasses or goggles should be worn when this product is being used. Failure to protect your eyes may cause them harm. Emergency eye wash facilities are also recommended in an area close to where this product is being used.

Skin Protection: Prevent skin contact by wearing impervious gloves, clothes and, preferably, apron. Make sure that all skin areas are covered. See below for suitable material types.

Protective Material Types: We suggest that protective clothing be made from the following materials: PVC.

Respirator: If there is a significant chance that dusts are likely to build up in the area where this product is being used, we recommend that you use a suitable Dust Mask.

Eyebaths or eyewash stations and safety deluge showers should be provided near to where this product is being used.

Section 9 - Physical and Chemical Properties:

Physical Description & colour:	Yellow powder.
Odour:	None.
Boiling Point:	Not applicable.
Freezing/Melting Point:	No specific data. Expected to decompose before melting.
Volatiles:	No specific data. Expected to be low at 100 °C.
Vapour Pressure:	No data.
Vapour Density:	No data.
Specific Gravity:	No data.
Water Solubility:	Insoluble.
pH:	No data.
Volatility:	No data.
Odour Threshold:	No data.
Evaporation Rate:	No data.
Coeff Oil/water distribution:	No data.
Autoignition temp:	No data.

Section 10 - Stability and Reactivity

Reactivity: This product is unlikely to react or decompose under normal storage conditions. However, if you have any doubts, contact the supplier for advice on shelf life properties.

Conditions to Avoid: This product should be kept in a cool place, preferably below 30 °C. Containers should be kept dry. Protect this product from light.

Incompatibilities: strong oxidising agents.

Fire Decomposition: Carbon dioxide, and if combustion is incomplete, carbon monoxide and smoke. Nitrogen and its compounds, and under some circumstances, oxides of nitrogen. Occasionally hydrogen cyanide gas. Oxides of sulfur (sulfur dioxide is a respiratory hazard) and other sulfur compounds. Most will have a foul odour. Water. silicon compounds, silicon compounds. Carbon monoxide poisoning produces headache, weakness, nausea, dizziness, confusion, dimness of vision, disturbance of judgment, and unconsciousness followed by coma and death. Hydrogen cyanide poisoning signs and symptoms are weakness, dizziness, headache, nausea, vomiting, coma, convulsions, and death. Death results from respiratory arrest. Hydrogen cyanide gas acts very rapidly; symptoms and death can both occur quickly.

Polymerisation: This product is unlikely to undergo polymerisation processes.

Section 11 - Toxicological Information

Local Effects:

Target Organs: There is no data to hand indicating any particular target organs.

Classification of Hazardous Ingredients

Ingredient	Risk Phrases
Iron Oxide: LD ₅₀ Oral, Rat 5000mg/kg	LD ₅₀ Dermal, Rabbit = N/Dmg/kg
Silicon Dioxide: LD ₅₀ Oral, Rat 5000mg/kg	LD ₅₀ Dermal, Rabbit = N/Dmg/kg

Section 12 - Ecological Information

This product is biodegradable. It will not accumulate in the soil or water or cause long term problems.

Section 13 - Disposal Considerations

Disposal: Containers should be emptied as completely as practical before disposal. If possible, recycle containers either in-house or send to recycle company. If this is not practical, send to a commercial waste disposal site. This product should be suitable for landfill. However, check with local Waste Disposal Authority before sending there. Note that product properties may have been changed in use, significantly altering it's suitability for landfill. Please do NOT dispose into sewers or waterways.

Section 14 - Transport Information

ADG Code: This product is not classified as a Dangerous Good. No special transport conditions are necessary unless required by other regulations.

Section 15 - Regulatory Information

AICS: All of the significant ingredients in this formulation are to be found in the public AICS Database.

Section 16 - Other Information

This MSDS contains only safety-related information. For other data see product literature.

Acronyms:

ADG Code	Australian Code for the Transport of Dangerous Goods by Road and Rail
AICS	Australian Inventory of Chemical Substances
CAS number	Chemical Abstracts Service Registry Number
Hazchem Number	Emergency action code of numbers and letters that provide information to emergency services especially firefighters
IARC	International Agency for Research on Cancer
NOHSC	National Occupational Health and Safety Commission
NOS	Not otherwise specified
NTP	National Toxicology Program (USA)
R-Phrase	Risk Phrase
SUSDP	Standard for the Uniform Scheduling of Drugs & Poisons
UN Number	United Nations Number

THIS MSDS SUMMARISES OUR BEST KNOWLEDGE OF THE HEALTH AND SAFETY HAZARD INFORMATION OF THE PRODUCT AND HOW TO SAFELY HANDLE AND USE THE PRODUCT IN THE WORKPLACE. EACH USER MUST REVIEW THIS MSDS IN THE CONTEXT OF HOW THE PRODUCT WILL BE HANDLED AND USED IN THE WORKPLACE.

IF CLARIFICATION OR FURTHER INFORMATION IS NEEDED TO ENSURE THAT AN APPROPRIATE RISK ASSESSMENT CAN BE MADE, THE USER SHOULD CONTACT THIS COMPANY SO WE CAN ATTEMPT TO OBTAIN ADDITIONAL INFORMATION FROM OUR SUPPLIERS. OUR RESPONSIBILITY FOR PRODUCTS SOLD IS SUBJECT TO OUR STANDARD TERMS AND CONDITIONS, A COPY OF WHICH IS SENT TO OUR CUSTOMERS AND IS ALSO AVAILABLE ON REQUEST.

Please read all labels carefully before using product.

This MSDS is prepared in accord with the NOHSC document "National Code of Practice for the Preparation of Material Safety Data Sheets" 2nd Edition [NOHSC:2011(2003)]

Copyright © Kilford & Kilford Pty Ltd, August, 2009.

<http://www.kilford.com.au/> Phone (02)9251 4532

MATERIAL SAFETY DATA SHEET



Material Safety Data Sheet

Statement of Hazardous Nature

This product is classified as hazardous according to criteria of Worksafe Australia

BGC Cement
77 Vulcan Road
Canning Vale
Western Australia
Telephone: (08) 9334 4555

Product Name	Portland and Blended Cement
Other Names	Ordinary Portland Cement (OPC) General Purpose Cement (Type GP) High Early Strength Cement (Type HE) Low Heat Cement (Type LH) Blended Cement (Type GB) Sulfate Resistant Cement (Type SR)
Manufactures Product Codes	BGP, BHE, BLH, GB8020, GB7030, BSR
U.N. Number	None
CAS Number	<i>See Physical Description below</i>
Dangerous Goods Class	Not Applicable
Hazchem Code	None
Poisons Schedule	Not Applicable
Use	Portland and blended cements are used as binders in a range of applications including concrete, mortars, renders and grouts requiring various attributes such as slow hardening, high workability and high water retentivity. They are also used in manufacture of fibre cement products, in mine backfill, in soil stabilisation, and general civil engineering applications.

PHYSICAL PROPERTIES

Appearance	Fine powder ranging from light grey to dark grey in colour. Also available in white and off-white (cream/creme) colour.
Boiling Point / Melt Point	Not Applicable
Vapour Pressure	Not applicable
Per Cent Volatiles	Not applicable
Specific Gravity	3.0 to 3.4
Flash Point	Not applicable

Flammability	Non-combustable
Autoignition Temperature	Not applicable
Other Properties	Not explosive. No odour. Hardens on mixing with water.

PHYSICAL DESCRIPTION

COMPONENT	CAS NUMBER	PROPORTION
Portland Cement clinker	65997-15-1	0% – 95%
Gypsum (CaSO ₄ .2H ₂ O)	10101-41-4	2% - 8%
Limestone (CaCO ₃)	1317-65-3	0% - 5%
Blast Furnace Slag	65999-69-2	0% - 75%
Lime (Calcium Hydroxide)	1305-62-0	0% – 40%
Hexavalent Chromium (water soluble)		<10ppm

HEALTH HAZARD INFORMATION

HEALTH EFFECTS

Swallowed : Mild corrosive action.

Eye : Short-term exposure, irritating. Long-term exposure, irritating may cause inflammation of the cornea.

Skin : Short-term exposure, irritating. Long-term exposure, wet cement, especially as an ingredient in plastic (unhardened) concrete, mortar or slurry, is slightly caustic and can dry the skin. There are also trace amounts on water-soluble hexavalent chromium present in cement (0-20ppm) and in some individuals may cause allergic dermatitis.

Inhaled : Short-term exposure, irritating. Long-term exposure may cause inflammation of lining of the respiratory system.

FIRST AID

Swallowed : Brush material from face and wash with copious amounts of clean water. Do not induce vomiting, give water containing sugar or milk to drink. Seek medical attention.

Skin : Wash with clean running water. A shower may be required.

Eyes : Immediately irrigate with copious amounts of clean running water for at least 15 minutes. Do not rub eyes. Seek medical attention.

Inhaled : Move to fresh air, wash with water and seek medical attention if affects persist.

Advice to Doctor : Contact a poisons information centre.

PRECAUTIONS FOR USE

Exposure Limits : Cement is classified as an inert nuisance dust.

TLV : 5mg/m³ for respirable dust and 10mg/m³ for total dust.

Wet cement, particularly in plastic (unhardened) concrete, mortar or slurry, can dry the skin and cause alkali burns. Continued exposure to individuals who are allergic to chromium, may cause severe allergic dermatitis.

Ventilation : Where practical, suitable means of dust collection / suppression should be applied as necessary to maintain acceptable air borne dust levels

Persons with a history of respiratory illness or reduced pulmonary function should avoid work places with high dust levels.

Personal Protection : In dust environments, the use of filter masks as in AS1716, Class L (in accordance with AS1715) and tight fitting goggles is advised.

Use of impervious gloves, boots and clothing to protect the skin from contact with dust and wet cement is recommended. Barrier creams may also be used.

Following work with cement, a shower with soap and water is recommended.

Flammability : Cement is non-combustible.

SAFE HANDLING INFORMATION

Handling and Storage : Cement should be stored away from moisture, steam, acid or acid fumes, in containers that prevent ingress of moisture as this will cause it to set and hardened in storage.

Concrete or steel bins and silos or plastic lined paper sacks are the most usual forms of storage.

Transportation is usually in bulk rail or road tankers, or in paper sacks.

Spills and Disposals : Spills may be cleaned up by any dry method such as, broom, shovel or vacuum device, with care taken to minimise dust evolution into the worker environment.

Clean up personnel should wear full cover clothing, gloves, boots, dust masks and goggles.

Carefully dispose of excess product and packaging by collecting for disposal as a trade waste in accordance with local authority guidelines.

CONTACT POINT: BGC Cement (08) 9334 4555
+61 8 9334 4555
Perth, Western Australia BGC Cemtech (08) 9334 4548
Mon-Fri 8am-4pm WST/WSST +61 8 9334 4548
(GMT +8) 77 Vulcan Road
Canning Vale
Western Australia

The information in this document is believed to be accurate at date of issue. Please check the currency of this MSDS by contacting BGC Cement or BGC Cemtech.

The provision of this information should not be construed as a recommendation to use this product in violation of any patent rights or in breach of any statute or regulation. Users are advised to make their own determination as to the suitability of this information in relation to their particular purposes and specific circumstances. Users should read this MSDS and consider the information in the context of how the product will be handled and used in the workplace and in conjunction with other substances or products.

Issue Date: February 2003

Re-confirmed: October 2008

Section 12

Accident Notification and Investigation

12.1 Accident Notification and Investigation	12-2
12.1.1 Requirement Under the Act	12-2
12.1.2 Accident Reporting Procedure.....	12-2
12.1.3 Forms.....	12-4
12.1.4 Workers Compensation	12-6

12.1 Accident Notification and Investigation

12.1.1 Requirement Under the Act

The Occupational Safety and Health Act of 1984 states that:

If, at a workplace, an employee incurs an injury, or is affected by a disease that -

- (a) results in the death of an employee; or
- (b) is of a kind prescribed in the regulations for the purposes of this subsection,

the employer of that employee shall forthwith notify the Commissioner in the prescribed form giving such particulars as may be prescribed. [s.19(3)]

The Occupational Safety and Health Regulations state that:

For the purposes of section 19(s) of the Act, the kinds of injury incurred by an employee to be notified to the Commissioner are -

- (a) a fracture of the skull, spine or pelvis;
- (b) a fracture in any bone -
 - (i) in the arm, other than in the wrists or hand;
 - (ii) in the leg, other than a bone in the ankle or foot;
- (c) an amputation of an arm, a hand, finger, finger joint, leg, foot, toe or toe joint;
- (d) the loss of sight of an eye;
- (e) any injury other than an injury of a kind referred to in paragraphs (a) to (d) which, in the opinion of a medical practitioner, is likely to prevent the employee from being able to work within 10 days of the day on which the injury occurred. [s.2.4(1)]

If you are a subcontractor who employs your own workforce, you are required to notify the Commissioner as an employer. BGC will also notify the Commissioner as an employer under contracting provisions.

You may notify the Commissioner by telephone - (08) 9327 8800 or 1800 198 118 or by using the prescribed form which may be downloaded from the Regulations file of www.safetyline.wa.gov.au

An employer who contravenes the requirements of the Act and Regulations commits an offence and is liable to a fine of \$25,000.

12.1.2 Accident Reporting Procedure

All accidents must be reported to BGC for investigation, and the reporting procedure follows:

PROCEDURE FOR REPORTING AN INCIDENT or INJURY or HAZARD

What you must do if: An accident occurs causing an injury
An accident or near miss occurs but there is no injury
You spot a hazard that could cause you or someone else an injury



Immediately report the injury or the incident or the hazard to the Site Manager or to the Site Manager's representative



If there is no Site Manager or representative available, report to your BGC Site Supervisor or to the Safety Manager



If you are injured, you must see a First Aider and / or a Doctor on the same day if practicable.

Your BGC Site Supervisor or Safety Manager will arrange for you to see a doctor through Prime Occupational Health. All medical certificates must be passed as soon as practicable to the Safety Manager



You will be asked to complete an EMPLOYEE/SUBCONTRACTOR STATEMENT. This should be sent to the Safety Manager as soon as practicable. The Safety Manager will initiate an INVESTIGATION to assess the cause(s) of the hazardous incident or of your accident, to assess what safety procedures may have failed and to assess what corrective actions will be needed to help avoid similar accidents



If a Workers Compensation claim is to be made, the Safety Manager will arrange for the appropriate documentation to be issued. When you complete this, the Safety Manager will forward it to BGC Insurance



If your accident prevents you from returning immediately to your normal job, you will be contacted by the BGC Group Injury Manager to discuss alternative duties in a return to work program. This will be done in full consultation with your medical practitioner

IMPORTANT

All accident and claim forms must be fully completed and submitted as soon as practicable. Failure to do so may slow down the claim process, or render it invalid.

Note that all medical bills including radiology and physiotherapy, incurred by an individual and that are refused as a valid Workers Compensation claim will be returned to the claimant for personal payment.

Table 12.1 Procedure for Reporting an Incident or Injury or Hazards

BGC Safety Manager

Telephone: 9334 4605

Fax: 9334 4507

12.1.3 Forms

12.1.3.1 Employee/Subcontractor Statement

The full version of this form, to be photocopied and completed as necessary, can be found on page 14-6 of Section 14 Forms.

BGC Employee / Subcontractor Statement	
What are you reporting?	
You are injured <input type="checkbox"/> Witness to injury <input type="checkbox"/> Incident (near miss) <input type="checkbox"/> Hazard that could cause an injury <input type="checkbox"/>	
Name: _____	DOB: _____ Length of time with BGC: _____
Occupation: _____	Occurrence Date: _____
Site/Location: _____	Occurrence Time: _____ am / pm
In detail describe the occurrence including specific location, tools, equipment or materials in use, and body part affected (if applicable)	
1. Describe what actually happened or what you saw:	

2. Where were you at the time? (give specific location e.g. store room):	

3. List what tools/equipment or materials were involved:	

4. If applicable, describe what body part has been injured (e.g. left thumb):	

5. In your opinion, what caused the injury/incident or unsafe situation (e.g. poor lighting, broken trolley):	

6. In your opinion, what could be done to prevent it from happening again?	

I have given this form to: _____ Date: _____	
Signed: _____ Date: _____	
Manager's Signature: _____ Date: _____	
Was medical treatment required? (if yes, provide details): _____	
This report is to accompany the Supervisors Investigation report and is to be forwarded to the Group Injury Manager within 24 hours of the occurrence.	

Figure 12.1 Sample Form: Employee/Subcontractor Statement

12.1.3.2 Accident/Incident Investigation Form

The full version of this three page form, to be photocopied and completed as necessary, can be found on page 14-8 of Section 14 Forms.


	
FIRST NOTIFICATION & INVESTIGATION FORM	
<small>(This form is to be completed by manager or supervisor, NOT BY EMPLOYEE) Page 1 must be faxed to BGC Insurance within 24 hours on 9321 0205. Complete pages 2/3 for personal injury, incident, hazard or near miss</small>	
Name of Person making report: _____ Telephone: _____ Division: _____ Signature: _____ Date: _____	
DETAILS	
Injury or <input type="checkbox"/> Incident <input type="checkbox"/> Hazard <input type="checkbox"/> Near Miss <input type="checkbox"/> Property loss/damage <input type="checkbox"/> Other: _____ Illness <input type="checkbox"/> First Aid <input type="checkbox"/> Medical <input type="checkbox"/> Hospital <input type="checkbox"/> Alt duties provided <input type="checkbox"/> Unable to work <input type="checkbox"/>	
Date of Accident:	Time of Accident:
Name of Person reported to:	Supervisor:
Date Accident reported:	Time Accident reported:
Division:	Location/site area:
PROPERTY LOSS OR DAMAGE BGC Vehicle Loss or Damage Yes <input type="checkbox"/> No <input type="checkbox"/> BGC Driver Name _____ BGC Vehicle Rego No. _____ Is BGC Vehicle serviceable? Yes <input type="checkbox"/> No <input type="checkbox"/> Estimated cost _____ Have Police been informed Yes <input type="checkbox"/> No <input type="checkbox"/> Other BGC Property loss or Damage: Yes <input type="checkbox"/> No <input type="checkbox"/> Type of property involved? _____ Contract Works <input type="checkbox"/> Stock <input type="checkbox"/> Fixtures/Fittings <input type="checkbox"/> Machinery/Plant/Equipment <input type="checkbox"/> Estimated Cost of loss/damage to BGC Property \$ _____ Have Police been informed? Yes <input type="checkbox"/> No <input type="checkbox"/> Loss or Damage to third party property Yes <input type="checkbox"/> No <input type="checkbox"/> Name: _____ Address: _____ Phone _____ Rego No. _____ Est Cost of loss/damage to 3 rd party property: \$ _____ Have Police been informed? Yes <input type="checkbox"/> No <input type="checkbox"/>	PERSONAL INJURY Injury to BGC Employee <input type="checkbox"/> If yes, F/T <input type="checkbox"/> P/T <input type="checkbox"/> Casual <input type="checkbox"/> Injury to Subcontractor <input type="checkbox"/> Company Name _____ Contact Number _____ Injury to Third Party <input type="checkbox"/> (e.g.: visitor, employee of contractor) Name of Injured Person: _____ Surname _____ First Name _____ Occupation: _____ Date of Birth: _____ Gender: Male <input type="checkbox"/> Female <input type="checkbox"/> Start date: _____ Time in present position: _____
Description of Property loss/Damage/Accident/Hazard: (what, how) _____ _____ _____ _____ List names of witnesses and contact numbers: _____ _____ _____ _____ Please attach any additional information/sketches/diagrams/statements, etc. Must complete page 2 and 3 if Personal Injury/Incident/Hazard or Near Miss	

Figure 12.2 Sample Form: Accident/Incident Investigation Form

12.1.4 Workers Compensation

12.1.4.1 Direct BGC Employees

Any BGC Direct employee who receives an injury at work is covered for medical treatment and loss of earnings by Workers Compensation. However, this does require:

- that the injury was reported at the time of the accident;
- that a Workers Compensation medical certificate is issued by a Doctor; and,
- that the Workers Compensation Claim Form 2B has been completed and submitted through the BGC Safety Manager.

An employee who receives a relatively minor injury may opt for all medical expenses to be paid apart from a Workers Compensation claim. However, if this option is accepted, the injured employee retains the right to make a Workers Compensation claim within 12 months of the date of the injury if medical opinion indicates a recurring effect.

This option is not available if the injury is muscular or skeletal or has incurred a loss of earnings.

12.1.4.2 Contractors / Sub-contractors

As per Workers Compensation and Rehabilitation Act 1981.

It is a BGC requirement that all contractors / sub-contractors (including their employees) are fully insured when attending work for BGC. This includes Workers Compensation Insurance, Public Liability Insurance and any other state or federal legislated insurance applicable.

Any BGC subcontractor (including their employees) who receives an injury at work must notify BGC as soon as possible and follow the accident reporting procedure stated in Section 12.

Section
13

Induction and Competency Training

13.1 Inductions	13-2
13.2 Competency Training	13-2
13.3 Labour Hire Personnel	13-2
13.3.1 Induction Documentation for Labour Hire Personnel ...	13-2

13.1 Inductions

All subcontractors and subcontractor employees engaged by BGC to install, modify or service building materials will have undergone an accredited course in Safety Awareness Training.

A record of this competency is maintained by BGC and constantly reviewed.

13.2 Competency Training

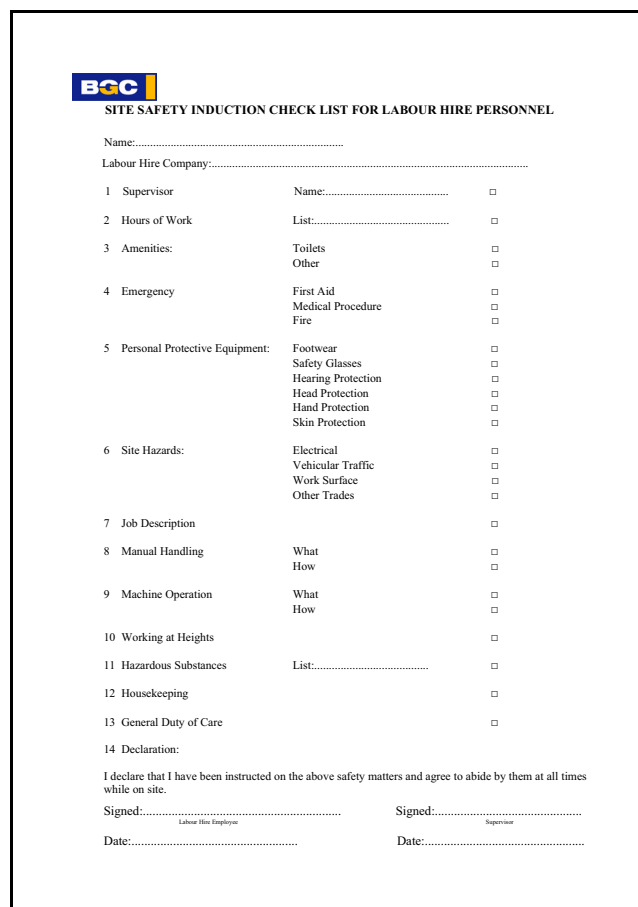
BGC requires that any subcontractor or subcontractor employee who will use machinery or plant on a site will have undergone training as required by legislation.

13.3 Labour Hire Personnel

Persons engaged by a subcontractor, or directly by BGC for work on a site, will undergo a safety induction on site under the supervision of the subcontractor. This will include job training.

13.3.1 Induction Documentation for Labour Hire Personnel

The induction documentation is included in the induction checklist form. The full version of this three page form, to be photocopied and completed as necessary, can be found on page 14-12 of Section 14 Forms.



BGC

SITE SAFETY INDUCTION CHECK LIST FOR LABOUR HIRE PERSONNEL

Name:.....

Labour Hire Company:.....

1 Supervisor	Name:.....	<input type="checkbox"/>
2 Hours of Work	List:.....	<input type="checkbox"/>
3 Amenities:	Toilets	<input type="checkbox"/>
	Other	<input type="checkbox"/>
4 Emergency	First Aid	<input type="checkbox"/>
	Medical Procedure	<input type="checkbox"/>
	Fire	<input type="checkbox"/>
5 Personal Protective Equipment:	Footwear	<input type="checkbox"/>
	Safety Glasses	<input type="checkbox"/>
	Hearing Protection	<input type="checkbox"/>
	Head Protection	<input type="checkbox"/>
	Hand Protection	<input type="checkbox"/>
	Skin Protection	<input type="checkbox"/>
6 Site Hazards:	Electrical	<input type="checkbox"/>
	Vehicular Traffic	<input type="checkbox"/>
	Work Surface	<input type="checkbox"/>
	Other Trades	<input type="checkbox"/>
7 Job Description		<input type="checkbox"/>
8 Manual Handling	What	<input type="checkbox"/>
	How	<input type="checkbox"/>
9 Machine Operation	What	<input type="checkbox"/>
	How	<input type="checkbox"/>
10 Working at Heights		<input type="checkbox"/>
11 Hazardous Substances	List:.....	<input type="checkbox"/>
12 Housekeeping		<input type="checkbox"/>
13 General Duty of Care		<input type="checkbox"/>
14 Declaration:		
I declare that I have been instructed on the above safety matters and agree to abide by them at all times while on site.		
Signed:.....	Signed:.....	
<small>Labour Hire Employee</small>	<small>Supervisor</small>	
Date:.....	Date:.....	

Figure 13.1 Sample Form: Site Safety Induction Checklist - Labour Hire Personnel

Section 14

Forms

14.1 Site Inspection for Deliveries Form	14-2
14.2 Site Safety Inspection Form	14-4
14.3 Employee/Subcontractor Statement.....	14-6
14.4 Accident/Incident Investigation Form	14-8
14.5 Site Induction Form for Labour Hire Personnel.....	14-12

14.1 Site Inspection for Deliveries Form

The following page comprises the full version of this form. The form can be photocopied and completed as required.

Site Inspection for Deliveries

Delivery Driver Name:	
Site Address:	Date:

Complete the following checks:	YES	NO
1 Safety signs observed	<input type="checkbox"/>	<input type="checkbox"/>
2 PPE required		
Hard hat	<input type="checkbox"/>	<input type="checkbox"/>
Safety Boots	<input type="checkbox"/>	<input type="checkbox"/>
Safety Glasses	<input type="checkbox"/>	<input type="checkbox"/>
Other	<input type="checkbox"/>	<input type="checkbox"/>
3 PPE worn	<input type="checkbox"/>	<input type="checkbox"/>
4 Site Principal / representative on site and advised	<input type="checkbox"/>	<input type="checkbox"/>
5 Associated tradesperson on site and advised	<input type="checkbox"/>	<input type="checkbox"/>
6 Access to site clear		
Electrical Hazard	<input type="checkbox"/>	<input type="checkbox"/>
Machinery Operations	<input type="checkbox"/>	<input type="checkbox"/>
Other trades	<input type="checkbox"/>	<input type="checkbox"/>
Suitable ground surface	<input type="checkbox"/>	<input type="checkbox"/>
7 Offloading area designated	<input type="checkbox"/>	<input type="checkbox"/>
8 Offloading area suitable	<input type="checkbox"/>	<input type="checkbox"/>
9 Public area, verge, sidewalk parking	<input type="checkbox"/>	<input type="checkbox"/>
10 Public area offloading	<input type="checkbox"/>	<input type="checkbox"/>
11 Offloading area secured	<input type="checkbox"/>	<input type="checkbox"/>
12 Offloading by:		
Forklift / Tractor	<input type="checkbox"/>	<input type="checkbox"/>
Hiab	<input type="checkbox"/>	<input type="checkbox"/>
Crane	<input type="checkbox"/>	<input type="checkbox"/>
Hand	<input type="checkbox"/>	<input type="checkbox"/>
13 Materials secured	<input type="checkbox"/>	<input type="checkbox"/>
14 Materials offloaded in public area clearly signed	<input type="checkbox"/>	<input type="checkbox"/>
15 Hazardous Substances secured	<input type="checkbox"/>	<input type="checkbox"/>
16 Work completed	<input type="checkbox"/>	<input type="checkbox"/>
17 Site Principal / representative / tradesperson advised you are leaving site	<input type="checkbox"/>	<input type="checkbox"/>

Comment on any safety issue encountered:

Signed: _____ (Delivery Driver)

14.2 Site Safety Inspection Form

The following page comprises the full version of this form. The form can be photocopied and completed as required.

SITE SAFETY REPORT

To be completed on site by fixer before commencing work.

Date:_____ Time:_____ Job No:_____ Fixer's Name:_____

Site Address:_____ Suburb:_____

	YES	NO
1 Access to site is suitable	<input type="checkbox"/>	<input type="checkbox"/>
2 The site is clear of excess debris	<input type="checkbox"/>	<input type="checkbox"/>
3 Toilet facilities are available	<input type="checkbox"/>	<input type="checkbox"/>
4 First Aid supplies are available	<input type="checkbox"/>	<input type="checkbox"/>
5 PPE is being worn correctly	<input type="checkbox"/>	<input type="checkbox"/>
6 Correct safety warning signs in place	<input type="checkbox"/>	<input type="checkbox"/>
7 Electrical power available on site	<input type="checkbox"/>	<input type="checkbox"/>
8 Overhead restrictions due to electric power	<input type="checkbox"/>	<input type="checkbox"/>
9 Electrical equipment tagged	<input type="checkbox"/>	<input type="checkbox"/>
10 Platform scaffold required	<input type="checkbox"/>	<input type="checkbox"/>
11 Scaffold width at least 3 planks	<input type="checkbox"/>	<input type="checkbox"/>
12 Scaffold rails at safe height (900 mm)	<input type="checkbox"/>	<input type="checkbox"/>
13 Scaffold gates, kick/toe boards in place	<input type="checkbox"/>	<input type="checkbox"/>
14 Fall arrest anchor points in place (if required)	<input type="checkbox"/>	<input type="checkbox"/>
15 Trades working under you	<input type="checkbox"/>	<input type="checkbox"/>
16 Visual inspection of tile batten	<input type="checkbox"/>	<input type="checkbox"/>

Comment on any NO:

Comment on any other visible hazard:

The above hazards have been recognised and reported to Harmony Roof Tiles

Reported To:_____

Signed (Fixer):_____ Date:_____

14.3 Employee/Subcontractor Statement

The following page comprises the full version of this form. The form can be photocopied and completed as required.



Employee / Subcontractor Statement

What are you reporting?

You are injured ☐ Witness to injury ☐ Incident (near miss) ☐ Hazard that could cause an injury ☐

Name: _____ DOB: _____ Length of time with BGC: _____

Occupation: _____ Occurrence Date: _____

Site/Location: _____ Occurrence Time: _____ am / pm

In detail describe the occurrence including specific location, tools, equipment or materials in use, and body part affected (if applicable)

1. Describe what actually happened or what you saw:

2. Where were you at the time? (give specific location e.g. store room):

3. List what tools/equipment or materials were involved:

4. If applicable, describe what body part has been injured (e.g. left thumb):

5. In your opinion, what caused the injury/incident or unsafe situation (e.g. poor lighting, broken trolley):

6. In your opinion, what could be done to prevent it from happening again?

I have given this form to: _____

Date: _____

Signed: _____

Date: _____

Manager's Signature: _____

Date: _____

Was medical treatment required? (if yes, provide details): _____

This report is to accompany the Supervisors Investigation report and is to be forwarded to the Group Injury Manager within 24 hours of the occurrence.

14.4 **Accident/Incident Investigation Form**

The following three pages comprise the full version of this form. The form can be photocopied and completed as required.

**FIRST NOTIFICATION & INVESTIGATION FORM**

Report No (Office use only) _____

(This form is to be completed by manager or supervisor, NOT BY EMPLOYEE) Page 1 must be faxed to BGC Insurance within 24 hours on 9321 0205. Complete pages 2/3 for personal injury, incident, hazard or near miss

Name of Person making report: _____ Telephone: _____

Division: _____ Signature: _____ Date: _____

DETAILS

Injury or Illness <input type="checkbox"/> Incident <input type="checkbox"/> Hazard <input type="checkbox"/> Near Miss <input type="checkbox"/> Property loss/damage <input type="checkbox"/> Other: _____	
First Aid <input type="checkbox"/> Medical <input type="checkbox"/> Hospital <input type="checkbox"/> Alt duties provided <input type="checkbox"/> Unable to work <input type="checkbox"/>	
Date of Accident:	Time of Accident:
Name of Person reported to:	Supervisor:
Date Accident reported:	Time Accident reported:
Division:	Location/site area:

PROPERTY LOSS OR DAMAGE	PERSONAL INJURY
BGC Vehicle Loss or Damage Yes <input type="checkbox"/> No <input type="checkbox"/> BGC Driver Name _____ BGC Vehicle Rego No. _____ Is BGC Vehicle serviceable? Yes <input type="checkbox"/> No <input type="checkbox"/> Estimated cost _____ Have Police been informed Yes <input type="checkbox"/> No <input type="checkbox"/>	Injury to BGC Employee <input type="checkbox"/> If yes, F/T <input type="checkbox"/> P/T <input type="checkbox"/> Casual <input type="checkbox"/> Injury to Subcontractor <input type="checkbox"/> Company Name _____ Contact Number _____
Other BGC Property loss or Damage: Yes <input type="checkbox"/> No <input type="checkbox"/> Type of property involved? Contract Works <input type="checkbox"/> Stock <input type="checkbox"/> Fixtures/Fittings <input type="checkbox"/> Machinery/Plant/Equipment <input type="checkbox"/> Estimated Cost of loss/damage to BGC Property \$ _____ Have Police been informed Yes <input type="checkbox"/> No <input type="checkbox"/>	Injury to Third Party <input type="checkbox"/> (e.g.: visitor, employee of contractor) Name of Injured Person: Surname _____ First Name _____
Loss or Damage to third party property Yes <input type="checkbox"/> No <input type="checkbox"/> Name: _____ Address: _____ Phone _____ Rego No. _____ Est Cost of loss/damage to 3 rd party property: \$ _____ Have Police been informed? Yes <input type="checkbox"/> No <input type="checkbox"/>	Occupation: _____ Date of Birth: _____ Gender: Male <input type="checkbox"/> Female <input type="checkbox"/> Start date: _____ Time in present position: _____

Description of Property loss/Damage/Accident/Hazard: (what, how)
List names of witnesses and contact numbers:
Please attach any additional information/sketches/diagrams/statements, etc.
Must complete page 2 and 3 if Personal Injury/Incident/Hazard or Near Miss

Part of Body Injured: Left <input type="checkbox"/> Right <input type="checkbox"/> (circle body part)				Type of Injury (circle type)	
Shoulder Collar Upper Arm Lower Arm Elbow Hand Wrist Finger	Hips/Buttocks Groin Upper Leg Lower Leg Knee Ankle Foot Toes	Neck Upper Back Lower Back Coccyx Chest Abdomen Ribs Skin	Head Ear Eye Nose Face Other (Specify) _____	Laceration Strain/Sprain Bruise Amputation Abrasion Eye damage Burn: Heat/Product Hernia	Fracture Hearing Loss Respiratory Internal Skin Disorders Other (Specify) _____
Claim Likely? No <input type="checkbox"/> Unsure <input type="checkbox"/> Yes <input type="checkbox"/> Workers Comp <input type="checkbox"/> Motor Vehicle <input type="checkbox"/> Subcontractor/3 rd party workers comp <input type="checkbox"/> Other _____ (specify)					

INVESTIGATION: If answer ticked is a circle, then this is a Contributing Factor and must be noted in Contributing Factor Section

1. Equipment/Environment

Yes No

- 1.1 ☐ ☐ Did any fault in equipment/tool/work area contribute to hazardous condition
- 1.2 ☐ ☐ Did the general design/quality of the equip/tools work area contribute
- 1.3 ☐ ☐ Did the location/position of equip/tools/work area contribute to hazardous condition
- 1.4 ☐ ☐ Was the hazardous condition recognised by anybody and reported?
- 1.5 ☐ ☐ Was there an inspection system to detect hazardous condition
- 1.6 ☐ ☐ Did the existing inspection system detect a hazardous condition
- 1.7 ☐ ☐ Were employee/s informed/aware of the hazardous condition
- 1.8 ☐ ☐ Was there an acceptable standard of housekeeping in the area
- 1.9 ☐ ☐ Was appropriate protective equipment for the job supplied (signs, barricades, lights, etc.)
- 1.10 ☐ ☐ Did employee know protective equipment was required
- 1.11 ☐ ☐ Was the correct equip/tools used for the task
- 1.12 ☐ ☐ Was there adequate means of access
- 1.13 ☐ ☐ Was the equipment working within its limitations
- 1.14 ☐ ☐ Was there good visibility
- 1.15 ☐ ☐ Was there adequate lighting
- 1.16 ☐ ☐ Was the equipment in a safe condition
- 1.17 ☐ ☐ Were the roads and dumps in good condition
- 1.18 ☐ ☐ Was it inclement weather
- 1.19 ☐ ☐ Was worn, slippery or uneven footing present
- 1.20 ☐ ☐ Were any safety devices inoperative at time of Accident
- 1.21 ☐ List any contributing factors

2. Work System/Procedures

Yes No

- 2.1 ☐ ☐ Were there written procedures for this job
- 2.2 ☐ ☐ Were there known procedures for this job
- 2.3 ☐ ☐ Did the written/known procedure/s anticipate the factors which led to the Accident
- 2.4 ☐ ☐ Were the written/known procedures complied with
- 2.5 ☐ ☐ Had employee/s been instructed/trained in the job procedure/s clearly
- 2.6 ☐ ☐ Had employee/s been deemed competent and understood job procedure/s
- 2.7 ☐ ☐ Did employee/s deviate from written/known job procedure/s
- 2.8 ☐ ☐ Was there a history of a previous accident when carrying out this job in the past
- 2.9 ☐ ☐ Had employee/s been made aware of any previous incident
- 2.10 ☐ ☐ Were safe working systems observed (isolation procedures, etc.)
- 2.11 ☐ ☐ Is a Job Safety Analysis available for the task
- 2.12 ☐ List any other contributing factors

3. Human/Personal Protective Equipment

Yes No

- 3.1 ☐ ☐ Were the actions of other persons contributory
- 3.2 ☐ ☐ Was employee/s physically capable of doing job (good health, no disability, recovering from illness)
- 3.3 ☐ ☐ Was employee/s affected by drugs/alcohol
- 3.4 ☐ ☐ Was employee/s affected by fatigue
- 3.5 ☐ ☐ Any known personal problems that could have affected employee/s actions
- 3.6 ☐ ☐ Was appropriate personal protective equipment specified for the job
- 3.7 ☐ ☐ Did employee know that wearing specific PPE was required
- 3.8 ☐ ☐ Was PPE adequate for the job
- 3.9 ☐ ☐ Was employee wearing specified personal protective equipment
- 3.10 ☐ ☐ Was there a frequent Supervisor/employee/s contact to discuss/review hazards and job procedures (safety meetings, tool box meeting)
- 3.11 ☐ List any other contributing factors

CONTRIBUTING FACTORS

A ticked circle is a contributing factor

Actions and conditions that contributed to the Accident taken from Investigation Section

CORRECTIVE FACTORS

Those that have been or will be taken to prevent re-occurrence

Action

	By Whom	Planned Completion Date	Completed (sign/date)

Supervisor/Manager Comments:

Signed

Date

Divisional Managers Comments

Signed

Date

Safety/Group Injury Manager Comments

Signed

Date

Injured Worker's Comments

Signed

Date

14.5 Site Induction Form for Labour Hire Personnel

The following three pages comprise the full version of this form. The form can be photocopied and completed as required.



SITE INDUCTION FOR LABOUR HIRE PERSONNEL

BGC, along with their Subcontractors, are committed to provide a safe environment for everyone who is engaged by them for construction site work.

Whenever you are on site, you are required to observe the safety procedures that will be explained to you by your appointed supervisor. You will be made aware of the hazards in your workplace, any restricted areas, and the procedures to be followed before commencing work.

If you have any concern regarding our safe work practices, raise the matter with your site supervisor. If you see a situation you consider to be a safety hazard, report it to your supervisor. Alternatively, you may contact:

Safety Manager – Tel: 9334 4605

Your supervisor is about to explain some safety matters to you using a check list. When you have completed this, please sign your name to indicate that you have understood the safety requirements and agree to work by them.

Please give this signed document to your supervisor before commencing work.

We wish you a safe employment while you are part of our team.



Notes on Induction Matters for Labour Hire Personnel

1. Know who your supervisor is. He or she is responsible for your safety while you are on site. You will not be asked to work without supervision at any time.
2. Confirm your hours of work. If what your supervisor indicates poses some problem, sort this out straight away.
3. There should be a toilet on site. If not, your supervisor will tell you the alternative.
4. Your supervisor should have a first aid kit, or have access to one on site. Know the procedure if a serious accident occurs.
5. Check carefully with your supervisor that the PPE you are wearing is suitable for the work you will be doing. All that is listed may not be required, but at least there has been a check.
6. You may be unfamiliar with a building or construction site. Your supervisor will make you aware of the major hazards you may encounter. For example, you may be working on a sloping roof rather than an even ground surface.
7. Job Description. Your supervisor will explain your task. If you have concern about any part of this, sort it out straight away.
8. Manual Handling. Your supervisor will explain what lifting and moving you may have to do as part of your task, and explain how this will be done, either by hand or mechanical means.
9. You may be asked to use a piece of plant or machinery that is unfamiliar to you. Your supervisor will ensure that the equipment is safe for you to use, and explain the safe operation of the equipment. You should only indicate agreement with this when you are satisfied you know how to operate the equipment safely.
10. Working at heights. You may be unfamiliar with working at a height. Your supervisor is responsible to ensure that all regulated protective measures are in place, however not all hazards can be totally eliminated.
11. Your supervisor will advise you if you are expected to work with materials that are considered hazardous. A Material Safety Data Sheet will be available for this material for you to read.
12. Scrap material and rubbish can present a hazard on site. Your supervisor will show you where and how to dispose of rubbish.
13. Under the Occupational Safety and Health Act of WA both employers and employees are required to exercise a duty of care in the workplace. Employers are required to provide and maintain workplaces, plant, and systems of work such that, so far as it is practicable, employees are not exposed to hazards. Employees shall take reasonable care to ensure their own safety and health at work, and avoid adversely affecting the safety or health of any other person through any act or omission at work.
14. When you are satisfied that you have been thoroughly instructed on the above matters, please sign the declaration. Have your supervisor sign it also. Give the signed copy to your supervisor.

REMEMBER, IF IN DOUBT, ASK



SITE SAFETY INDUCTION CHECK LIST FOR LABOUR HIRE PERSONNEL

Name:.....

Labour Hire Company:.....

1 Supervisor Name:..... ☐

2 Hours of Work List:..... ☐

3 Amenities: Toilets ☐
Other ☐

4 Emergency First Aid ☐
Medical Procedure ☐
Fire ☐

5 Personal Protective Equipment: Footwear ☐
Safety Glasses ☐
Hearing Protection ☐
Head Protection ☐
Hand Protection ☐
Skin Protection ☐

6 Site Hazards: Electrical ☐
Vehicular Traffic ☐
Work Surface ☐
Other Trades ☐

7 Job Description ☐

8 Manual Handling What ☐
How ☐

9 Machine Operation What ☐
How ☐

10 Working at Heights ☐

11 Hazardous Substances List:..... ☐

12 Housekeeping ☐

13 General Duty of Care ☐

14 Declaration:

I declare that I have been instructed on the above safety matters and agree to abide by them at all times while on site.

Signed:.....
Labour Hire Employee

Signed:.....
Supervisor

Date:.....

Date:.....

Section
15

Additional Safety Information

15.1 Working at Heights.....	15-2
15.1.1 Tiling Safety.....	15-2
15.2 Working Alone	15-3
15.3 Electricity	15-5

15.1 Working at Heights

Division 5 of the **Western Australian Occupational Safety and Health Regulations (1996)** sets out the regulatory requirements for the prevention of falls at workplaces in WA

BGC requires that all work at heights is done in accordance with this legislation and in accordance with the document entitled:

'Code of Practice - Prevention of Falls at Workplaces 2004'

This document is on the following pages and is published by the Government of Western Australia - Commission for Occupational Safety and Health.

Some common fall hazards are listed below to assist in identification of hazards associated with working at heights.

- Surfaces being worked on. This includes fragility, brittleness, stability, slipperiness or slope of surfaces and the safe movement of employees when conditions change.
- Changes in levels where employees may be exposed to falls from one level to another.
- The stability of temporary or permanent structures.
- Ground surface stability when used to support ladders, scaffolding or elevated work platforms.
- The size of the raised work area and whether it is sufficient for the people and materials on it.
- The correct erection, maintenance and disassembly of scaffolding.
- Edge protection for open edges of floors, roofs, work platforms or walkways.
- Openings or holes in roofs, floors or work platforms.
- Proximity of workers to areas where items may fall.
- Proximity to power lines.
- Access and egress to elevated work areas.
- Manual handling in elevated work areas.
- Weather conditions
- Suitability of footwear and clothing.
- The use of ladders. Where and how they are being used.
- Young and inexperienced workers carrying out task at heights.

15.1.1 Tiling Safety

Additional information specific to those involved in Roof Tiling is included in the form of **SAFE WORK PRACTICES FOR ROOF TILERS** and **SAFE WORK PRACTICES FOR TILERS - TRAINERS NOTES**.

Both of these documents were originally published by the Australian Government, Department of Education, Employment and Workplace Relations.

15.2 Working Alone

Definition of 'Isolation' is 'to set apart, detach or separate so as to be alone'. In Western Australia, the word 'isolation' is often used to refer to remote places a long way from main centres. In the **Guidance Note Working Alone**, the meaning of 'isolation' is used to refer to a person who is alone in any place as part of their work. The word 'alone' is used to reduce the confusion of working in an isolated area of WA.

Employees and self-employed people have to take reasonable care for their own safety when they work alone.

The employee and self-employed person must be able to:

- carry out all work activities safely without direct supervision;
- manage events that are likely to occur when working alone;
- follow procedures to obtain emergency assistance if required; and
- follow procedures to establish regular contact with a nominated person.

The OSH Act requires employers, so far as is practical, to provide and maintain a working environment where their employees are not exposed to hazards. The general duties impose on employers by the OSH Act include requirements for:

1. Safe systems of work;
2. information, instruction, training, and supervision;
3. consultation and co-operation;
4. personal protective clothing and equipment; and
5. safe plant and substances.

Communication with isolated workers

If an employee is isolated from other people because of the time, location or nature of the work then the employer must ensure that:

1. there is a means of communication available which will enable the employee to call for help in the event of an emergency; and
2. there is a procedure for regular contact to be made with the employee and the employee is trained in the procedure.

Refer to the OSH Act 1984; OSH Regulations 1996 (penalties); Guidance Note Working Alone 2009 www.commerce.wa.gov.au/WorkSafe

INJURY/INCIDENT PROCEDURE FOR WORKING ALONE



Figure 15.1 Injury/Incident Procedure For Working Alone

15.3 Electricity

Electricity is dangerous and can KILL. Do not attempt to fix or alter anything electrical.

- Report to any extension lead or hand power tool without a current quarterly inspection tag. (guideline - Red/Green/Blue/Yellow)
- Report any cases of electrical shock to your supervisor immediately, and seek medical attention.
- **Report damage to electrical equipment, (sparking etc.) to your supervisor. Never tamper with electrical equipment.**
- Treat all power cords and cables as live.
- Faulty power tools are the most common cause of electrical accidents. Check them and their fittings and leads prior to each use.
- Attach an "OUT OF SERVICE" tag to any defective electrical equipment.
- **ONLY** licensed **ELECTRICIANS** are permitted to make repairs or modifications to electrical tools, plugs, fittings, and leads.
- Extension leads should be kept as short as possible, off the floor and **DRY AT ALL TIMES**
- If a power lead has to be crossed by trolleys or vehicles, cable protectors must be used.
- NEVER lift or carry a power tool by its lead or wrap cord tightly around tool for storage purposes. A loose or broken wire could cause the tool to become live.
- Use an earth leakage box if using portable lights inside confined spaces and use heavy duty cable.
- Switch tools off at the power supply when work is completed or when you want to change drill bits, discs, etc.

BGC recommends the use of colour coded tags. Tags must be filled in completely with the electrical contractor, Electrical Workers licence number, name of person who conducted the test and either test date or date when retest is due.

If the correct colour coded test tags are unavailable it is acceptable to use a plain tag but all of the above information must be on the tag.

ALL TAGGING OF ELECTRICAL EQUIPMENT MUST BE AS STATED IN THE AS/NZS 3012:2003

1	2	3	4	5	6	7
Environment	Relocatable construction premises, Class I (earthed conductive parts) and Class II (double insulated electrical equipment)		Residual current devices (RCDs)			
	Relocatable construction premises, fixed and transportable equipment and construction wiring including switchboards	Portable equipment	Push button test (by user)		Operating time (RCD tester)	
			Portable	Non-portable fixed	Portable	Non-portable fixed
Construction and demolition sites in accordance with clause 1.1	6 months	3 months	After connection to a socket or before connection of equipment, and at least once every day in use.	1 month	3 months	12 months

Table 15.1 Tagging Information

RED January February March

BLUE July August September

GREEN April May June

YELLOW October November December



STAY ON TOP OF IT

**SAFE WORK
PRACTICES
FOR ROOF
TILERS**

Name:



Australian Government

Department of Education, Employment
and Workplace Relations



Stay On Top Of It: Safe Work Practices For Roof Tilers

Written by

Margaret Regan and Peg Wymond

This resource has been developed by the
Workplace Skills Unit
Swinburne University of Technology TAFE

© Commonwealth of Australia 2009

Funded under the Workplace English Language and Literacy
Program by the Australian Government Department of Education,
Employment and Workplace Relations.



Australian Government

**Department of Education, Employment
and Workplace Relations**



Stay On Top Of It:
Safe Work Practices For Roof Tilers

Project Manager
Peg Wymond

Language and Literacy Consultants and Writers
Margaret Regan and Peg Wymond

Desktop Publisher
Gabrielle Markus

All enquiries about this publication should be addressed to:
Workplace Skills Unit W69
Swinburne University of Technology TAFE
369 Stud Road
Wantirna Sth, VIC 3152
Ph: 03 9210 1963
www.tafe.swinburne.edu.au/social-sciences/WSA/WSA_index.html

Disclaimer

The views expressed in this publication do not necessarily represent the views of the Minister for Education or the Australian Government. The Australian Government does not give any warranty nor accept any liability in relation to the contents of this work.

Care has been taken to ensure the accuracy and currency of the information within this training manual at the time of printing. Swinburne cannot however accept responsibility for the accuracy or completeness for the information or opinions contained herein. The *Stay On Top Of It* training manual has been designed as an aid to training roof tilers. However, roof tilers and trainers should make their own enquiries regarding decisions concerning their interests. No person should rely on the general information presented here as a substitute for specific advice.

This work is copyright. Apart from any use as permitted under the Copyright Act 1968, no part may be reproduced by any process without prior written permission from the Commonwealth. Requests and inquiries concerning reproduction and rights should be addressed to the Commonwealth Copyright Administration, Attorney General's Department, Robert Garran Offices, National Circuit, Barton ACT 2600 or posted at <http://www.ag.gov.au/cca>.

Contents

Acknowledgements	iv
Using this manual	vi
Chapter 1 – Preventing problems	1
1.1 Responsibilities	2
1.2 Preparing for safety	8
1.3 When you arrive	11
Review checklist	21
Chapter 2 – Doing the job (roof tiling)	23
2.1 Setting up	24
2.2 Doing the work	31
2.3 Using mortar	43
2.4 Injury management and reporting	45
Review checklist	47
Chapter 3 – Before you leave	49
3.1 Cleaning up the site	50
Review checklist	53
Glossary	54
Appendix 1 – Fall protection requirements	58
Appendix 2 – First aid kit requirements	60
Appendix 3 – Material safety data sheet (MSDS)	61
Appendix 4 – Blank JSA and SWMS	65

Acknowledgements

We gratefully acknowledge the guidance, expertise, equipment and logistical support provided by the following people and organisations:



ROOFING TILE
ASSOCIATION
OF AUSTRALIA

Steering Committee

Jeff Anthony – CSR Bricks & Roofing
Richard Bromley – BGC Cement
Merrilyn Bull – Swinburne University of Technology TAFE
Stuart Clark – Boral Roofing
Doyle Nash – Boral Roofing
Chris Griffiths – Queensland Master Roof Tilers Association
Lloyd Johnston – Boral Roofing
Scott Kind – Bristle Roofing
Trevor Marshall – Bristle Roofing
Giselle Mawer – Giselle Mawer & Associates
Keith Miller – CSR Bricks and Roofing
Steven Powell – CSR Bricks and Roofing
Mike Quade – CPSISC
Tony Tanner – Roofing Tile Association of Australia
Brian Whitlow – Bristle Roofing

Additional Industry Support

Mike Turner – Boral Roofing
Trevor Alsop – Bristle Roofing
Ray Newton – Alice Roof Tiles

Further Support

Steve Chadwick – Holmesglen TAFE
Tony Collins – Bristle Roofing
Paul Meulenberg – Swinburne University of Technology TAFE
John Roberts – Boral Roofing
Dave Santiago – Boral Roofing
Shane Scotson – Northern Melbourne Institute of TAFE
Mick Sheridan – Becton Property Group

Thanks also to the many roof tilers who agreed to appear in this resource.

Perfectile Roofing P/L

Jason Whitelaw
Justin Goeree
Shannon Hillman
Troy Marsh
Chris Browne

Dawson Roofing

Leigh Dawson
Matthew Naughton
Peter Hynam
Daniel Hunter
Ben Snowdon

Devine Homes

Sasha Dodos

Rooftop Tiling

Brett Hunt
Brayden Cameron
Corey Hyde-Salerno

TDH Developments P/L

Tim Holland
Corey Kwiat
Charles Fenech
Michael Callus

Hudson Roofing

Rodney Hudson
David Pratt
Matt Camenzuli
Michael Putt

World of Roofing

Phillip Page
Jason Peters

Skinner Roofing P/L

Sean Skinner
Daniel King
Dean Palfreyman

Tadwin P/L

Dave O'Grady

Boral

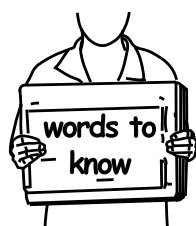
Brenton McLeod

Using this manual

This training manual is part of a resource package that includes a DVD and Trainer's Notes. Together they support training in the following units of competency from Certificate III in Roof Tiling from the Construction, Plumbing and Services Integrated Framework Training Package (CPC08):

- CPCPCM2015A Work safely on roofs
- CPCCRT2001A Handle roof tiling materials

These training materials can be used either with a trainer or at your own pace. The assessment tasks included here support the development of competence for aspects of relevant units of competence, rather than entire units. The completion of the tasks included in this resource could provide some evidence of competence when being assessed.



You will see this symbol on many pages in the manual. The words below this symbol are used in the following few pages of the manual. If you do not know the meaning of any of these words, you can look them up in the glossary at the back of the manual.



This symbol appears in the manual where there are questions and exercises for you to check your understanding of the section you have just finished. The answers to these activities can be found in the Trainer's Notes.



You will find this symbol at the end of each chapter. It prompts you to consider whether you may be ready to be assessed on the information in the chapter you have just completed.



Preventing problems

In this section you will find information about:

1.1 Responsibilities

No drugs or alcohol on site

No fighting, intimidation, bullying or harassment

Safe work procedures

Ensuring site readiness for tiling

Hazards and risks

Scaffolding and guard rail checks

1.2 Preparing for safety

Weather conditions

Equipment checks

First aid kits and fire extinguishers

Risk assessment

1.3 When you arrive

Parking your vehicle

Safety signs

Induction

Fit for work

Warm up exercises

JSA / SWMS

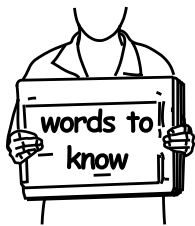
Risk assessment

Overhead power lines check

Plan work layout

Personal protective equipment and clothing (PPE & C)

Electrical safety



prescription
drugs

intimidation

bullying

harassment

1.1 Responsibilities

Employee responsibilities

To keep everyone safe on your worksite, you must know your own and your employer's responsibilities.

Everyone is responsible for protecting their own health and safety and the health and safety of other people at the work site.



Children and animals should not be on site.



You must not work if you are affected by drugs, including prescription drugs or alcohol. Illegal drugs or alcohol must not be brought on site.

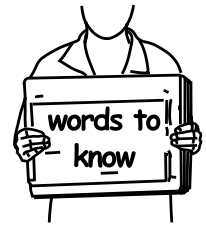


You must not take part in fighting, intimidation, bullying or harassment.

You must not remove safety controls or safety signs, barricades or equipment (including environmental protection equipment such as sediment traps or bunding) unless you have been authorised to do so.

Employees must follow all safe work procedures such as for:

- wearing personal protective equipment and clothing (PPE & C)
- using hazardous substances
- working safely at height
- clearing rubbish from the site.



barricades

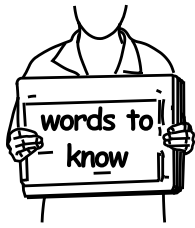
environmental
protection
equipment

sediment traps

bunding

authorised





void protection

Employer responsibilities

Employers are responsible for making the site ready for tiling. This includes:

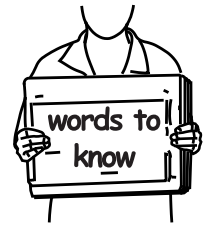
- carrying out a risk assessment
- ensuring suitable scaffold and work platforms
- providing void protection
- supplying a toilet and fresh clean water
- providing recycling and rubbish areas.



Hazards and risks

A hazard is anything that could cause harm, such as sharp tools, heavy loads that need lifting and frayed electrical cords. A risk is the probability (or chance) that the hazard will cause injury or harm and the consequences if it does.

For example, the risks of sharp tools might be cuts, and the risk of heavy loads might be back injuries. Before you start work, all possible hazards and risks should be identified and appropriate safety measures put in place to get rid of them or at least reduce them to acceptable levels.



risk control hierarchy

Risk control hierarchy

The risk control hierarchy ranks risk controls from the most preferred control to the least. In the hierarchy, getting rid of the hazard is the most preferred control while personal protective equipment is the last control you should consider.



For example, you can use the hierarchy to control the risk of hearing damage from using a power saw to cut battens. Starting at the top, consider eliminating or substituting the cutting of battens with something that would achieve the same result. If you can't do this, consider isolating other workers from the noise by having them work at a distance from the sawing. Next you might use an engineering control such as a quieter saw or a sharper blade to lower the level of noise. After that, administrative controls could include workers rotating tasks so that no one has a long exposure to the noise. Finally, use personal protective equipment such as ear plugs to control the risk even further.

If you have ideas about how to control risks at your work, you should discuss them with your supervisor.



Guard rails

OHS Legislation, Codes of Practice and Australian Standards cover fall protection and the specifications for roof guardrail installations. You should make yourself aware of your individual state's requirements so that you can recognise if guardrail systems are compliant and identify if there are any potential hazards on the roof or within the fall zones.

Roof guardrails are required when:

- 1) the fall height from the gutter line is more than the individual state's requirement **or**
- 2) there is less than 2 metres of clear fall area out from the gutter line.
This includes when hazards such as fencing, posts, drop edge beams, concrete drive ways, construction waste or stacked materials are within this fall zone.

AS:4994. 1/2 *Temporary roof edge protection for housing and residential buildings* provides advice on roof angles and the relevant selection and application of safety systems, eg guardrail & scaffolding catch platforms.



State	Working at Heights Threshold in Domestic Residential
ACT	3m
NSW	Zero
NT	2m
QLD	3m
SA	3m
TAS	3m
VIC	3m
WA	3m

You should know your state's requirements for working on roofs. These requirements may vary for glazed and semi-glazed tiles.

Roof guard rails must have 3 guard rails and the bottom rail should be approximately 100mm above the roof. The top rail should be between 900 and 1100 mm above the roof. There must also be ladder access points placed in the guardrail system for safe access and egress from the roof for tilers.

Your state may have even stricter requirements than AS:4994.

For more detail about protection to manage the risk of falling, see Appendix 1.

Scaffolding

Scaffolding is also covered by Codes of Practice and Regulations. They include the following points.

- All scaffolding and work platforms should only be used if they have been erected by a certified scaffolder in accordance with regulations and guidelines. Scaffolders should provide information in the form of handover certificates or access control cards (or scaff tags) on the scaffolding access points to indicate whether the scaffolding is “Safe to Use” (in green) or “Do Not Use - Unsafe” or “Incomplete” (in red) . These tags also show the weight classification of the scaffold.

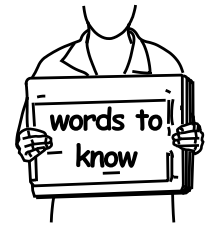


- All scaffolds, landings and work platforms must be provided with an access ladder that extends at least 1 metre beyond the step-off point.



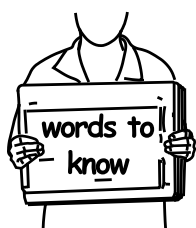
- All scaffolds and work platforms at or above 2 metres above the nearest horizontal plane must be fitted with rigid guardrails at a height of between 900mm and 1100mm from the work platform, and completely surround the area of the work platform.
- Kickboards must be fitted to all scaffolds at or above 2 metres. All scaffold kickboards must be secured so they don't move while being used.

Check with your state or territory's work safety body about specific scaffolding requirements.



erected

fall restraint



Australian
Standards

first aider

operational

1.2 Preparing for safety

It is the tiler's responsibility to check that conditions are right before any tiling is started.

Check weather conditions

Weather conditions must be suitable for tiling. Be aware that these conditions may change at any time.

Excessive heat, gusty winds and wet or icy conditions are not suitable for tiling work, and you should never work on a roof when there is lightning in the area.

Check equipment



Before you arrive on site you should be sure that your equipment is fit for purpose and in good working order. Do daily checks of your ladders, tile elevator, etc and make sure that any defective equipment, such as missing guards or broken parts, is repaired or replaced.



Electrical leads must be industrial strength and all leads and hand tools must be tested and tagged every 3 months. This is a legal requirement and is part of the Australian Standards.

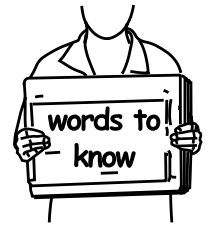


You should have a first aid kit ready for use on site. Check that used or out-of-date items have been replaced. It is important that everyone knows where the first aid kit is and that it is readily available, not buried in the back of a van or ute. Where possible, each site should also have a trained and qualified first aider.

Some states may have specific requirements about the type and contents of a first aid kit. Check with your site supervisor and government's work safety body. See Appendix 2 for an example.



Be prepared for a fire incident. When cutting or grinding there may be sparks. Make sure you have a fire extinguisher available for use on site, and indicated in your JSA or SWMS (see pages 14-15 for more about these). You should check that it is up to date and operational.



controls

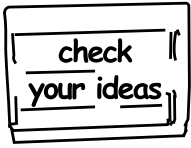
risk assessment

Be aware that in some states using electric tools to cut and grind metal battens is not allowed on fire ban days.



Before you arrive on site, check with the person responsible for the site that a site risk assessment has been completed and that necessary controls (eg guard rails) have been put in place. This person may be the builder, your supervisor or someone else who has been given this responsibility. You will also need to complete your own risk assessment when you arrive on site.

For each chemical you use, you must have a Material Safety Data Sheet (or MSDS) on site. The MSDS has information about how to use the product safely and what to do if an accident happens. The MSDS is prepared by the manufacturer of the product and should be provided to you by the supplier of the product. It is also available on request from the manufacturer. See Appendix 3 for an example of an MSDS.



1. Name three things you should check before arriving on site.

- a. _____
- b. _____
- c. _____

2. Describe site situations where guardrails must be in place.

3. Who would you check with that the site risk assessment has been completed before you arrive at a job?

4. Name 3 of your responsibilities as an employee.

- a. _____
- b. _____
- c. _____

5. Name 3 of your employer's responsibilities.

- a. _____
- b. _____
- c. _____

1.3 When you arrive

When you arrive at work make sure you park your vehicle safely so that it does not become a hazard for others. Other vehicles and people need to be able to move in and out of the site safely. Allow room for any deliveries to the site and make sure you don't park across private driveways.



Safety signs

Hang safety signs in clear public view as soon as you arrive on site. There are a variety of signs you can use to advise anyone entering the site that you are working overhead. People must be warned to stay clear of your work area in order to avoid being at risk. You must also read and follow instructions on other safety signs on your site.

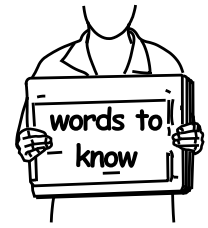


Site induction

You may be required to go through a site induction before starting work. These are usually done by the builder and are necessary on larger sites.

You will be told about:

- hazards present on the site
- evacuation procedures
- emergency procedures
- who the first aiders are
- hazard/incident/injury reporting
- tool box talks or meetings
- plant and equipment register
- hazardous substance register
- access to Material Safety Data Sheets (MSDS)
- special circumstances, unusual conditions and site rules.



hazard

site induction

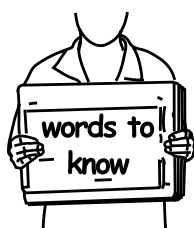
evacuation

tool box talks or meetings

plant and equipment

hazardous substance

Material Safety Data Sheet (MSDS)



fit for work

consumed

Fit for work



Everyone must turn up fit for work. Workers can create hazards for others if they are not fit for work. This means they should not be overly tired or affected by alcohol or drugs (illegal or prescription). Alcohol and illegal drugs should not be brought onto or consumed within the building site. Your insurance will not protect you if you have an accident on site while affected by alcohol or drugs.



Do warm up exercises to keep your body safe and help prevent injury. Stretching gets your muscles ready to work and can help your body move more easily. Like an athlete, your body is your main piece of equipment – take care of it to avoid injury.

Complete administrative tasks

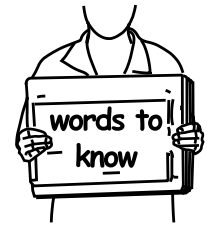
Some sites may have sign-in procedures which you must follow when you arrive on site. Signing in has a number of benefits.

1. People will know you are there so they can avoid creating hazards for you as they plan and do their own work.
2. If there is an emergency, there is a record of who is on site so everyone can be accounted for.
3. Signing in makes sure that everyone on site has their construction induction card. The national card, and various coloured state cards, all show that the holder has completed at least a General Construction Industry Safety Induction training course.



JSA and SWMS

Information you hear about in the induction should be documented, generally in the **Job Safety Analysis (JSA)** or **Safe Work Method Statement (SWMS)**. All workers on site are responsible for developing and signing-off on these documents.



site specific

eliminate

minimise

control
measures

confirm

structural
stability

facilities

The JSA or SWMS should be site specific. It will identify:

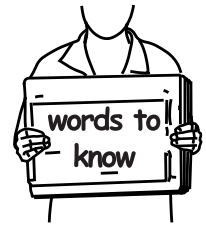
- the tasks that will be done on site and the order in which these tasks will be carried out
- the hazards involved in each of these tasks
- what controls will be needed to eliminate or minimise the risk of injury with each of the hazards
- the name of the person responsible (supervisor or higher) for putting the control measures into place.

The information on the JSA/SWMS will confirm whether the site is suitable for tiling (including if there is adequate scaffolding, warning signs, structural stability and facilities).

See Appendix 4 for an example of a blank JSA and SWMS.

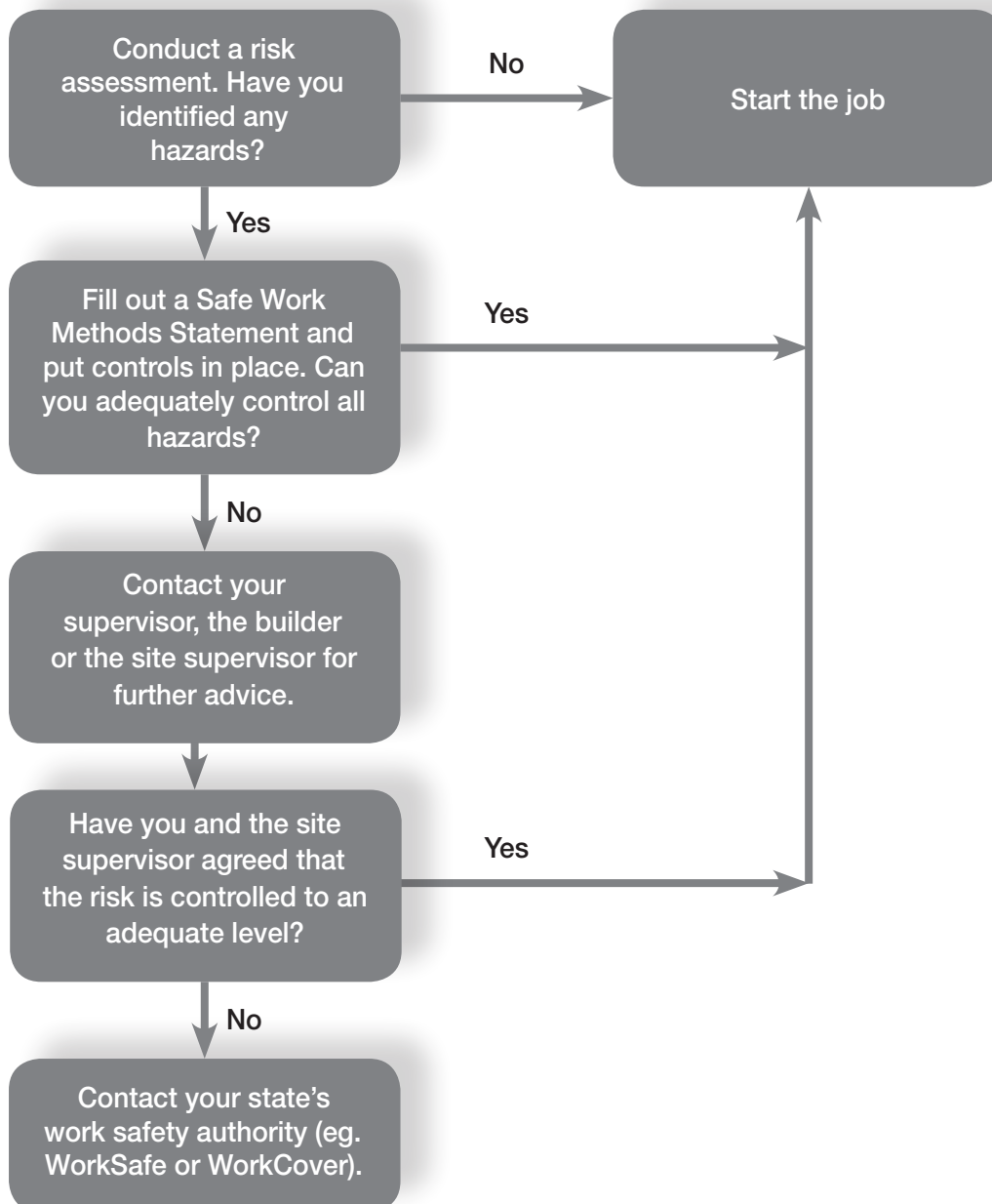
Risk assessment

Before beginning the job you must conduct a risk assessment using a site safety checklist or your SWMS. You should do this every day in case new hazards have been introduced to the site. Any identified hazards can then be managed using the SWMS. If you cannot adequately control a hazard, you should contact your supervisor, the builder or the site supervisor for further advice. Work should not start until the risk is controlled to a level that is agreed to by the tiler and the site supervisor.



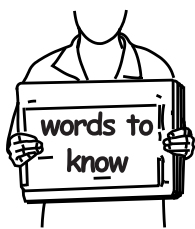
adequately

strategies



When you conduct daily risk assessments with the site safety checklist you are helping to ensure your safety and the safety of others by:

- being alert to changing conditions on site and new hazards being present
- identifying strategies to eliminate, manage or control the hazards and putting controls in place
- sharing responsibility with others for the management of the hazards.



excess debris

restriction

anchorage
points

Site Safety Checklist

Inspection by tile fixer to be carried out on site before beginning work.

Use in conjunction with the fall protection Codes of Practice for roof tiling.

Circle **Y** – Yes or **N** – No

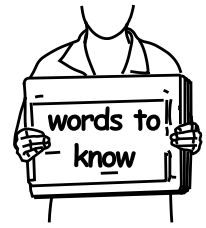
1. Is entry and exit from the site suitable?	Y	N
2. Is required edge protection / guardrail in place and complete?	Y	N
3. Is required scaffold complete (eg gates, kick/toe boards) and in place at correct height for the pitch of roof?	Y	N
4. Is the scaffold platform at a safe width?	Y	N
5. Is the site clean of excess debris to ensure a safe working area?	Y	N
6. Are there any other trades working underneath you?	Y	N
7. Is there restriction due to overhead electric wires (4 metre clearance)?	Y	N
8. Are there fall arrest anchorage points in place if required?	Y	N
9. Is there power on site?	Y	N
10. Is there a toilet and fresh clean water available on site?	Y	N
11. Do you have safety warning signs in place in full view?	Y	N
12. Do you have Material Safety Data Sheets with you?	Y	N
13. Have you visually inspected the battens for knots or dry rot?	Y	N
14. Are there any other hazards? If so, how are you going to control them?	Y	N
<p>Tiler Fixer Sign Off</p> <p>I certify that I have completed the Site Safety Checklist before starting work on site.</p> <p>Name: _____</p> <p>Signed: _____</p> <p>Date: _____</p>		

Any hazards should be discussed as a group so that everyone is aware of potential risks. This is called group consultation. To minimise risk, employees should only be given jobs for which they are suitably trained.

Plan the work



Be aware of power lines. Overhead power lines must have a 4 metre clearance from your work area. Make sure you position your battens away from power lines. If your work area is within 4 metres, tiger tails must be fitted to the power lines or the power turned off. Tiger tails are not insulated – they are only a visual reminder that the power lines are nearby.



tiger tails

cordon off

Decide on your work layout. Check that all the materials you will need are there, and stored safely, so they will be ready when you want to use them.

Plan to:

- minimise manual handling (such as lifting, stretching, bending, pulling, pushing, carrying and twisting), to minimise the risk of injury
- minimise exposure to trip and slip hazards (for example by putting a plank across mud)
- minimise exposure to fall hazards.

See pages 24-27 for more information on manual handling hazards and how to control them.



Use safety tape to cordon off a suitable area to throw tiles and off cuts into from the roof. This keeps people safe from falling debris.

Personal protective equipment (PPE)

Where it is not practical to control the risk of injury by other means, personal protective equipment (PPE) may need to be used. You will need different PPE for different tasks. You must make sure your PPE is ready for use when it is needed.

Personal protective equipment includes the following.



Non-slip footwear for working on the roof.



Ear muffs for use with power saws, especially if cutting metal. Hearing protection is required when using an angle grinder, some nail guns and petrol motors, or if a worker nearby is using one of these.



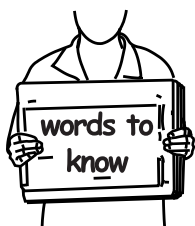
Sunscreen, sunhat, sunglasses and appropriate protective clothing such as $\frac{3}{4}$ length sleeved safety shirt and $\frac{3}{4}$ length pants.



Gloves to protect your hands when handling tiles, some building materials and chemicals.



Safety glasses to protect your eyes against air-borne particles such as from hammering, nail gun use or dust blown by the wind. These can be tinted for UV protection.



residual current
device (RCD)

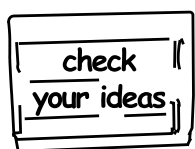
Electrical safety

You must keep your electrical equipment in good working order.

If the site has no earth leakage protection, a portable residual current device (RCD) should be used. This will automatically stop the flow of electricity if you are about to be electrocuted. The unit needs to be tagged and tested every three months, like all electrical equipment.



Every day you should push the test button on the RCD to check that it is working.



1. Name three things you should do when you arrive on site to get ready to start your work.

- a. _____
- b. _____
- c. _____

2. How can a JSA or SWMS help you do your job safely?

3. Think about the PPE and electrical equipment you use. When do you check that they are in good working order?

Review checklist

You should be able to:

■ Understand these words and phrases

- | | |
|---|--|
| <ul style="list-style-type: none"> – prescription drugs – intimidation – bullying – harassment – barricades – environmental protection equipment – sediment traps – bunding – authorised – void protection – risk control hierarchy – potential – erected – fall restraint – Australian Standards – first aider – operational – controls – risk assessment – hazard – site induction – evacuation | <ul style="list-style-type: none"> – toolbox talks or meetings – plant and equipment – hazardous substance – Material Safety Data Sheet – fit for work – consumed – administrative tasks – site specific – eliminate – minimise – control measures – confirm – structural stability – facilities – adequately – strategies – excess debris – restriction – anchorage points – tiger tails – cordon off – residual current device (RCD) |
|---|--|

☐


If you think you are ready to be assessed, see your trainer or assessor.

■ Know about your responsibilities

- Protect your own health and safety
- Protect the health and safety of others on site
- Stay unaffected by drugs
- Don't remove safety controls or signs
- Follow safe work practices

☐

■ Know about the responsibilities of your employer

- Carry out a risk assessment
- Provide suitable scaffold and work platforms
- Provide void protection
- Designate areas for rubbish and recyclable materials
- Ensure there is a toilet and fresh clean water

☐

- Know what to check before you arrive at work ☐
including:
 - Weather conditions
 - Equipment
 - First aid kits and fire extinguishers
 - Site risk assessment has been completed

- Know what to do when you arrive at work ☐
including:
 - Park safely
 - Put up safety signs
 - Check that everyone is fit for work
 - Do warm up exercises
 - Sign in or complete an induction, if appropriate
 - Check the JSA / SWMS
 - Complete a risk assessment
 - Check that scaffolding and guard rails are in place
 - Plan work layout
 - Check PPE
 - Check electrical equipment

2

Doing the job (roof tiling)

In this section you will find information about:

2.1 Setting up

Manual handling

Safe use of ladders

2.2 Doing the work

Avoiding heat stress

Working at height

Using power tools

Loading the roof

Using the elevator

Handling and moving tiles

Securing pallets

Laying the tiles

Walking on tiles

Safe tile laying practices

Job rotation

Cutting-in the roof

Collecting and disposing of waste

2.3 Using mortar

Dust hazards

Safe manual handling

2.4 Injury management and reporting

Getting help

Electric shock

Reporting incidents and injuries

2.1 Setting up

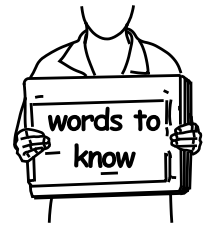
There are a number of hazards associated with unloading and setting up your equipment.

Manual handling

Manual handling is any activity that requires you to use your body to lift, lower, push, pull or hold something or someone.



It is important that you try to minimise your exposure to manual handling hazards, such as by using a mechanical aid to assist you. For example, a hoist can be used to lift a tile elevator to the roof and the tile elevator or a winch can be used to send material to the roof. A trolley can be used to move materials along a roof.



mechanical aid

winch



Assess manual handling tasks before you start them. Plan each move by testing the weight of the load, checking that your route is free of obstructions and making sure you can put the load where it will not become a hazard for yourself or other workers.



Watch for power lines when you lift equipment such as ladders and elevators off your vehicle and do not set up equipment near power lines.

There are general manual handling principles you should follow to keep yourself safe.



1. Stand close to the load with your feet shoulder width apart for a stable base.



2. If the load is down low, bend your knees and keep a straight back.



3. Hold loads firmly and close to your body, keeping a firm grip.



4. Lift smoothly and move your feet to turn, don't twist.



5. Be careful not to create a tripping hazard when you put things down.



6. Ask for help, if needed.

Consider making 2-3 easier trips instead of one big one.



industrial
standard

access point

Safe use of ladders

You should make sure that the ladders you use are industrial standard. Check also that the way you use ladders complies with Australian Standards and Codes of Practice.

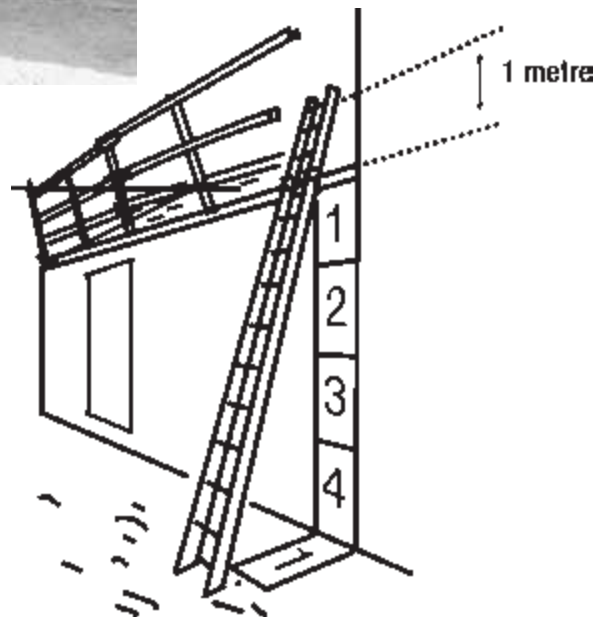
Find the safest place for erecting the ladder.



Make sure the base of the ladder is stable, particularly on soft or uneven soils.

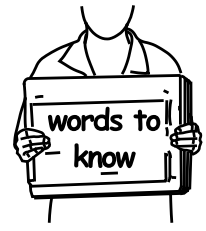
The area should be clear of equipment and other materials, including waste. These can cause tripping hazards.

The height of the ladder must extend at least 1 metre above the access point from the ladder. The safe distance for the foot of the ladder from the wall of the building is $\frac{1}{4}$ the height of the ladder.



The gutter must be protected so use a gutter guard. Then tie the ladder off and secure it at the top.

When you are using metal ladders or metal reinforced ladders, be aware of electrical hazards. For all ladders, if there are electric wires or cables overhead make sure you leave clearance of 4 metres.



points of contact

There are some general safety rules tilers should follow when using a ladder.



Don't lean to the side when you are on the ladder.



Don't stand on rungs that are above the access point.



You are required by law to maintain three points of contact with the ladder at any time you are using a ladder. Remember that work must not be performed while you are on the ladder.



Don't wear muddy shoes or boots while climbing a ladder as they can cause a slip hazard. Change into clean roof shoes before you start climbing the ladder.



reduce

Safe use of battens



Stand battens up so that they are easy to reach from the roof. Putting them in this position will also reduce manual handling and fall risks.

Be careful that:

- battens will not fall and hit others on the ground
- they are clear of any electrical hazards.

Check shadow areas



At the start of the day shaded areas on the roof may still be wet from overnight rain, dew or frost. Walking on wet surfaces, especially wet glazed terracotta roofs, is unsafe as they are slippery.

Feel if the roof is dry before walking on it. If it is wet, allow it to dry first.



1. How can you minimise the manual handling risks in your job?

2. Name three things you should do when setting up a ladder to make sure it is safe to use.

- a.

- b.

- c.

3. Why should everyone in the work group be involved in completing the risk assessment?

2.2 Doing the work

Doing the work also involves many manual handling hazards. You should plan to minimise these hazards as you prepare the roof for the tiles.

Whether you're pegging out, laying sarking, securing battens, carrying tiles or completing any other part of the tiling job, you should plan to minimise the manual handling hazards.

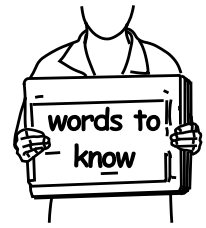
Keep your cool

Avoid heat stress or becoming dehydrated. These conditions are caused by:

- high temperatures or high humidity
- exposure to the sun
- intense physical activity
- wearing clothing that restricts air movement and stops you from sweating.

Make sure you:

- have regular drinks of cool water while you are working
- wear loose clothing (where this is not a safety hazard) so your body is able to sweat freely. Light coloured shirts help to reflect the sun and keep you cooler
- use sunscreen to protect yourself from UV rays that can cause skin cancers
- protect yourself from the direct sunlight by using a wide brimmed hat, helmet attachments or clip-on neck protectors.



dehydrated

high humidity





intersect

Working at height

Any work you do at height involves fall hazards, especially working on an untiled roof. To minimise the risk of falling there are some basic work practices that you should follow to stay safe.



Walk across the trusses. Make sure you place your feet where the truss and batten intersect.



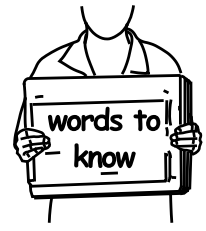
Work from the bottom of the roof upwards, closing gaps as you go.



Take extra care when you are walking backwards.

Are extra controls necessary?

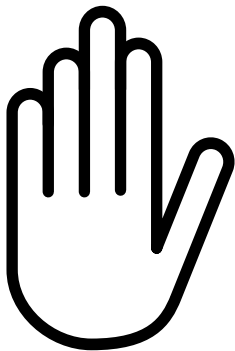
If the truss spacing is more than 600mm there is a greater risk of falling. Check your SWMS for any extra control measures that should be in place.



inadequate



Wear a safety harness for small maintenance jobs where there is no edge protection and you need to move from a working platform to work off the ground. You must make sure it is connected to a safe anchorage point before moving from the platform. The safety harness should not be disconnected until you have moved back to the working platform. Anchorage points can vary, for example single points or straps around suitable beams, and you should be properly trained before using this equipment.



Strict requirements are in place for scaffolding and edge protection and these requirements can vary from state to state. If scaffold or edge protection is missing or inadequate you must stop work and contact your supervisor, or the builder or site supervisor.



fascia

Keep yourself safe at height

There are certain work practices to avoid so that you keep safe while you are working on a roof.



DON'T climb on any rails or supporting framework.



DON'T use metal fascia to support you. It will not support a load and will easily unclip.



DON'T walk on valley irons. The surface is too smooth and slippery and you may fall on the upturned edge of the valley and suffer serious cuts.

DON'T leave long battens or sarking in unsafe places if the conditions are windy. Even in light winds sarking can act as a sail and be very dangerous.

Power tools

Any power tools such as saws and nail guns present significant safety risks for the user and other people nearby. Some of those risks are:

- electrocution
- cuts
- punctures.



Power tools must always be used with earth leakage protection. If there is none on site, make sure a residual current device (RCD) is in place.

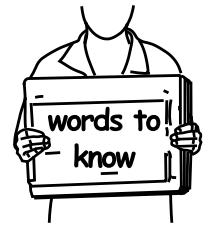


Nail guns can be misfired and nails can ricochet causing workers serious injury. When using a nail gun, make sure the area below the worksite is clear of people, and that you and nearby workers ALWAYS wear safety glasses.



Power leads and airlines can get snagged, knock tools off the roof or become a trip hazard to others. Electrical supply leads should be protected from damage. Where possible, pull leads up through the frame instead of pulling them over metal surfaces such as edge protection.

Elevate electrical leads from the ground, away from water and wet areas, to avoid electrocution.



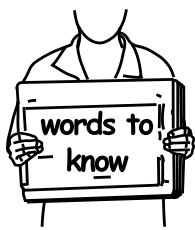
electrocution

punctures

earth leakage
protection

ricochet

snagged



sarking

mortar

Loading the roof

Part of a tiler's job is to load the roof, but you need to take steps to reduce the associated manual handling risks.



A 2-man lift is best whenever an elevator needs to be moved.

Make sure others can easily move around the elevator so you don't create a trip hazard for others.



Using equipment to lift things will minimise lifting hazards. Consider using a winch to carry things to the roof, including sarking and mortar.

Using an elevator has manual handling risks for workers loading tiles onto the elevator on the ground, as well as for the workers lifting tiles from the elevator and placing in stacks on the roof.

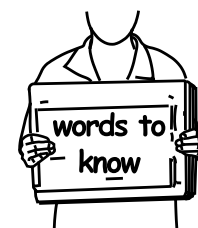
Remember:

- Whether carrying the tiles on the ground or on the roof, carry the stack in front, close to your body. If you carry tiles on your shoulder you face greater manual handling risks in the long term.
- It's hard to see while carrying tiles in front, which can create a trip hazard.

Plan the move. Look for trip hazards before you start to move.

Refer to the manual handling guidelines in section 2.1 of this manual for extra tips about safely carrying tiles.

As you load tiles onto the elevator, make sure you watch out for other hazards that may affect your safety and the safety of others.



caustic



Water trapped in the wrapping of concrete products may become caustic and cause skin burns. Wear work gloves when handling these tiles and wash your work clothes regularly.



When loading the elevator, check that the worker on the roof is keeping up with how quickly you are sending up the tiles.



Delivered tiles can present a hazard if the pallet is damaged or placed on an angle. Check that tiles are stable when you unwrap them so they don't fall on you.



If the roof is long and relatively flat, trolleys can be helpful for moving tiles.

Laying the tiles

Laying tiles involves bending, lifting and lowering loads. Just as you did when loading the roof, it is important to use safe manual handling practices.

You can also keep yourself safe by making sure you do the following:



Place your feet carefully on the nose of the tiles or where the trusses and battens cross.



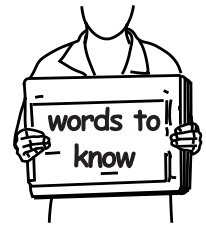
Work from the bottom up so that there are tiles for you to stand on.



Keep your shoes clean of mud or clay. Muddy shoes are a slip hazard.



Avoid wet roofs or roofs in shadow, which are damp. These are slip hazards.



rotated



Learn all tasks so that jobs can be rotated. This helps to avoid overuse of individual body parts.



cutting-in

preventative

disposable

respiratory

dust resistant

Cutting-in the roof

Cutting-in the roof also has safety risks, but these risks can be minimised if you use safe work methods and take preventative steps to protect your body.

Avoid the use of angle grinders. Using an angle grinder creates silica dust that is harmful to breathe, but using a cutter will avoid this. The dust also creates a slip hazard.



Even when using a tile cutter you can take steps to minimise the safety risks. What can you do?



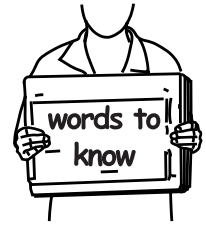
Wear at least a disposable P1 or P2 respiratory mask and dust resistant safety eye wear to give you added protection. The risk of getting dust in your eyes or lungs is higher on a windy day. You may prefer to wear a respirator.



Use a cutting tray to collect the waste and minimise slip hazards.

Know about the potential harm

Dry grinding or cutting of roof tiles can create a hazardous dust containing crystalline silica. Do not breathe the dust. Look at the diagram below to see the risks.



dry grinding

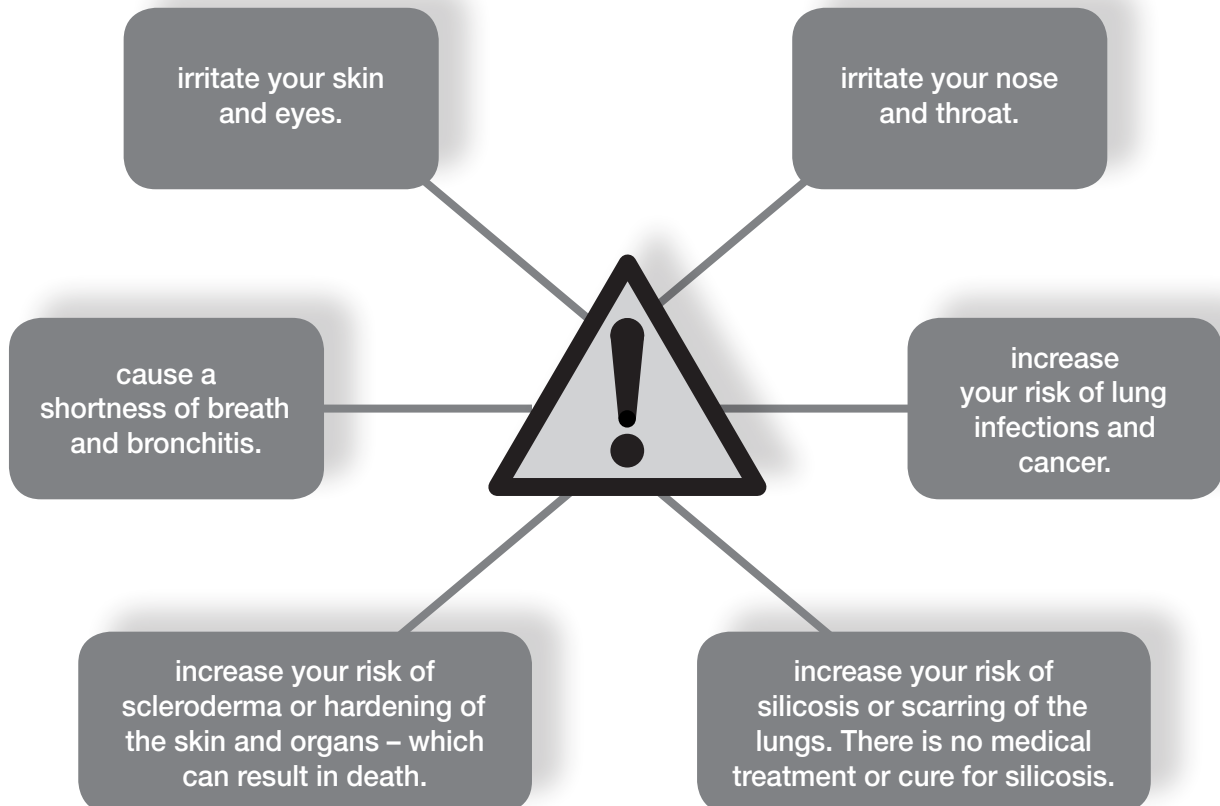
respiratory
system

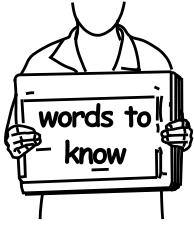
bronchitis

scleroderma



Breathing the dust can...





dispose

designated
waste area

Disposing of waste

If you are careful about how you dispose of waste you will help to keep yourself safe, as well as others who are on site.

Drop waste carefully over the edge into the designated waste area.



Make sure other workers or visitors on site are clear of the waste area.

2.3 Using mortar

By following some basic steps you can keep yourself safe when working with mortar.

Breathing in cement dust is hazardous.

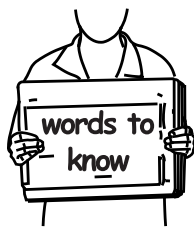


Cement mixers and hand held mixers can create dust hazards. Use a mask to avoid breathing in the dust.



Cement bags and buckets of mortar can be heavy, so following safe manual handling principles will help to keep you safe.

- Lift the load keeping your back straight.
- Carry the load close to your body.
- Avoid twisting your body.
- Avoid carrying mortar in buckets while climbing a ladder.



rubber boots



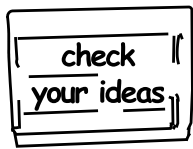
Rubber boots help stop buckets from sliding off the roof.



Consider partially filling the bucket with mortar to make the load easier to manage.



Consider sending the bucket up the elevator instead of carrying it.



1. Describe four ways you can protect yourself from heat stress.
 - a. _____
 - b. _____
 - c. _____
 - d. _____
2. Why shouldn't you step on metal fascia or valley irons?

3. Think about the equipment you use to cut-in roofs. What do you have to do to keep yourself safe while doing this job?

4. How do you transport mortar to a roof? Can you think of a safer way to do this?

2.4 Injury management and reporting

It's important that you report any of the following to your supervisor:

- Incidents
- Injuries
- Hits
- Near misses

A record should be kept of all injuries and incidents. These records are important because they provide evidence about what happened and when.

If all of these events are reported, safety issues can be identified more easily and action can be taken to prevent similar incidents happening in the future.

What if there is an injury?



If you are injured:

- find the details of the nearest medical centre or hospital on the builder's board at the front of the site
- ring 000 or ask someone to call an ambulance for you, if you cannot take yourself.



If someone else is injured, make them comfortable until medical attention arrives but do not move the injured person unless their life is threatened.



notifiable incidents

state's safety regulator



In the case of an electrical shock, disconnect the power if possible, but do not put yourself at risk to do this.



If necessary, check the product's label or MSDS for first aid and information about what to do.



All injuries should be reported to your supervisor or employer.

Most states require notifiable incidents be reported to the state's safety regulator, such as WorkSafe or WorkCover. Notifiable incidents include serious injuries, particularly if they require hospital treatment.



1. What is the process for your work team to report an injury or incident at work?

2. How would you locate the nearest medical clinic if you were hurt while on a job?

Review checklist

You should be able to:

■ Understand these words and phrases

- | | |
|-----------------------------|----------------------------|
| – mechanical aid | – caustic |
| – winch | – rotated |
| – industrial standard | – cutting-in |
| – access point | – preventative |
| – points of contact | – disposable |
| – reduce | – respiratory |
| – dehydrated | – dust resistant |
| – high humidity | – cutting tray |
| – intense physical activity | – waste |
| – intersect | – dry grinding |
| – inadequate | – respiratory system |
| – fascia | – bronchitis |
| – electrocution | – scleroderma |
| – punctures | – dispose |
| – earth leakage protection | – designated waste area |
| – ricochet | – rubber boots |
| – snagged | – partially (fill) |
| – sarking | – notifiable incidents |
| – mortar | – state's safety regulator |

☐


If you think you are ready to be assessed, see your trainer or assessor.

■ Know what to check when setting up for the job

- Use safe manual handling techniques
- Use a mechanical aid where possible
- Don't set up equipment (eg ladders) near power lines
- Use ladders that comply with industrial standards
- Secure ladders in safe place
- Discuss risk assessments
- Ensure battens are standing up and easy to reach
- Check shadow areas – don't work on wet tiles
- Power leads are raised from ground to avoid electrocution

☐

■ Know what to do when doing the job

- Have regular drinks
- PPE
- Work from bottom of roof upwards
- Walk where the truss and batten intersect
- Check SWMS for extra control measures
- Report if edge protection or scaffold is inadequate
- Use power tools with earth leakage protection
- Clear worksite if using nail gun

☐

- Know what to do when loading the roof ☐
 - Use two man lift when moving elevator
 - Use equipment to control manual handling hazards
 - Check tiles are stable before unwrapping them
 - Wear gloves while handling tiles

- Know what to do when laying the tiles ☐
 - Work from bottom up
 - Keep shoes clean
 - Ensure roof is dry

- Know what to do when cutting in the roof ☐
 - Avoid using angle grinder
 - Use tiler cutter and tray
 - Wear correct PPE
 - Dispose of waste carefully

- Know what to do when using mortar ☐
 - Wear correct PPE
 - Follow safe manual handling principles
 - User rubber boots on pails
 - Consider partially filling buckets

- Know what to do when there is an incident or injury ☐
 - Report incident/injury
 - Record details
 - Assist injured
 - Get help
 - Disconnect power for electric shock
 - Check MSDS, if necessary

3

Before you leave

In this section you will find information about:

3.1 Cleaning up the site

Clean roof and gutter

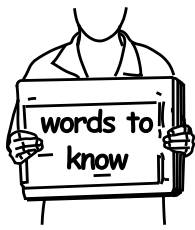
Tidy materials and equipment

Remove equipment

Remove rubbish

Recycle

Secure the site



fall protection

3.1 Cleaning up the site

When the tiling and mortar work is finished, the roof and gutters must be cleaned.

Watch out for others below

Sweeping or blowing material over the edge can create hazards for people below. Make sure you warn others on site before sweeping or blowing anything over the edge of the roof.



Cleaning out gutters can result in cuts and scratches to your hands. Wear work gloves to avoid this.

You are also at risk of falling so make sure adequate fall protection is still in place and that you move carefully around the roof.

Tidy materials and equipment

All plant must be immobilised at the end of each day.



Ladders must be removed when not in use and holes should be securely covered.

It is best to use a 2-man lift for stacking pallets.

Remove equipment and load truck

When you pack up and load equipment back onto your vehicle, you will face many of the same manual handling issues that you had when you unloaded your equipment and set it up.

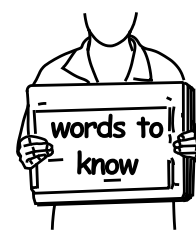
Again, you should not carry equipment while climbing down a ladder.



It is better to use the elevator or winch, or, if possible, pass things down to someone on the ground.



Be sure to secure the equipment in your vehicle. Unsecured items can become projectiles when you brake sharply or if you are in an accident.



immobilised

secure

projectiles

recyclable

designated
recycling areas

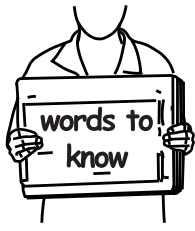
Leave site as you found it

Leave the floors of the building reasonably clean and tidy. Remove rubbish from the ground around the building and put it into designated rubbish areas. This helps to eliminate slip, trip and fall hazards. Be sure you do not block access and walkways.



Domestic rubbish, including food and drink wrappings, must not be left on site.

Any material that is recyclable, such as batten off-cuts, should be put in designated recycling areas.



gated

unauthorised
people

Aim to leave every site at least as clean as you found it.



Children and other people sometimes wander onto building sites. If the site is gated, help keep unauthorised people out by locking the site before you leave.



1. How do you make sure workers aren't below you when you clean off the roof?

2. How do you secure your equipment in your vehicle? Can this be done more safely?

3. What materials can go into designated recycling areas?

Review checklist

You should be able to:

- Understand these words and phrases
 - fall protection
 - immobilised
 - secure
 - projectiles
 - domestic rubbish
 - recyclable
 - designated recycling areas
 - gated
 - unauthorised people

- Know what to check when cleaning up the site
 - Clear roof and gutter
 - Tidy materials and equipment
 - Load vehicle safely
 - Remove or recycle rubbish

- Know what to do when securing the site
 - Lock gate


☐

If you think you are ready to be assessed, see your trainer or assessor.

☐
☐

Glossary

access point	the place where the tiler gets onto the roof from the ladder
adequately	satisfactorily
anchorage points	fixed points
Australian Standards	detailed documents developed by experts from industry and government. There are over 400 Australian Standards relevant to occupational health and safety (OHS). All work in the industry must be up to the standards described in these documents
authorised	given official permission
barricades	objects designed to stop people from entering or leaving an area
bronchitis	an illness where your breathing tubes become infected and swollen, resulting in coughing and difficulty in breathing
bullying	hurting or frightening someone who is smaller or less powerful, often forcing them to do something they do not want to do
bunding	material used to contain fluids or prevent leakage that may contaminate ground water etc
caustic	able to burn your skin, nasal passages and lungs
confirm	make sure
consumed	used
control measures	actions or changes that need to happen to keep the risk of injury, illness or property damage to the lowest level possible
controls	things that you do or use to reduce the risk of someone being hurt or the environment being damaged
cordon off	rope off or enclose
cutting-in	cutting tiles to fit into smaller spaces or along the edges
dehydrated	when you lose a lot of liquid from your body and do not drink enough water to replace it
designated recycling areas	the official place where materials that can be reused are stored
designated waste area	the official place where unwanted material is stored

disposable	made to be thrown away after use
dispose	get rid of
domestic rubbish	waste that comes from home
dry grinding	grinding of dry material
dust resistant	not affected by dust
earth leakage protection	something that protects you from electricity 'leaking' to the earth
electrocution	when someone is killed because electricity has flowed through his/her body
eliminate	the most effective risk control measure - it involves removing the risk
environmental protection equipment	tools or objects that are used to keep the environment safe
erected	built
evacuation	the movement of people from a dangerous place to somewhere safe
excess debris	leftover building materials (eg offcuts) and other rubbish
facilities	resources such as toilets and running water
fall protection	devices put in place to make sure workers are kept safe from falls (eg guard rails)
fall restraint	a specific control measure to manage the risk of falling
fascia	the vertical edge where the gutter can be attached
first aider	a worker on site who has completed first aid training
fit for work	well enough to work and not affected by drugs or alcohol
gated	fully fenced and able to be locked off from the public
harassment	behaviour that annoys or upsets someone over a period of time
hazard	something that could cause harm to people, property or the environment
hazardous substance	any material or product that could harm people's health
high humidity	high levels of moisture in the air
immobilised	not moving or not able to be moved
inadequate	not good enough

industrial standard	at a level of quality that is acceptable by the roof tiling industry
intersect	cross over one another
intimidation	when someone is frightened or threatened, usually in order to get him/her to do something that he/she may not want to do
Material Safety Data Sheet (MSDS)	a document which tells you about the possible health effects of products and how to deal with them safely
mechanical aid	a machine that helps you do your job
minimise	to keep the risk of injury to the lowest level possible
mortar	a mixture of sand, water and cement
notifiable incidents	incidents which must be reported to the safety regulating authorities such as WorkSafe or WorkCover. They include any incident at work which results in death or serious injury or which exposes a person working close to the area to an immediate health and safety risk
operational	in working order
plant and equipment	machinery, tools, clothes etc used in industry
points of contact	places where your hand is holding the ladder or your foot is on the step of the ladder
potential	possible when certain conditions exist
prescription drugs	drugs that have been ordered by a doctor
preventative	steps or actions to stop something from happening
projectiles	objects that fly through the air with force
punctures	small holes made in the skin by a sharp object
recyclable	can be used again
reduce	make less
residual current device (RCD)	a safety device which switches off the power when electricity 'leaking' to earth at a harmful level is detected. It gives a high level of personal protection from electric shock
respiratory	related to breathing
respiratory system	the organs in your body which enable you to breathe
restriction	something limiting movement or action

ricochet	when something hits a surface and then bounces from the surface at a different angle
risk assessment	a judgement about the likelihood of something causing harm to people under the circumstances of its use
risk control hierarchy	a way that risks can be systematically evaluated against a set of control options
rotated	jobs are done at different times by different people
rubber boots	rubber rings placed around the bottom of buckets to keep the buckets from sliding off the roof
sarking	the pliable reflective foil fixed under the tile battens for insulation and water-proofing
scleroderma	a chronic autoimmune disease which causes hardening in the skin or other organs and can be fatal
secure	make safe
sediment traps	structures designed to trap the wet waste from the tiling job
site induction	time used to show or explain to a worker information about their work site
site specific	only related to the site where the work is taking place
snagged	caught on a sharp object
state's safety regulator	the government body in your state that is responsible for the administration of work safety and health laws
strategies	plans
structural stability	the ability of a structure to not move or collapse under normal conditions
tiger tails	devices that are attached to power lines to reduce the risk of electrocution by making them easier to see. They are coloured yellow and black
tool box talks or meetings	a safety meeting. It is a practical way to raise workers' awareness of specific problems on site and also help to remind workers that OHS is an important part of the working day
unauthorised people	people who do not have permission to be in a particular place
void protection	barrier to prevent you falling down the hole between two levels, for example, scaffolding, railings, sheets of wood or board
winch	a device used to hoist or haul a load and consists of a cylinder turned by a crank on which a cable or rope winds

Appendix 1 – Fall protection requirements

AS/ZS 4994.1 Guardrail Compliance Standard

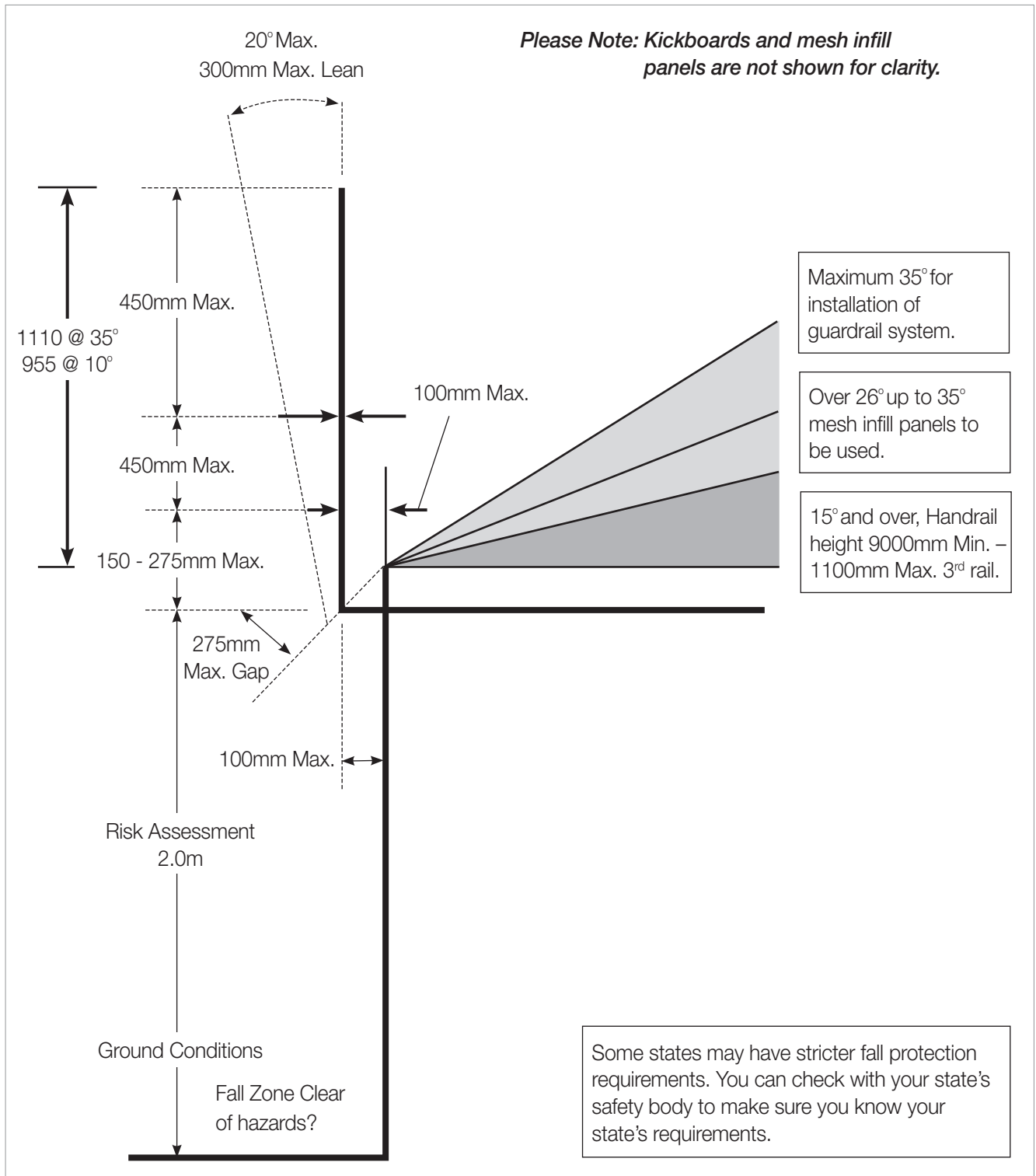
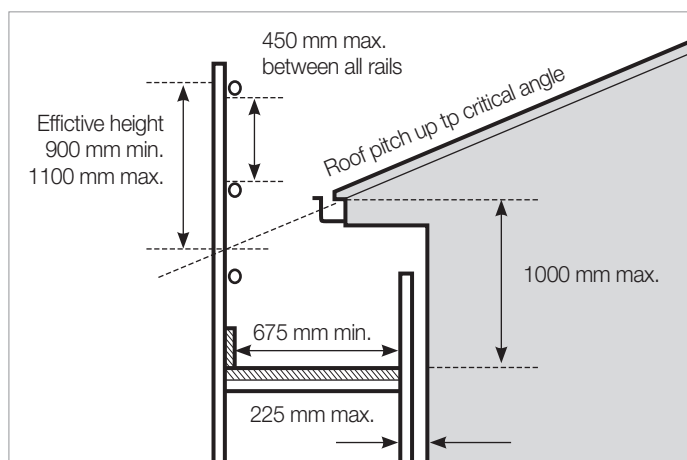


Figure 1: Guardrail Compliance Standard (AS/ZS 4994.1)

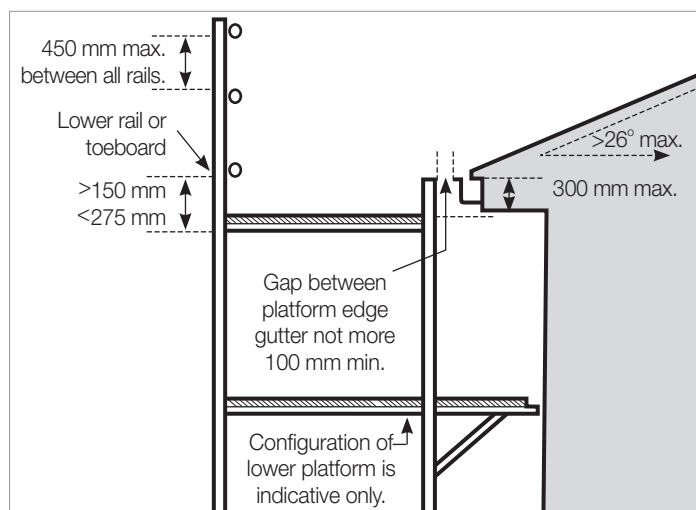
Fall protection

Scaffolding systems used to control the risk of falls should:

- where the roof pitch is not greater than the critical angle, be positioned as close as feasible to the underside of the roof, and in no case greater than 1 metre below the roof edge
- where the pitch of the roof is greater than critical angle, be positioned as close as feasible to the underside of the roof and in no case more than 300 mm below the roof edge



(a) Roof pitch up to critical angle



(b) Roof pitch greater than critical angle

- have a guardrail with an effective height of not less than 900mm or greater than 1100mm above the point where the roofline projection intersects the guard railing
- where there is an increased risk of falling due to slippery roofing materials such as fully glazed tiles or the presence of dust, moisture or oil on roofing, be positioned not more than 300mm below the roof edge, regardless of roof pitch

- have a gap between the platform edge and the gutter of no more than 100mm
- where there is an increased risk of falling due to slippery roofing materials such as fully
- incorporate a rail or toeboard within 100mm of where the roof line projection intersects the guard railing
- incorporate a toeboard at the platform's outer edge
- be extended to finish not more than 225mm from the building face or be fitted with edge protection on the platform's inner edge
- be kept clear of equipment, materials and debris.

Steep roofs

Where the slope of a roof exceeds 35 degrees, the roof is an inappropriate surface to stand on even with guard railing or a catch platform. In these circumstances, roof workers need a system to prevent sliding and to prevent fall from the perimeter, comprising one or more of the following:

- a work positioning system
- a roof ladder
- a scaffold platform, located at the roof edge

Appendix 2 – First aid kit requirements

Clause 20 of NSW's Occupational Health and Safety Regulation 2001 sets out the following requirements for first aid kits.

(4) An employer must ensure that the first aid facilities at the following sites or places include a first aid kit of the type specified opposite the description of the site or place:

Construction sites at which 25 or more persons work or other places of work at which 100 or more persons work	First Aid Kit A
Construction sites at which fewer than 25 persons work or other places of work at which fewer than 100 and more than 10 persons work	First Aid Kit B
Places of work (other than construction sites) at which 10 or fewer persons work	First Aid Kit C

(5) In subclause (4), **First Aid Kit A**, **First Aid Kit B** and **First Aid Kit C** mean a first aid kit containing the following items in the quantity (if any) specified in columns A, B and C, respectively:

	A	B	C
Adhesive plastic dressing strips, sterile, packets of 50	2	1	1
Adhesive dressing tape, 2.5 cm 5 cm	1	1	—
Bags, plastic, for amputated parts:			
Small	2	1	1
Medium	2	1	1
Large	2	1	—
Dressings, non-adherent, sterile, 7.5 cm 7.5 cm	5	2	—
Eye pads, sterile	5	2	—
Gauze bandages:			
5 cm	3	1	1
10 cm	3	1	—
Gloves, disposable, single	10	4	2
Rescue blanket, silver space	1	1	—
Safety pins, packets	1	1	1
Scissors, blunt/short nosed, minimum length 12.5 cm	1	1	—
Splinter forceps	1	1	—
Sterile eyewash solution, 10 ml single use ampules or sachets	12	6	—
Swabs, prepacked, antiseptic, packs of 10	1	1	—
Triangular bandages, minimum 90 cm	8	4	1
Wound dressings, sterile, non-medicated, large	10	3	1
First-aid pamphlet as approved by WorkCover	1	1	1

Appendix 3 – MSDS

Chem Alert Report

Manufacturer's Material Safety Data Sheet

1. IDENTIFICATION OF THE MATERIAL AND SUPPLIER

Product Name **CONCRETE ROOF TILES AND ROOF TILE ACCESSORIES**

Synonyms CONCRETE MASONRY BLOCK, CONCRETE MASONRY UNIT, MASONRY BLOCK.

Uses BUILDING APPLICATIONS, ROOFING.

Supplier Name CSR LIMITED

Address 9 Help Street, Chatswood NSW, 2067, AUSTRALIA

Telephone +61 2 9235 8044; +61 2 235 8000

Fax +61 2 235 8044

Emergency 1800 807 668

2. HAZARDS IDENTIFICATION

NOT CLASSIFIED AS HAZARDOUS ACCORDING TO NOHSC CRITERIA
NOT CLASSIFIED AS A DANGEROUS GOOD BY THE CRITERIA OF THE ADG CODE

3. COMPOSITION / INFORMATION ON INGREDIENTS

Ingredient	Formula	Conc.	CAS No.
PORTLAND CEMENT		<25%	65997-15-1
DISTILLATE		<1%	Not Available
FATTY ACID SOAP		<1%	Not Available
SILICA, CRYSTALLINE - QUARTZ	Si-O2	>60%	14808-60-7
PIGMENT		<10%	Not Available
WATER	H2O	<10%	7732-18-5
ACRYLIC COPOLYMER		<1%	Not Available

4. FIRST AID MEASURES

Eye Flush gently with running water. Seek medical attention if irritation develops.

Inhalation If over exposure occurs, leave exposure area immediately. Seek medical attention if symptoms develop.

Skin (Dust). Gently flush affected areas with water. Seek medical attention if irritation develops.

Ingestion For advice, contact a Poisons Information Centre on 13 11 26 (Australia Wide) or a doctor. Ingestion is considered unlikely due to product form.

Advice To Doctor Treat symptomatically.

5. FIRE FIGHTING MEASURES

Flammability Non flammable. No fire or explosion hazard exists.

Fire and Explosion Non flammable. No fire or explosion hazard exists.

Extinguishing Non flammable.

Hazchem Code None Allocated

**Colour
Rating
GREEN**

Copyright © 2005 RMT. The data contained herein is protected by copyright and may not be reproduced for any reason.

Printed by : RMT

Page 1 of 4

Chem Alert Report

Manufacturer's Material Safety Data Sheet

6. ACCIDENTAL RELEASE MEASURES

Spillage Collect and reuse where possible.

7. HANDLING AND STORAGE

Handling Use safe work practices to avoid eye or skin contact and inhalation. Observe good personal hygiene. Prohibit eating, drinking and smoking in contaminated areas. Wash hands before eating. Remove contaminated clothing and protective equipment before entering eating areas.

Storage Store in cool, dry, well ventilated area, removed from oxidising agents, acids and foodstuffs. Ensure product is adequately labelled, protected from physical damage and sealed when not in use.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Ventilation Do not inhale dust/ powder. Use with adequate natural ventilation. Where a dust inhalation hazard exists, mechanical extraction ventilation is recommended.

Exposure Standards PORTLAND CEMENT (65997-15-1)
 ES-TWA : 10 mg/m3 Portland Cement
 ES-TWA# : 0.05 mg/m3 Chromium (VI) Compounds (contaminant)
 WES : 10 mg/m3

SILICA, CRYSTALLINE - QUARTZ (14808-60-7)
 ES-TWA : 0.1 mg/m3 (Silica Quartz, respirable, NOHSC)
 ES-TWA# : 0.1 mg/m3 (QLD); 0.15 mg/m3 (NSW)
 WES : 0.2 mg/m3

PPE Wear leather or cotton gloves. If cutting or sanding with potential for dust generation, wear dust-proof goggles and a Class P1 (Particulate) Respirator.



9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance: COLOURED TILE
Odour: ODOURLESS
pH: NOT AVAILABLE
Vapour Pressure: NOT AVAILABLE
Vapour Density: NOT AVAILABLE
Boiling Point: NOT AVAILABLE
Melting Point: NOT AVAILABLE
Evaporation Rate: NOT AVAILABLE
Solubility (water): INSOLUBLE
Specific Gravity: 1.9 - 2.1
% Volatiles: NOT AVAILABLE
Flammability: NON FLAMMABLE
Flash Point: NOT RELEVANT
Upper Explosion Limit: NOT RELEVANT
Lower Explosion Limit: NOT RELEVANT
Autoignition Temperature: NOT AVAILABLE

Colour
 Rating
GREEN

Copyright © 2005 RMT. The data contained herein is protected by copyright and may not be reproduced for any reason.

Printed by : RMT

Page 2 of 4

Chem Alert Report

Manufacturer's Material Safety Data Sheet

10. STABILITY AND REACTIVITY

Reactivity	Incompatible with oxidising agents (eg. peroxides) and acids (eg. hydrochloric acid).
Decomposition Products	May evolve toxic gases if heated to decomposition.

11. TOXICOLOGICAL INFORMATION

Health Hazard Summary	Low toxicity - irritant. Under normal conditions of use this product is not anticipated to present a hazard unless product is cut, drilled or sanded with the generation of irritating/slightly corrosive dust. Use safe work practices to avoid dust generation and inhalation. Chronic exposure to crystalline silica may cause lung fibrosis (silicosis) and it is classified as carcinogenic to humans (IARC Group 1).
Eye	Low irritant. Slightly corrosive dust may be generated during cutting/ sanding of product. Contact may result in irritation, lacrimation, pain and possible corneal burns.
Inhalation	Not applicable. An inhalation hazard is not anticipated unless this material is cut, drilled or sanded with dust generation, which may result in mucous membrane irritation of the upper respiratory tract with over exposure. Crystalline silica is classified as carcinogenic to humans (IARC Group 1).
Skin	Not applicable. If dust is generated, prolonged exposure may result in irritation, itching, redness, rash and possible dermatitis.
Ingestion	Not applicable. Due to product form, ingestion is considered highly unlikely.

12. ECOLOGICAL INFORMATION

Environment	Limited ecotoxicity data was available for this product at the time this report was prepared. Ensure appropriate measures are taken to prevent this product from entering the environment.
--------------------	--

13. DISPOSAL CONSIDERATIONS

Waste Disposal	Reuse where possible. No special precautions are required for this product.
Legislation	Dispose of in accordance with relevant local legislation.

14. TRANSPORT INFORMATION

Transport	Not classified as a Dangerous Good according to the Australian Code for the transport of Dangerous Goods by Road and Rail.
UN Number	None Allocated
DG Class	None Allocated
Subsidiary Risk(s)	None Allocated
Packing Group	None Allocated
Hazchem Code	None Allocated

15. REGULATORY INFORMATION

Poison Schedule	A poison schedule number has not been allocated to this product using the criteria in the Standard for the Uniform Scheduling of Drugs and Poisons (SUSDP).
------------------------	---

**Colour
Rating
GREEN**

Copyright © 2005 RMT. The data contained herein is protected by copyright and may not be reproduced for any reason.

Printed by : RMT

Page 3 of 4

Chem Alert Report

Manufacturer's Material Safety Data Sheet

16. OTHER INFORMATION

Additional Information RESPIRATORS: In general the use of respirators should be limited and engineering controls employed to avoid exposure. If respiratory equipment must be worn ensure correct respirator selection and training is undertaken. Remember that some respirators may be extremely uncomfortable when used for long periods. The use of air powered or air supplied respirators should be considered where prolonged or repeated use is necessary.

ABBREVIATIONS:

mg/m³ - Milligrams per cubic metre

ppm - Parts Per Million

TWAVES - Time Weighted Average or Exposure Standard.

pH - relates to hydrogen ion concentration - this value will relate to a scale of 0 - 14, where 0 is highly acidic and 14 is highly alkaline.

CAS# - Chemical Abstract Service number - used to uniquely identify chemical compounds.

M - moles per litre, a unit of concentration.

IARC - International Agency for Research on Cancer.

PERSONAL PROTECTIVE EQUIPMENT GUIDELINES:

The recommendation for protective equipment contained within this Chem Alert report is provided as a guide only. Factors such as method of application, working environment, quantity used, product concentration and the availability of engineering controls should be considered before final selection of personal protective equipment is made. Information provided by Risk Management Technologies is summarised for ease of use. Additional technical information is available by calling +61 8 9322 1711.

HEALTH EFFECTS FROM EXPOSURE:

It should be noted that the effects from exposure to this product will depend on several factors including: frequency and duration of use; quantity used; effectiveness of control measures; protective equipment used and method of application. Given that it is impractical to prepare a Chem Alert report which would encompass all possible scenarios, it is anticipated that users will assess the risks and apply control methods where appropriate.

COLOUR RATING SYSTEM: Chem Alert reports are assigned a colour rating of Green, Amber or Red for the purpose of providing users with a quick and easy means of determining the hazardous nature of a product. Safe handling recommendations are provided in all Chem Alert reports so as to clearly identify how users can control the hazards and thereby reduce the risk (or likelihood) of adverse effects. As a general guideline a Green colour rating indicates a low hazard, an Amber colour rating indicates a moderate hazard and a Red colour rating indicates a high hazard.

Report Reviewed Awaiting manufacturer update

Date Printed 13th January 2005

Report Status Chem Alert reports are compiled as an independent source of information by RMT's scientific department, based on the latest chemical and toxicological research and, where appropriate, in compliance with relevant standards, guidance notes and legislation. Where available the manufacturer's original MSDS is also provided to Chem Alert subscribers as a scanned image for their convenience. In many instances Chem Alert reports are compiled on behalf of manufacturers in which case they serve as the "Manufacturer's MSDS" and are clearly identified as such on the relevant reports.

Prepared By Risk Management Technologies
5 Ventnor Avenue, West Perth
Western Australia 6005
Phone: +61 8 9322 1711
Fax: +61 8 9322 1794
Web: www.rmt.com.au

**Colour
Rating
GREEN**

Copyright © 2005 RMT. The data contained herein is protected by copyright and may not be reproduced for any reason.

Printed by : RMT

Page 4 of 4

Appendix 4 – Blank JSA and SWMS

Job Safety Analysis Worksheet

Company name _____

Site name _____

Contractor: _____

Activity: _____

Date _____

Job No _____

All personnel covered by Green Card _____

Approved by _____

YES NO

Concrete/Terra-cotta Roof Tiling

Activity	Hazards	Risk control measures	Who is responsible
<i>List the tasks required to perform the activity in the sequence they are carried out</i>	<i>The hazard issues for roofers on many residential building sites are generic. Check the site for the list of general hazards and mark down any specific concerns in the spaces provided TICK if OK * Refer to users guide for assistance *</i>	<i>List measures taken to control the risks associated with any identified hazards</i>	<i>The principal contractor (usually the builder) on the site is primarily responsible for site conditions. List the names and contact no's of any people with whom you discuss site conditions and corrective actions.</i>
Marking out	Frame complete		
Battening	Frame approved for tiling Personnel working underneath manual handling		
Loading tiles	Perimeter banner required?		
Spreading roof	Perimeter banner installed?		
Cutting in hips & valleys	Perimeter banner sufficient?		
Dry ridding	Working access clear		
Bedding ridges	Ground free of holes, pits, open trenches in work area		
Painting	Power board ok. No power lines in work area		
Sweeping down	Exposure to asbestos		
Re-roofing and working on existing buildings	Materials delivered on level stable ground		
Repairs, Rasprays	Exposure to silica dust		
Cutting terra-cotta/concrete tiles with power tools	Packs in good condition		
Are all your power tools tested & tagged? Have you considered the weather conditions? Is all your equipment securely guarded and in good working order? All tiles have green card and correct PPE			
	Access ladders ok. Tied off?		
	Trades working below		
	Other (list)		

Remember: a JSA must be completed and retained for every project, and must be produced at the request of a manufacturer's contracts officer or other qualified inspector (eg workcover).

There may be safety risks or other issues which are not specifically addressed by this checklist. All safety issues need to be considered and appropriate safeguards used, if a particular risk is not covered you should note and take necessary action to eliminate the risk.

Safe Work Method Statement

16505

Roof Tiling Company Name:

Note: All Roof Tiling team members must read, double and sign the Work Method Statement prior to starting work. All members of the Roof Tiling Gang must have completed a General OHS Construction induction prior to starting work.

Job Number:		Date:		Person Responsible:	
Builder:		Site Address:			
Describe the Task	Potential Risks/Issues	Y/N	Control Measures		
Setting up and operating equipment (installing the tile elevator)	ELECTRICAL <ul style="list-style-type: none"> Are there high voltage power lines in close proximity? Does the site power supply have earth leakage devices? Do flexible cords run through water or act as trip hazards? Is electrical equipment/tools/leads in safe working order and have current tagging? GUARDS <ul style="list-style-type: none"> Are equipment and tools correctly fitted with guards? Is the guarding adequate? 				
Accessing a pallet of tiles on the ground. Manual handling tiles from pallet to elevator, elevator to roof – roof to laying tile	PRODUCT <ul style="list-style-type: none"> Is the placement of product adequate? Is there unstable positioning of product? Is there product that can fall from height? Is housekeeping at the site adequate (trip hazards)? Is there hazardous manual handling? 				
Using ladder to access roof or upper level of structure (e.g. internal access to second floor of building)	ROOF ACCESS/EGRESS <ul style="list-style-type: none"> Are the ladders in good condition (load rating 120 kg minimum and adjust at grade)? Are the ladders on stable ground? Are the ladders secured? Has guardrail been installed and are there guardrail access gates? Employees not trained in the correct installation and use of a ladder? 				
Working on Roof	SITE SPECIFIC WITHIN 2 METRE FALL ZONE <ul style="list-style-type: none"> Are there any protrusions on the ground? Are there any trenches/open pits? Are there any fences within the fall zone? Is the proximity of other structures a hazard? Are other building materials a hazard? Is there any mobile plant that is a danger? 				
	ROOF SURFACE SLOPE <ul style="list-style-type: none"> Where concrete or semi-glazed tiles are used does the slope exceed 26 degrees? Where dry clean fully glazed tiles are used does the slope exceed 23 degrees? Is the roof slippery? (i.e. dust, oil, moisture etc) 				
	ROOF STRUCTURE <ul style="list-style-type: none"> Is the roof structure stable? Is the temporary roof support adequate? Do the centres between roof battens exceed 600 mm? 				
	HEIGHT <ul style="list-style-type: none"> Is the potential fall height greater than the prescribed legislative requirement? 				
	OTHER TRADES <ul style="list-style-type: none"> Could falling objects strike any trades working below? Has the lay throw down area been defined? 				
	Environment <ul style="list-style-type: none"> Heat stroke and sunburn 				
Battering - Operating a nail gun	<ul style="list-style-type: none"> Shooting nail into another person (is there danger to other people) Is the noise excessive? 				
Cutting tiles	<ul style="list-style-type: none"> Is dust generated from cutting tiles? 				
Using chemicals	Chemicals <ul style="list-style-type: none"> Could chemicals in use at the site affect living personnel? Could you be exposed to hazardous materials (asbestos lead) at or around the site? 				
OTHER					

White – Bristol Roofing Pink – Provide to Builder Yellow – Remains in folder

BR 013 05-08

© Commonwealth of Australia 2009

Funded under the Workplace English Language and Literacy Program by the Australian Government Department of Education, Employment and Workplace Relations.

Produced by:
WORKPLACE SKILLS UNIT
Swinburne University of Technology - TAFE
369 Stud Road
Wantirna Sth VIC 3152
Ph: 03 9210 1963
www.tafe.swinburne.edu.au/social-sciences/WSA/WSA_index.html



Australian Government

**Department of Education, Employment
and Workplace Relations**

**SWIN
BUR
NE**
* * *

**SWINBURNE
UNIVERSITY OF
TECHNOLOGY**



STAY ON TOP OF IT

SAFE WORK PRACTICES FOR ROOF TILERS

TRAINER'S NOTES



Australian Government

Department of Education, Employment
and Workplace Relations



Stay On Top Of It: Safe Work Practices For Roof Tilers

Trainer's Notes

Written by

Margaret Regan and Peggy Wymond

© Commonwealth of Australia 2009

Funded under the Workplace English Language and Literacy Program by the Australian Government Department of Education, Employment and Workplace Relations.



Australian Government

**Department of Education, Employment
and Workplace Relations**

These Trainer's Notes are part of a resource package and are designed to be used in conjunction with the *Stay On Top Of It* DVD and manual, developed by Workplace Skills Unit, Swinburne University of Technology TAFE.



Disclaimer

The views expressed in this publication do not necessarily represent the views of the Minister for Education or the Australian Government. The Australian Government does not give any warranty nor accept any liability in relation to the contents of this work.

Care has been taken to ensure the accuracy and currency of the information within the Trainer's Notes at the time of printing. Swinburne cannot however accept responsibility for the accuracy or completeness of the information or opinions contained herein. These Trainer's Notes have been designed as an aid to training roof tilers. However, roof tilers and trainers should make their own enquiries regarding decisions concerning their interests. No person should rely on the general information presented here as a substitute for specific advice.

This work is copyright. Apart from any use as permitted under the Copyright Act 1968, no part may be reproduced by any process without prior written permission from the Commonwealth. Requests and inquiries concerning reproduction and rights should be addressed to the Commonwealth Copyright Administration, Attorney General's Department, Robert Garran Offices, National Circuit, Barton ACT 2600 or posted at <http://www.ag.gov.au/cca>.

Acknowledgements

We gratefully acknowledge the guidance and expertise provided by the following organisations and people:



Steering Committee

Jeff Anthony – CSR Bricks & Roofing
Richard Bromley – BGC Cement
Merrilyn Bull – Swinburne University of Technology TAFE
Stuart Clark – Boral Roofing
Doyle Nash – Boral Roofing
Chris Griffiths – Queensland Master Roof Tilers' Association
Lloyd Johnston – Boral Roofing
Scott Kind - Bristile Roofing
Trevor Marshall – Bristile Roofing
Giselle Mawer – Giselle Mawer & Associates
Keith Miller – CSR Bricks and Roofing
Steven Powell – CSR Bricks and Roofing
Mike Quade – CPSISC
Tony Tanner – Roofing Tile Association of Australia
Brian Whitlow – Bristile Roofing

We also acknowledge the support provided over the course of the project by other industry personnel. This includes those who provided feedback as the resource was being developed, as well as those who took part in the filming and trialling of the materials.

Table of Contents

1.	About the Resource	p4
2.	How Adults Learn	p5
3.	Why Learners May Be Reluctant to Learn	p6
4.	Your Role as a Trainer	p7
5.	Before You Start	p8
6.	Ideas for Assessment Tasks	p9
7.	Activities, Assessment Tasks and Training Package Competencies	p11
8.	Answers to DVD and Check Your Ideas Activities	p16

1 About the Resource

Purpose of the *Stay On Top Of It: Safe Work Practices For Roof Tilers* training resource

The *Stay On Top Of It* DVD and manual set supports learners to demonstrate competence as roof tilers in the residential building sector. The resource set creates a visually accessible and appealing framework for the technical information, concepts and vocabulary involved in safe roof tiling.

Who can use this learning resource?

Stay On Top Of It has been developed especially for roof tilers working in the residential sector. It is designed to make the information accessible for all tilers, including those who need assistance with English language and literacy skills. The set can be used as an induction program, refresher course or as part of a larger training course. While the resource is most likely to be used in a training situation, some tilers may wish to use the materials without the assistance of a trainer. It may be used as *part of* an assessment; however the assessor will require further evidence of competency, particularly in practical demonstrations and observations.

What can you expect when using this resource?

Both the DVD and manual are divided into 3 main sections:

- Preventing problems
- Doing the job
- Before you leave

The manual has a large number of pictures that match directly to the DVD, helping to reinforce the learning experience.

The DVD also contains opportunities for applying the information to the tilers' individual situations.

Learning supports

The DVD includes summaries at the end of each section, reinforced by simple images. These are followed by a set of "Consider this" questions which ask the learners to apply the content of the previous section to their own work experiences. These can be completed verbally or in writing. The activities located separately to the main portion of the DVD allow learners to demonstrate their knowledge verbally.

Each section of the training manual includes several opportunities to "Check Your Ideas", as well as a Review Checklist at the end. "Words to Know" are listed in the margins and are also defined in the glossary at the end of the manual.

What competencies is the resource linked to?

Stay On Top Of It supports training in several nationally endorsed units of competency from the CPC08 Construction, Plumbing and Services Integrated Framework including:

- CPCPRF2001A Work safely on roofs
- CPCCRT2001A Handle roof tiling materials.

These units are core and elective units in a number of Certificates, including CPC20808 Certificate II in Metal Roofing and Cladding and CPC30808 Certificate III in Roof Tiling.

The resource also supports aspects of the underpinning OH&S components that are integrated into other units in the following Certificate:

- Certificate III in Roof Tiling from *CPC08* Construction, Plumbing and Services Integrated Framework Training Package.

Assessment activities

These Trainer's Notes include assessment activities designed to support assessment against the above units of competency (see mapping in section 7). It is expected that a trainer might skip some assessment activities or add others, depending on the needs of the person or group being trained. These assessment activities are designed specifically to avoid unnecessary reliance on reading and writing. Writing is only required when competency in the task is directly linked to writing, for example when a tiler needs to fill out a site risk assessment form. If the assessment is to result in a statement of attainment being issued for a unit of competence, it is the responsibility of the Registered Training Organisation (RTO) and assessor to ensure valid, sufficient evidence has been provided before signing off against any assessment.

2 How Adults Learn

Adults as learners

So that training is as effective as possible, it is important to understand how adults learn. If you reflect on how you best learn new skills as an adult, it is likely that successful learning for you is consistent with the basic principles of adult learning. For example, think about a time when, as an adult, you learned how to operate a piece of machinery. Or reflect on how you learned to drive. What teaching approach(es) suited you best? What didn't work?

Consider the table below. For each of the adult learning principles there are suggestions for how you might put these principles into practice.

Principle	What can you do?
1. Adults must view the learning as relevant to their situation.	Training material should relate as closely as possible to the work the learners are doing or wanting to move into.
2. Adults bring a vast wealth of life experience to the learning process. Any new learning should build on the skills, knowledge and experience that workers already have.	Acknowledge the experience and expertise your learners already have. While there may be gaps in skills and competencies of individual trainees, and some of their ideas may actually be wrong, the contribution of each trainee is a valuable starting point for training and is the basis for developing individual responsibility for tiling safely.
3. Adults use a variety of learning methods including listening, reading, doing and observing.	Many learners are aware of their own learning strengths and weaknesses and will do best when allowed to choose from different forms of presentation and activities.
4. Adults learn more in an informal environment.	Make sure learners can practise their developing skills in a context where they feel confident to try things, or where the risk of failing is not so great as to make them withdraw from the task altogether.
5. Adults are generally aware of what skills they do and do not need to have in order to be competent in their job.	Assessment should include a range of options for demonstrating competence, only relying upon written or oral skills when these skills are integral to competence.

3 Why Learners May Be Reluctant to Train

Many people have some difficulty with reading and writing in English for work. These days, skill gaps have a greater impact on people's ability to meet their work requirements, as increasingly information is being provided to workers in written form and many records need to be filled in and kept.

Common reasons for skills gaps include the following.

- In the past, many children were encouraged to leave school early and join the workforce. Formal schooling may not have been highly valued and it may have been felt that work skills could be learned better on the job than at school.
- Changes in work practice and legislation now require more advanced reading, writing and numeracy skills than were necessary when many workers started out.
- Attending many different schools may result in disrupted schooling and poor learning outcomes.

- Recurrent illness as a child may cause significant chunks of schooling to be missed.
- People changing careers are faced with an array of new specialist language, acronyms and jargon.
- Recent arrivals in Australia from non-English speaking countries often spend their time and energy working rather than learning English.
- Migrating to Australia during school years sometimes results in a lack of a sound knowledge of English.
- Learning another language as an adult is often very difficult.

4 Your Role as a Trainer

What makes a good trainer?

A trainer should encourage, support, offer suggestions and give information so that each learner can understand and make use of all the concepts covered.

Good trainers:

- listen
- don't judge or label learners
- are patient
- are confident in their own ability to cover the material in the course
- are able to look at a learning situation from a number of viewpoints
- value the current skills of learners and work with each learner to build skills
- encourage learners to have a go and move towards becoming more independent learners.

Addressing special needs

There are several ways to approach a training situation where learners have special learning needs. You can:

- present small, manageable chunks of information one at a time, in sequential order
- encourage learners to get information first from the visuals provided, and then from the written text
- encourage learners to work with a training partner, buddy or mentor as a support person
- check for a learner's understanding of each idea, especially when this is to be built on
- remember that competency may be demonstrated by doing or explaining rather than by writing
- relate information to a learner's own work situation or other situations they are familiar with.

When giving information:

- use clear, simple English
- give information in logical sequence
- use simple but complete sentences
- check for understanding
- avoid jargon or explain the jargon when you use it.

Think carefully before asking people to read out loud. Reading out loud is asking them to give a performance. Most people can read better to themselves. You can:

- ask learners what they think the text is about, instead of asking learners to read aloud
- read a section and ask them what comes next
- read aloud and encourage the participants to follow with you, highlighting important information.

When requiring people to write:

- recognise that many people will experience anxiety and be reluctant to put pen to paper
- gather ideas orally first so that initially you can act as a scribe
- allow learners to make notes and complete activities in their first language if this is appropriate.

When using the DVD:

- learners from non-English speaking backgrounds will find it easier to follow the DVD if they have discussed some of the issues and vocabulary beforehand
- it is important that learners be given a specific purpose when watching the DVD. This may involve setting tasks for them to do when they watch the video such as listening for specific information, confirming/checking ideas from a previous brainstorm or answering questions
- learners are likely to benefit from stopping the DVD at the end of each section. Allow time for writing any additional information, discussing issues and answering section questions.

5 Before You Start

It is highly recommended that you familiarise yourself with the resource before you begin training. You may find that content is in a different sequence than you are used to.

Glossary words have been chosen as words needed by learners to understand the content in each section of the manual. You may need to check the learners' understanding of these words or even provide the meaning of these words before launching into the section. Learners may wish

to write a synonym next to each word from English or another language and they can be directed to the glossary at the back where definitions for each word can be found.

Stay On Top Of It has been developed as a national resource and therefore reference to specific state regulations or legislation has been avoided. As a result, trainers need to relate the material to their own legislative and regulative requirements and provide specific examples, as appropriate.

Where possible, provide real documents, tasks or examples from the trainees' work situations to ensure that the training is relevant and the ideas have been understood. If using this resource as part of an assessment of competence, assessors will need to develop observation checklists which reflect the unit evidence requirements including performance criteria and critical evidence. These activities are additional suggestions to ensure trainees understand OHS principles and can demonstrate the ability to do required tasks safely.

6 Ideas for Assessment Tasks

A. Preventing problems

1. Walk through a site and ask the tiler to identify any hazards. The tiler should show where they would write about a specific hazard on the assessment form. The tiler can fill out the form for one hazard.
2. Ask the tiler to demonstrate exercises they can use to get ready for tiling.
3. Choose one job the tiler does and ask the tiler to show the PPE they would use when doing that job.
4. Ask the tiler to explain or demonstrate how to use the risk control hierarchy to guide them in safely setting up a ladder in different site conditions, such as on uneven surfaces or with nearby power lines.
5. Ask the tiler to show you the electrical tools they use. Check them for tagging.

B. Doing the job

1. Ask the tiler to choose one of the following pieces of equipment and tell you how it helps to make the job easier and safer.
 - Elevator
 - Winch
 - Trolley
2. Ask the tiler to lift and carry a heavy bag.
3. Ask the tiler to lift and carry a stack of tiles.
4. Ask the tiler to show how they pass material to a second storey and ask them to explain what they need to do to make the pass up as safe as possible.

5. Ask the tiler to show you where they plug in their leads. Check for earth leakage protection.
6. Ask the tiler to show where they place off-cuts and other rubbish.
7. Ask the tiler to use a SWMS or the equivalent to find out the controls recommended for laying tiles.
8. Ask the tiler to show you how to walk safely across an untiled roof and a tiled roof.
9. Give the tiler the MSDS for concrete. Ask them to find out what to do if they breathe it in or it gets in their eyes.
10. Ask the tiler to show you the contents of their first aid kit.
11. Ask the tiler to tell you where the nearest medical centre or doctor's surgery is.
12. Ask the tiler what they would do if a part of the scaffolding fell near them but did not hit them.
13. Ask the tiler what they would do if they received a deep cut to the shin.

C. Before you leave

1. Ask the tiler whose responsibility it is to clear rubbish from the work area.
2. Ask the tiler whose responsibility it is to ensure void protection is in place.
3. Ask the tiler to explain what is involved in cleaning the roof before you leave a job.
4. Ask the tiler what they do to keep themselves and others safe while cleaning the roof.

7 Activities, Assessment Tasks and Training Package Competencies

Activities listed under the Check Your Ideas icon in Chapters 1 – 3 of the *Stay On Top Of It: Safe Work Practices For Roof Tilers* manual and in Ideas for Assessment in these Trainer's Notes support the development of knowledge and skills to help learners achieve elements of the Construction, Plumbing and Services Integrated Framework Training Package as mapped below.

Units of Competency: **CPCPCM2015A – Work safely on roofs**

Competency element	Performance Criteria	Relevant Activity/Assessment Task			
		Chapter 1	Chapter 2	Chapter 3	Ideas for Assessment Tasks
Identify work safety requirements	1.1 Scope of task and proposed work practices and activities are identified and documented in accordance with workplace procedures, statutory and regulatory authority requirements and relevant information .	P10-Q3, 4, 5	P30-Q3 P44-Q3		A1 C4
	1.2 Safety (OHS) requirements associated with working safely on roofs, and workplace environmental requirements , are adhered to throughout the work.	P10-Q2	P30-Q2 P44-Q1, 2, 3, 4	P52-Q1, 3	A1 C4
	1.3 Quality assurance requirements are identified and adhered to in accordance with workplace requirements.				
	1.4 Site is inspected to determine layout and physical condition, condition of structure, prevailing weather conditions, equipment requirements and potential hazards.	P10-Q1, 2 P20-Q1	P30-Q1, 2, 3 P44-Q1, 3, 4	P52-Q1	A1
	1.5 Safety equipment is identified, selected and checked for serviceability in accordance with workplace requirements.	P10-Q1 P20-Q1	P44-Q1, 3		A3 A4
	1.6 Certification of suitability of structure to support the safety system is obtained.	P10-Q3			A1

Prepare for work	2.1 Work procedures and instructions for the task are identified.	P20-Q1	P30-Q3 P44-Q1, 2, 3, 4	P52-Q1	A8
	2.2 Materials, tools and equipment , including personal protective equipment, are selected and checked for serviceability.	P10-Q1 P20-Q1	P30-Q2 P44-Q1, 3, 4		A3 B1
	2.3 Fall protection and perimeter protection equipment is inspected and installed, ensuring adequacy for work and conformance to regulatory requirements.	P10-Q2, 3 P20-Q1	P30-Q3		A1
	2.4 Roof safety system is installed in accordance with workplace and regulatory requirements.	P10-Q1, 2, 3	P30-Q3		
	2.5 Appropriate signage and barricades are selected and installed.	P20-Q1		P52-Q1	
Perform work on roof	3.1 Access from ground to work area is checked to ensure it is safe and in accordance with regulatory requirements.	P20-Q1	P30-Q2, 3 P44-Q4		A4 B4
	3.2 Fall protection and personal safety requirements are applied in accordance with regulatory requirements.	P10-Q2, 3 P20-Q1	P44-Q1		A4 C4
	3.3 Manual handling of materials and equipment is undertaken in accordance with regulatory requirements.	P20-Q1	P30-Q1 P44-Q4		B2 B3 B4
	3.4 Roof materials and equipment are located on roof, ensuring that they are safely secured and distributed to eliminate risk of distorting or collapsing the building framework.		P44-Q2, 4		A4 B1 B4
	3.5 Safety system is checked periodically for compliance with regulations in accordance with workplace procedures, and faults are reported .				
	3.6 Risk control measures are monitored to ensure that they are effective and appropriate to the task and work environment.		P44-Q1, 3		A5 B7
	3.7 Risk control measures are reassessed, as required, in accordance with changed work practices and/or site conditions, and alterations are undertaken within scope of authority.		P44-Q1, 3		

Clean up	4.1 Safety system is dismantled in accordance with sequence and removed from work site.				
	4.2 Work area is cleared and materials disposed of or recycled in accordance with state and territory legislation and workplace procedures.		P44-Q3	P52-Q1, 3	B6 C1 C3
	4.3 Tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturer recommendations and workplace procedures.		P30-Q2 P44-Q3	P52-Q2	
	4.4 Documentation is completed in accordance with workplace requirements.	P10-Q4, 5 P20-Q1	P30-Q3 P46-Q1		A1

Unit of Competency CPCCRT2001A – Handle roof tiling materials

Competency element	Performance Criteria	Chapter 1	Chapter 2	Chapter 3	Ideas for Assessment
Plan and prepare	1.1 Work instructions, including plans, specifications, quality requirements and operational details are obtained from relevant information , confirmed and applied for the scope of work performed.	P10-Q1			A4 A8 A10
	1.2 Safety (OHS) requirements are followed in accordance with safety plans and policies.	P10-Q4, 5 P20-Q2	P30-Q2, 3 P44-Q1, 2, 3, 4	P52-Q1	A1 A3 A4 A5 B7 B8 C4
	1.3 Signage and barricade requirements are identified and implemented.	P20-Q1		P52-Q1	
	1.4 Plant, tools and equipment selected to carry out tasks that are consistent with the requirements of the job, checked for serviceability and any faults are rectified or reported prior to commencement.	P10-Q1 P20-Q3	P30-Q2 P44-Q3, 4		A3 A5 B5
	1.5 Environmental requirements are identified for the project in accordance with environmental plans and statutory and legislative authority obligations and applied.		P30-Q3	P52-Q3	B6
Receive, sort and distribute roof tiling materials	2.1 Roof tiling products, materials and components are identified and checked for conformity to material schedule, plans, quality requirements and specifications on delivery to site.	P10-Q1			
	2.2 Handling characteristics of roof tiling material and components are identified and safe and effective handling techniques are applied in accordance with safe work method statements and workplace procedures.	P20-Q2,	P30-Q1 P44-Q2, 3, 4	P52-Q1	B9

	2.3 Fall safety devices are installed to roof perimeter and handled in accordance with regulatory and workplace requirements.	P10-Q3	P30-Q3		
	2.4 Elevator is handled, assembled and erected at job location to manufacturer specifications and workplace requirements.		P30-Q1 P44-Q2		
	2.5 Roof surface sarking and batten materials are handled and loaded onto roof and positioned ready for installation in accordance with specified tile and job specifications.		P30-Q1 P44-Q2		
	2.6 Roof tiling material and components are sorted to suit material type and size, and stacked for ease of identification and retrieval for task sequence.		P30-Q1		
	2.7 Roof tiling material and components are transferred, loaded onto roof, supported and evenly distributed.		P44-Q2, 4		
Handle and remove surplus material from roof	3.1 Materials are handled safely and effectively according to material safety data sheets (MSDS) and regulatory authorities' requirements.	P20-Q2	P44-Q3, 4		B9
	3.2 Hazardous material is identified for separate handling by authorised personnel.		P30-Q3 P44-Q4		
	3.3 Surplus roof tiling material and components are loaded and transferred from roof to ground.		P30-Q1	P52-Q1	
	3.4 Materials are stored safely and effectively according to MSDS and requirements of regulatory authorities.			P52-Q2	
	3.5 Roof, guttering and downpipes are cleared free of waste and surplus material.			P52-Q1	C1 C3
Clean up	4.1 Work area is cleared and materials disposed of, reused or recycled in accordance with legislation, regulations, codes of practice and job specification.		P44-Q2, 3	P52-Q1, 3	B6 C1 C3
	4.2 Plant, tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturer recommendations and standard work practices.	P20-Q3		P52-Q2	

8 Answers to DVD and Check Your Ideas Activities

Activities in the DVD:

Case study 1

Hazards include trip hazards (rubbish, building materials, electrical lead), access blocked by pallets and timber, electrical cord detached from plug to expose wires, nails sticking up from wood, missing section of scaffold.

Case study 2

It is the employer's responsibility to make the site ready for tiling, including erecting appropriate scaffolding and propping, ensuring clear access to the site, providing a toilet, ensuring no other trades are on site, providing appropriate scaffolding for the pitch of the roof. The tiler is responsible for starting the job only after all hazards are controlled and for not creating hazards while doing the job.

Case study 3

Mortar – wear appropriate PPE. Wide roof truss spacing – fall protection sarking or a fall arrest system in place. Insufficient support – no work until the problem is fixed.

Answers for Check Your Ideas activities could include the following.

Chapter 1, page 10

1. Things you should check before arriving on site could include:
 - your PPE is in good working order
 - a site risk assessment has been completed
 - necessary controls have been put in place (eg guard rails)
 - an MSDS is on site for each hazardous chemical being used
 - a first aid kit is available
 - a fire extinguisher is available
 - equipment is in good working order (eg ladders, elevator).
2. According to the National Code of Practice for the Prevention of Falls in General Construction, site situations that require guardrails depend on your state's requirements. They may depend upon the height and slope of the roof, as well as any hazards below the roofline.
3. You can check with the site supervisor that a site risk assessment has been completed before you arrive at the job. You must still complete your own site risk assessment, as conditions may have changed since the site supervisor's risk assessment was completed, such as materials being delivered close to the roof line.
4. Responsibilities of an employee include:
 - keep the site free of children and animals
 - ensure you are unaffected by drugs, including prescription drugs and alcohol
 - refuse to take part in fighting, intimidation, bullying or harassment

- do not remove safety controls, safety signs, barricades or equipment, unless authorised to do so
 - follow all safe work procedures.
5. It is the responsibility of the employer to:
- conduct an initial risk assessment
 - provide suitable scaffold and work platforms
 - ensure void protection is in place
 - ensure there are recycling/rubbish areas
 - ensure a toilet and fresh clean water are available.

Chapter 1, page 20

1. Things you do when you arrive on site to get ready to start your work may include:
 - park your vehicle safely
 - hang safety signs in clear public view
 - do warm up exercises
 - sign in, if required
 - undergo a site induction, if required
 - assist in the development of the Job Safety Analysis (JSA) or Safe Work Method Statement (SWMS) and sign off on these documents
 - conduct a risk assessment using a site safety checklist or your SWMS
 - plan your work to minimise manual handling and your exposure to trip and slip hazards, as well as fall hazards
 - use safety tape to mark a suitable area to throw tiles and off cuts from the roof
 - make sure your PPE is ready to use when it is needed.
2. A JSA or SWMS can help you do your job safely by reminding you of the hazards to look for at each site and providing methods of reducing the risk presented by different hazards.
3. You should check that your PPE is in good working order at least once a week as well as every time you use it. Electrical equipment should also be tagged and tested at least every three months.

Chapter 2, page 30

1. Ways you can minimise the manual handling your team does include:
 - use a mechanical aid to assist you (eg tile elevator, winch)
 - plan manual handling tasks by checking the weight of the load, checking the route is free of obstructions and making sure you can put the load where it will not create a hazard for yourself or others
 - follow the general manual handling principles when you are moving a load.
2. Things you can do when setting up a ladder to make sure it is safe to use include:
 - check that the ladder complies with industrial and Australian standards

- make sure the base of ladder is stable, especially on soft or uneven ground
 - erect ladder in an area that is clear of equipment and other materials
 - ensure the top of the ladder is at least 1 metre above the access point of the ladder
 - use a gutter guard, if you have one
 - tie the ladder off and secure it at the top
 - make sure you leave a clearance of 4 metres if there are electric wires or cables overhead.
3. Everyone should be involved in completing the risk assessment because this ensures all tilers are aware of the hazards present on the site and how they will be controlled.

Chapter 2, page 44

1. You can protect yourself from heat stress by drinking lots of water, wearing a sunhat, applying sunscreen, wearing light weight clothes and wearing sunglasses. You can also plan your work so that you avoid the hottest part of the day, such as by starting very early.
2. You should not step on metal fascia because it is not structural and is unlikely to support your weight. Valley irons can be extremely slippery and you can easily lose your footing on them.
3. To keep yourself safe while cutting in a roof:
 - use tile cutters and trays
 - use appropriate PPE including gloves and safety glasses
 - avoid using an electric saw, but if you do use one wear appropriate PPE including gloves, safety glasses and breathing protection.
4. Safe ways to transport mortar to a roof include sending up partially filled buckets by elevator or winch.

Chapter 2, page 46

1. Reporting an injury or incident at work includes telling your supervisor, filling in a Register of Injuries and possibly notifying your state's safety body (such as WorkSafe or WorkCover). The builder may also need to be notified.
2. The construction site should have a builder's board with the name and address of the medical centre closest to the site. You can also use a mobile phone to ring directory assistance.

Chapter 3, page 52

1. To ensure workers aren't below you when you clean off the roof, you can let everyone know the cleaning is about to begin and check that other workers have cleared the area.
2. Securing your equipment in your vehicle includes tying items to the vehicle and packing the vehicle so that items cannot move around when your vehicle is moving.

3. Materials that can go into designated recycling areas include most drink containers, wooden batten off cuts and some buckets. Check the recycling labels on containers to ensure they are recyclable.

Answers for Assessment Task questions could include the following.

1 Preventing problems

1. Answer will depend on the situation.
2. Tiler to demonstrate exercises they can use to get ready for tiling. Should include stretches for legs, shoulders, neck, arms and back.
3. Answer will depend on the situation.
4. Answer may include:
 - Clearing equipment or materials away from area (eliminate)
 - Erect ladder in a more suitable place (engineering control)
 - Arrange for power to be disconnected (engineering control)
5. Answer will depend on the situation but tagging should be done at least every three months.

2 Doing the job

1. Answers may include the following:
 - Using an elevator puts less stress on the body as tiles are lifted to the roof automatically. Since it is impossible to lift tiles to the roof while maintaining three points of contact with a ladder, using an elevator makes loading tiles safer.
 - A winch put less stress on your body because you do not have to lift as much equipment and materials, such as buckets of mortar, to the roof.
 - Pushing a trolley loaded with roof tiles is easier on your body as it helps you to make fewer trips. This is also safer for you as you do not have to walk as frequently across an untilted roof.
2. The tiler should bend knees, keep back straight, hold the load close and turn by moving feet, not twisting.
3. Answer will depend on the situation but should include standing close to ends of the stack, bending knees to lift the tiles, keeping back straight during the lift, holding the tiles close and putting down the tiles while keeping a straight back.
4. Answer will depend on the situation.
5. Answer will depend on the situation but in all cases earth leakage protection must be in place.
6. Answer will depend on the situation but there should be separate places for off-cuts and other recyclables.
7. Tiler should locate on the SWMS the controls recommended for laying tiles safely. The generic SWMS included in the training manual can be used for this.

8. Tiler should walk where battens and trusses cross and on the nose of tiles.
9. Tiler should locate health and first aid information on the MSDS.
10. Answer will depend on the tiler and the state's requirements. The first aid kit should contain a range of bandages and medications for minor cuts and scrapes.
11. Answer will depend on the situation. This information should be available on the builder's board at the entrance to the site.
12. The incident should be reported to the builder and the site supervisor.
13. The tiler should seek medical attention and report the incident.

3 Before you leave

1. It is the tiler's responsibility to clear their rubbish from the work area.
2. It is the employer's responsibility to provide void protection.
3. Cleaning the roof involves removing all equipment and materials, sweeping and blowing the roof and clearing all material from the gutters.
4. Tilers can keep themselves and others safe while cleaning the roof by:
 - warning others before sweeping or blowing anything over the edge
 - making sure adequate fall protection is in place
 - wearing suitable PPE which may include gloves, safety glasses, a hat and possibly a dust mask, depending on the conditions.

© Commonwealth of Australia 2009

Funded under the Workplace English Language and Literacy Program by the Australian Government Department of Education, Employment and Workplace Relations.

Produced by:
WORKPLACE SKILLS UNIT
Swinburne University of Technology - TAFE
369 Stud Road
Wantirna Sth VIC 3152
Ph: 03 9210 1963
www.tafe.swinburne.edu.au/social-sciences/WSA/WSA_index.html



Australian Government

**Department of Education, Employment
and Workplace Relations**

**SWIN
BUR
NE**
* * *

**SWINBURNE
UNIVERSITY OF
TECHNOLOGY**

CODE OF PRACTICE

Prevention of Falls at Workplaces

2 0 0 4



Foreword

The introduction of the *Occupational Safety and Health Act 1984* enabled the establishment of the tripartite Commission for Occupational Safety and Health. The Commission, which comprises representatives of employers, unions, government and experts, has the function of developing the legislation and any supporting guidance material and making recommendations to the Minister for implementation. To fulfil its functions, the Commission is empowered to establish advisory committees, hold public inquiries and publish and disseminate information.

This code of practice has been developed through the tripartite consultative process and the views of the employers and unions along with those of government and experts have been considered.

The Commission's objective is to promote comprehensive and practical preventive strategies that improve the working environment of Western Australians.

The information presented in this booklet should be read by employers and employees as background for understanding and implementing this code of practice.

The Act

The *Occupational Safety and Health Act 1984* (the Act) provides for the promotion, co-ordination, administration and enforcement of occupational safety and health in Western Australia.

The Act places certain duties on employers, employees, self-employed people, manufacturers, designers, importers and suppliers.

It also places emphasis on the prevention of accidents and injury.

In addition to the broad duties established by the Act, the legislation is supported by a further tier of statute, commonly referred to as regulations, together with a lower tier of non-statutory codes of practice.

Regulations

Regulations have the effect of spelling out the specific requirements of the legislation.

Regulations may prescribe minimum standards and have a general application or they may define specific requirements related to a particular hazard or particular type of work. They may also allow the licensing or granting of approvals and certificates etc.

Codes of practice

A code of practice is defined in the Act as a document prepared for the purpose of providing:

- practical advice on preventive strategies; and
- a practical means of achieving any code, standard, rule, provision or specification relating to occupational safety and health in Western Australia.

A code of practice may contain explanatory information.

The preventive strategies outlined in a code of practice do not represent the only acceptable means of achieving the standard to which the code refers. A code of practice does not have the same legal force as a regulation and is not sufficient reason, of itself, for prosecution under the Act.

**commission
for occupational
safety and health**

CODE OF PRACTICE

Prevention of Falls at Workplaces

This code of practice is a revised and updated version of the WorkSafe Western Australia Commission's *Code of Practice: Prevention of Falls at Workplaces* published in 1997. (The Commission is now known as the Commission for Occupational Safety and Health.) Representatives from employer organisations, trade unions, Government and people with knowledge and expertise in occupational safety and health have undertaken the revision, ensuring that the interests of all parties at the workplace have been considered. This revised code is intended to provide practical guidance on meeting the requirements in the *Occupational Safety and Health Act 1984* and Occupational Safety and Health Regulations 1996 relating to prevention of falls at the workplace, including those that came into operation from 1 July 2001.

Scope

This code of practice applies to all workplaces in Western Australia covered by the *Occupational Safety and Health Act 1984*. It provides detailed guidance on the prevention of falls at workplaces. However, it is not possible to deal with every situation that may be found at workplaces, where there is the potential for a person to fall from, through or into any place or thing.

Who should use this code of practice?

This code should be used by everyone who has a duty to prevent, as far as practicable, falls at workplaces. This includes employers, employees, self-employed people, architects, engineers, designers, builders, manufacturers, suppliers, safety and health representatives and safety and health committees. The practical guidance in this code of practice should be considered in conjunction with the general duties in the *Occupational Safety and Health Act 1984*.

Definitions

For the purpose of this code of practice:

“the Act” refers to the *Occupational Safety and Health Act 1984*.

“Australian Standard”, “Australian/New Zealand Standard”, “AS” and “AS/NZS” refer to standards developed and published by Standards Australia. These are voluntary technical and commercial standards, which are sometimes referenced in the Occupational Safety and Health Regulations 1996. See Appendix 1 for more information.

“competent person”, in relation to the doing of anything, means a person who has acquired, through training, qualification or experience or a combination of those things, the knowledge and skills required to do that thing competently.

“duty of the employer”, where an employer has a duty under a provision of this code of practice to do something, but the employer is not the person in charge of the workplace at which an employee works, the employer has the same duty under that provision as the person in charge of the workplace has, except that the employer’s duty is limited to an employee.

“falling”, in this code of practice, is a reference to a person falling and includes a reference to a person falling from, through or into a place or thing.

“person in charge of a workplace” means the person who has the management or control of the workplace.

“the Regulations” or **“Regulation”** refer to regulations in the Occupational Safety and Health Regulations 1996.

Copyright

Western Australian legislation is produced by permission of the copyright owner, the State of Western Australia, but such legislation does not purport to be the official or authorised version. Official copies can be purchased from the State Law Publisher, 10 William Street, Perth [Tel. (08) 9321 7688]. The Act and Regulations can also be purchased from WorkSafe, Westcentre, 1260 Hay Street, West Perth [Tel. (08) 9327 8777].

Contents

1. General duties at the workplace	1
2. Hazard identification, risk assessment and risk control – the risk management process for the prevention of falls	3
2.1 An overview	3
2.2 Identifying hazards	3
2.3 Assessing and analysing risks	5
2.4 Controlling risks	6
2.5 Monitoring and review of control measures	7
3. Instruction and training	9
4. Supervision	12
5. Design and planning of plant, buildings and structures	13
5.1 Plant (machinery, equipment and vehicles)	13
5.2 Buildings and structures	14
6. Access to and egress from work areas	16
7. Edge protection	17
8. Fall injury prevention systems and anchorages	19
8.1 An overview	19
8.2 Restraint systems	20
8.3 Fall-arrest systems	21
8.4 Inspection of fall injury prevention systems	23
8.5 Hazards with the use of fall-arrest systems	26
8.6 Catch platforms (fans)	27
8.7 Scaffolding	28
8.8 Safety nets	32
8.9 Safety mesh	33
9. Ladders: portable and fixed	37
10. Building maintenance units	45
11. Other types of temporary working platforms	46
12. Forklift trucks	51
13. Purlin trolleys	53
14. Protection of holes and openings	54
15. Grid mesh and checker plate flooring panels	55

16. Brittle or fragile roofing	56
17. Freight transport and general plant	59
18. Industrial rope access systems (abseiling)	65
19. Tree climbing	67
20. Emergency rescue procedures	70
20.1 Fall-arrest systems	70
20.1.1 Suspension trauma	71
Appendix 1: References and other sources of information	73
Appendix 2: Legislative framework for safety and health in Western Australia	76
Appendix 3: Sections of the Act and Regulations referenced in this code of practice	79
Appendix 4: Job Safety Analysis (JSA)	90
Appendix 5: Terms used in fall injury prevention systems	100
Appendix 6: Components of fall-arrest and restraint systems	103
Appendix 7: Contacts for further information	112

1. General duties at the workplace

The *Occupational Safety and Health Act 1984* (referred to in this document as the Act) contains general duties which describe the responsibilities of people who affect safety and health at work. These duties apply to the prevention of falls. The Act and the Occupational Safety and Health Regulations 1996 (referred to in this document as the Regulations) should be read in conjunction with this code of practice.

Employers must, so far as is practicable:

- provide a workplace and safe system of work so employees are not exposed to hazards;
- provide employees with information, instruction, training and supervision to enable them to work in a safe manner;
- consult and co-operate with safety and health representatives (if any) and other employees in matters related to safety and health at work;
- provide adequate protective clothing and equipment where hazards cannot be eliminated; and
- ensure plant can be used, cleaned, maintained, transported and disposed of safely.

See Appendix 3
Section 19 of the
Act.

Safe systems of work: workplace policies and procedures

Policies and procedures should be developed and implemented for each workplace to ensure safe systems of work and include:

- hazard identification and risk assessment and control processes;
- monitoring performance and reviewing control measures;
- mechanisms for consulting with employees;
- induction and training programs;
- an agreed system for reporting and recording information on identified hazards or other relevant safety and health information;
- safe work methods (such as job or task procedures);
- ongoing inspection and maintenance programs;
- emergency rescue procedures; and
- review of safety management policies and procedures.

Other people at the workplace

The Act also sets out duties for other parties at the workplace:

Employees must take reasonable care to ensure their own safety and health at work, and the safety and health of others affected by their work.

Self-employed people must take reasonable care to ensure their own safety and health at work and, as far as practicable, ensure their work does not affect the safety and health of others.

Employment or engagement of contractors and their employees

The person (called the principal in the Act) must ensure the safety and health of anyone they engage (called

See Appendix 3
Sections 20 and 21
of the Act.

the contractor in the Act) to do the work. The principal is considered to be the employer of a contractor and any people employed or engaged by the contractor to carry out the work. Thus the principal has an employer's 'duty of care' to contractors and their employees for matters over which the principal has control.

Designers, manufacturers, importers and suppliers of plant must ensure that plant intended for use in a workplace is safe to install, maintain and use at workplaces. Safety and health information must be provided when plant and substances are supplied for use at work, and whenever requested for substances.

Designers and builders of a building or structure for use at a workplace must ensure, so far as is practicable, that persons constructing, maintaining, repairing, servicing or using the building or structure are not exposed to hazards.

Further information

The Commission's guidance note, *The General Duty of Care in Western Australian Workplaces* has more information on the 'duty of care' requirements. It is available on the Internet (at: www.safetyline.wa.gov.au) or for purchase from WorkSafe at the Westcentre, 1260 Hay Street, West Perth [Tel. 08 9327 8777].

Consultation

Consultation and co-operation between employers and employees are the keys to providing and maintaining a safe and healthy workplace.

Employers are required to consult with safety and health representatives (if any) and employees on safety and health matters.

Employer and employee involvement in the process of identifying hazards from falls and assessing and controlling the risks will help to ensure that:

- the risks from falls are identified because employees are most likely to know about risks associated with their work;
- employees have a commitment to this process and any changes, such as control measures, that are implemented; and
- fall incidents are eliminated or minimised.

2. Hazard identification, risk assessment and risk control – the risk management process for the prevention of falls

2.1 An overview

Employers have a duty to ensure, as far as practicable, that employees are not exposed to hazards at the workplace. They can do this by following a risk management process to identify hazards and assess and control risks.

In addition, there is a specific requirement for employers to carry out this risk management process for the prevention of falls. This involves a three step process to:

- identify hazards;
- assess risks; and
- control risks.

To assist in identifying hazards where a person may fall and assessing and controlling the risks, consideration should be given to:

- previous injuries, ‘near miss’ incidents or accidents arising from falls which have occurred at the workplace or other similar workplaces;
- relevant codes of practice and guidance notes;
- consultation with employees, safety and health representatives (if any), safety and health committees, self employed people and contractors to find out what problems may be associated with performing tasks/jobs;
- walk through inspections of the workplace (consider using checklists); and
- any other records or statistics which indicate potentially unsafe work practices.

2.2 Identifying hazards

Identifying hazards involves recognising things that may cause injury or harm to the health of a person, such as where a person may fall from, through or into a place or thing.

There are a number of ways to identify potential things or situations that may cause a fall to occur. Choosing an appropriate process or procedure for identifying hazards will depend on the nature of the work environment and hazards involved.

A hazard identification process or procedure may range from a simple checklist for specific equipment, such as a ladder or fall-arrest system inspection checklist, to a more open-ended appraisal of a group of related work processes. Generally, a combination of methods will provide the most effective results.

A hazard identification tool commonly used is the Job Safety Analysis (JSA).

See Appendix 3
Regulation 3.1.

See Appendix 3
Regulation 3.49.

See the significant
incident summary
sheets published
by WorkSafe and
available on the
internet at
www.safetyline.wa.gov.au

A hazard means
anything that may
result in injury or
harm to the health of
a person

See Appendix 4
for a JSA form and
examples.

Common fall hazards checklist

Key things to check at the workplace include:

- **surfaces:**
 - the stability;
 - the fragility or brittleness;
 - the slipperiness (e.g. where surfaces are wet, polished, glazed or oily in the case of new steelwork);
 - the safe movement of employees where surfaces change;
 - the strength or capability to support loads; and
 - the slope of work surfaces (e.g. where they exceed 7°);
- **levels** (where levels change and employees may be exposed to a fall from one level to another);
- **structures** (the stability of temporary or permanent structures);
- **the ground** (the evenness and stability of ground for safe support of scaffolding or working platform);
- **the raised working area** (whether it is crowded or cluttered);
- **scaffolding** (the correct erection and dismantling);
- **edges** (edge protection for open edges of floors, working platforms, walkways, walls or roofs);
- **hand grip** (places where hand grip may be lost);
- **openings or holes** which will require identification or protection or **unguarded shafts or excavations**;
- **proximity of employees to unsafe areas:**
 - where loads are placed on elevated working areas;
 - when objects are below a work area, such as reo bars and star pickets;
 - where work is to be carried out above workers (e.g. potential hazards from falling objects); and
 - power lines near working areas;
- **movement of plant or equipment** (ensuring there is no sudden acceleration or deceleration);
- **access to, egress from and movement around the working area** (checking for obstructions);
- **manual handling** (checking safe work practices for carrying awkward materials, such as plaster boards and roof sheeting, which may be caught by the wind);
- **lighting**;
- **weather conditions** (when heavy rain, dew or wind are present);
- **footwear and clothing** (suitability for conditions);
- **ladders** (where and how they are being used); and
- **young, new or inexperienced employees** (i.e. employees unfamiliar with a task).

2.3 Assessing and analysing risks

This involves looking at the chance or likelihood of a fall occurring and, if a fall did occur, the extent of any harm or injury (i.e. the consequences). This is a way of deciding which hazards need to be tackled first (i.e. where there is the highest risk of falls).

This step should provide information on:

- where, which and how many employees are likely to be at risk of incurring injuries;
- how often this is likely to occur; and
- the potential severity of any injuries.

Risk assessment is not an absolute science – it is a ‘best estimate’ on the basis of the information available. It is therefore important that:

- a person undertaking a risk assessment has the necessary information, knowledge and experience of that work environment and work process; or
- the risk assessment involves people with information, knowledge and experience in the process.

In carrying out a risk assessment, it is necessary to break down each activity or process into a series of parts or smaller tasks and assess each one separately. A Job Safety Analysis can assist with this.

Risk, in relation to any injury and harm, means the probability of that injury or harm occurring.

See Appendix 4 Job Safety Analysis.

Information for risk assessments

Ways to determine the likelihood and potential consequences of each hazard include:

- looking at similar workplaces or processes;
- looking at the workplace’s previous incident and injury reports and data for falls;
- consulting with safety and health representatives (if any) and other employees;
- looking at the way tasks/jobs are performed;
- looking at the way work is organised;
- determining the size and layout of the workplace;
- assessing the number and movement of all people at the workplace;
- determining the type of operation to be performed;
- identifying the type of machinery/plant to be used;
- assessing adequacy of inspection and maintenance processes;
- examining the way all materials and substances are stored and handled;
- assessing what knowledge and training is needed to perform tasks safely and the adequacy of current knowledge and training (e.g. gap analysis); and
- examining adequacy of procedures for all potential emergency situations (e.g. accidents and rescues).


2.4 Controlling risks

The next step is to implement control measures to eliminate or reduce the risk of a person being injured or harmed (e.g. eliminate or reduce the likelihood of a person falling) and to ensure those measures are monitored and reviewed on an ongoing basis.

There is a preferred order of control measures, ranging from the most effective to the least effective in eliminating or reducing the risk of falls. This is outlined below in Table 1.

The preferred way of controlling risk is by design, substitution, redesign, separation or administration. These control measures generally eliminate, reduce or minimise risk more effectively than personal protective equipment.

Specific regulations set out certain mandatory methods that are required to control the risk and some of these, such as the protection of holes and openings, are outlined later in this document.

Table 1 Preferred order of control measures to eliminate or reduce the risk of falls	
1. Elimination – removing the hazard or hazardous work practice from the workplace (e.g. eliminating the need to access the fall risk area such as by installing air conditioning units in the centre of the roof);	Most effective control measure 
2. Substitution – substituting or replacing a hazard or hazardous work practice with a less hazardous one (e.g. providing an alternative means of access such as a safe walkway so the risks of falls are avoided; or installing an elevating work platform for work at heights);	
3. Isolation – isolating or separating the hazard or hazardous work practice from people involved in the work or people in the general work areas (e.g. barricading or enclosing the fall risk area with edge protection, installing handrails and covering floor penetrations);	
4. Engineering control – if the hazard cannot be eliminated, substituted or isolated, an engineering control is the next preferred measure. This includes the use of a fall injury prevention system designed to restrain or arrest a person's fall from one level to another and minimise the risk of injury or harm to a person if they fall (e.g. a restraint system or fall-arrest system, catch platforms, safety nets and safety mesh). It may also include modifications to plant or providing guarding to machinery and equipment; and	
5. Administrative control – this includes introducing work practices that reduce the risk, such as implementing measures to ensure that procedures, instruction, training and warning signs are in place to warn and protect persons exposed to falls. This could also include limiting the amount of time a person is exposed to a particular hazard. These controls should be used in conjunction with physical controls and appropriate supervision.	Least effective control measure
In some instances, a combination of control measures may be appropriate.	

Examples of control measures include:

- designing, planning and modifying plant, buildings and structures to prevent falls;
- looking at the way jobs can be done safely to eliminate or reduce the likelihood of a fall (e.g. checking that ladders are safe and used correctly);
- organising and sequencing work so that people do not interfere with or increase the risk of a fall for themselves or others;
- identification, collection and presentation of information and knowledge required by employees and contractors to enable them to work safely;
- identifying the training required to work safely if there is the risk of a fall; and
- identifying areas requiring non-slip surfaces for stairs or ladders.

Other means of reducing the risk

Other means of reducing risks may be more appropriate to a particular case than the ones mentioned in this section, if they can eliminate or reduce the risk of a fall.

For example, the erection of different communication towers and masts (many of which may require multi guy lines) and advertising and other types of signage on towers and structures will require consideration of other means of reducing the risks of falling.

The risks associated with maintenance and servicing plant and buildings must also be considered.

In all cases, the three basic steps of hazard identification, risk assessment and risk control must be carried out.

2.5 Monitoring and review of control measures

Deciding on and implementing a risk control measure is not the end of the risk management process. It is important to constantly monitor and review control measures to ensure that they continue to prevent or control exposure to hazards or hazardous work practices.

A risk management process should be conducted as an ongoing process because workplaces are usually constantly changing environments with new hazards being introduced; for example, when new equipment or plant are introduced or the work environment or standards are changed.

In determining the frequency of the monitoring and review processes, consider such things as:

- the level of risk (high-risk hazards need more frequent assessments); and
- the type of work practice or plant involved (there may be particular stages in the life of a piece of equipment where more frequent assessments are appropriate).

Each workplace should:

- have a planned program of inspections and maintenance;
- undertake a review each time the work environment changes; and
- regularly review the process for hazard identification, risk assessment and risk control to ensure it is effective.

Maintenance of plant, equipment and structures

Maintenance and repair programs should be reviewed regularly to ensure their effectiveness. Performance testing and evaluation standards should be established.

Incorporating the manufacturer's recommendations, repair and maintenance programs should specify:

- where servicing is required;
- the extent of servicing required;
- the nature of the servicing required;
- the frequency of servicing;
- who is responsible for maintaining repair and maintenance programs; and
- how defects will be corrected.

In order to keep accurate maintenance records, a recording or reporting system should be developed, implemented and maintained.

3. Instruction and training

Employers must provide proper safety and health instruction and training to employees.

Instruction and training are an important part of ensuring safe systems of work and should take into account the functions of each employee and provide them with the necessary skills and knowledge to enable them to do their work safely.

In providing training, it is also essential to address the intent of the Act and Regulations so that employees understand that, in some instances, the prevention of falls depends on them doing a particular work activity in a particular way, such as when using ladders and fall injury prevention systems and working on fragile and brittle roofs.

The type of instruction and training given should include:

- general safety and health induction, including the ‘duty of care’ responsibilities under the Act and Regulations and workplace policies and procedures;
- task specific induction;
- ‘on the job’ training;
- ‘in house’ training programs designed to address specific needs, such as specific training for working from heights and correct use of ladders; and
- industry-based or formal training, such as accredited or certificated courses.

Training programs

In developing and implementing an effective training program, employers should include:

- analysis of training needs, including the identification of the tasks to be performed and associated hazards and risks;
- identification of any pre-requisites or entry standards;
- definition of learning objectives and clear identification of the extent/level of competencies to be achieved, such as what will be covered;
- selection of appropriate training aids depending on the environment and the targeted trainees (use of hardware, graphics, videos and printed materials);
- adequate assessment (e.g. the assessment includes a practical component where the trainee has to demonstrate applied skills);
- recognition of skills attained where applicable (e.g. accreditation or certification);
- delivery of training by a competent person; and
- evaluation of effectiveness of training.

Induction

Induction programs are essential:

- for new employees;

See Appendix 3
Section 19(1)(b) of
the Act.

For examples of
regulations for
specific work
activities, see
Appendix 3
Regulation 3.26
(ladders), Regulation
3.55 (fall injury
prevention systems)
and Regulation 3.57
(fragile and brittle
roofs).

- where work situations have changed; and
- where work practices are being introduced for the first time.

In addition to providing general safety and health information, an induction should include:

- ‘on the job’ training, including how to carry out a job or task in a safe manner and not be exposed to falls;
- information on the hazards and risks from falls at that workplace;
- information on the selection, fitting, use, care, maintenance and storage of personal protective clothing and equipment, such as fall injury prevention equipment; and
- emergency rescue procedures.

Further training or re-training

Employees may need further training where:

- new methods, equipment, hazards, policies or procedures are introduced;
- the type of operation or environment changes; or
- their particular job requirements change.

Certification or accreditation

There may be occasions when a person is required to obtain formal accreditation or certification (for example, certificates of competency are required under the safety and health legislation for scaffolders, riggers and doggers).

Where a particular type of accreditation or certification is required before a job or task can be carried out, employers must ensure that such accreditation or certification is valid and current.

Employers must also ensure that people who are being trained to obtain accreditation or certification are supervised during the training.

The possession of a certificate of competency does not provide any exemption from the requirement for fall protection to be provided for a person working at heights.

Prevention of falls training

Training in the prevention of falls should include:

- safe work systems and practices to prevent falls, including how the systems installed prevent falls;
- hazard and incident/accident reporting systems;
- the correct selection, fitting, use, care, maintenance and storage of personal protective equipment (see the following page for fall injury prevention systems);
- correct selection, use, care and storage of tools and equipment to be used (for example, using a tool belt instead of carrying tools);
- emergency rescue procedures;
- safe methods of working on brittle and fragile material;

- electrical safety; and
- maintaining record keeping procedures and systems.

Training in the use of fall injury prevention systems

Where a fall injury prevention system is used, the instruction and training given should include at least:

- what each individual piece of equipment is intended for and how it works;
- the correct selection, fitting, use, care, inspection, maintenance and storage of individual fall-arrest and restraint equipment (in accordance with the manufacturer's instructions and Australian/New Zealand Standard, AS/NZS 1891.4), their strengths and weaknesses and the siting of temporary fall-arrest systems;
- the method to be used in carrying out a specified work task, including the access and attachment method;
- maintenance of evidence of training undertaken; and
- emergency rescue procedures.

See Section 20
Emergency rescue
procedures.

4. Supervision

Employers must provide supervision to ensure that employees are not exposed to hazards and that they are taking reasonable care where there is a risk of falling from, through or into any place or thing.

Supervision by a competent person is important, especially if the people being supervised are undergoing training or are unfamiliar with the working environment.

Employers should monitor the work to ensure that agreed safe work practices are followed; for example, monitoring the use and care of fall injury prevention systems.

Supervision of the use of fall injury prevention systems

Where fall injury prevention systems are used, the employer must ensure that:

- only employees who have received training and instruction in relation to the system of work are authorised to carry out the work;
- employees use the fall injury prevention system in the correct manner; and
- adequate safety and health systems are in place, are functional, and safe work practices have been adopted and are used.

Employees must follow instructions

It is also important to ensure employees understand that they must comply, so far as they are reasonably able, with instructions given by their employer, where those instructions are for their own safety and health or for the safety or health of other persons.

See Page i for a definition of a competent person.

See Appendix 3 Section 20 of the Act and Regulation 3.55(3) and (4).

5. Design and planning of plant, buildings and structures

Any person designing and planning a plant, building or structure has a general ‘duty of care’ to ensure that the design and construction allows people to properly construct, maintain, repair, service or use the plant, building or structure in a safe manner.

The aim of this ‘duty of care’ obligation is to ensure that designers and builders of buildings and structures or designers, manufacturers, importers or suppliers of plant eliminate completely or significantly reduce risks before they actually reach the workplace.

This ‘duty of care’ also extends to any person who may be involved in the modification, renovation, maintenance or normal operation of a plant, building, structure or plant.

Therefore, at the design and planning stage, it is important to give consideration to prevention of falls systems, not only for use during the construction stage, but also for use during the maintenance of the plant, building or structure.

To ensure that risks to safety and health are considered fully during the design and planning process, designers or architects should:

- identify hazards associated with the design of the plant, building or structure that may arise while it is constructed and maintained, to which a person at the workplace is likely to be exposed;
- assess the risk of injury or harm to a person resulting from the hazards arising as a result of the design; and
- consider the means by which the risk may be reduced.

5.1 Plant (machinery, equipment and vehicles)

Designers, manufacturers, importers or suppliers of plant must eliminate or significantly reduce risks before they actually reach the workplace. Thoughtful design of plant can eliminate risks of falls from heights from the beginning.

The definition of ‘plant’ in the Act includes any machinery, equipment, appliance, implement or tool and any components or fittings of the plant. Therefore, the duty of care obligations for the safe design and manufacture of plant apply to a wide range of items, including farm machinery, transport vehicles, overhead conveyor systems and port loaders.

The elimination or reduction of risks of falls from plant might include:

- providing adequate steps and hand rails on a transport vehicle;
- incorporating a fall injury prevention system in silos and overhead conveyors;
- ensuring workers who will be maintaining or cleaning the plant are able to do so safely; and
- considering the safety of passengers.

Careful manufacture can also ensure the plant is as safe as the designer intended it to be, thus significantly reducing the chances that people may be exposed to risks of falls.

Providing information on hazards and safe use of plant is vital. This can make users aware of any risks the designer has been unable to eliminate and ensure that users do not create any new risks of falls by not using the plant properly.

See Appendix 3
Section 23 of the
Act.

See Appendix 3
Subsections 23(1)
and 23(2) of the Act.

5.2 Buildings and structures

Designers or constructors of buildings or structures must ensure that workers who will be involved with the construction, use or subsequent maintenance work are not exposed to risks of falls. Therefore, at the design and planning stage, it is important to consider providing fall prevention systems as part of the building or structure.

A ‘building or structure’ is defined in the Regulations as any erection, edifice, wall, chimney, fence, bridge, dam, reservoir, wharf, jetty, or ship or other floating structure, and includes any part of any of these things.

As it is unlikely that all design work on larger projects will be carried out by one designer, liaison should occur between the builder and other designers so that the work can be coordinated to ensure the safe interaction of the different design aspects.

When risks remain in the design work, information must be included with the design to alert others to the risks. Providing information about safety issues is a key component to ensure proper, adequate and suitable design and installation.

Design and planning checklist

Safety considerations for the design and planning stage include:

- designing safe access to or egress from any work area including the roof;
- providing permanent guard rails or edge protection (e.g. parapet walls);
- the use of temporary work platforms (e.g. scaffolds and elevating work platforms);
- the location, operation, servicing and replacement of plant and equipment;
- the provision of suitably located temporary and permanent anchorage points and struts with safety line attachment to hook harnesses and lanyards for the use of fall injury prevention system;
- safer building design with, for example:
 - low level mounting of roof vents;
 - location of air conditioning units and other roof mounted plant, such as satellite dishes, away from the edges of the building;
 - non-fragile material for the roof;
 - permanent safety mesh for fall protection; and
 - safer gutters, e.g. installing large volume gutters and downpipes and gutter boards (made of material strong enough to prevent persons falling) on large gutters, and locating gutters at ground level or away from the edges;
- specific safety requirements for workers doing subsequent installation, maintenance or repair work, for example:
 - people installing and maintaining antennae and satellite dishes;
 - contractors servicing air conditioning equipment on the roof;
 - people cleaning windows and gutters; and

- people repairing the roof or gutters;
- the pre-fabrication of structures on the ground before they are lifted into position; and
- assessment of how close construction plant will have to go to roads or overhead power lines.

See Appendix 3
Section 23 of the
Act.

Design and planning for the safety of construction workers

The design and planning considerations for the construction stage include:

- reducing the risk for those working at heights, such as the installation of guard rails to perimeter structural members prior to erection;
- reducing the time spent working at heights by pre-fabricating modules on the ground, before lifting them into position;
- sequencing of the work to be performed at heights;
- the siting and condition of access roads, for example, to enable a crane to place building materials in the most appropriate and accessible location, rather than the materials being moved manually;
- preparation of the ground or floor below the work area. It should be compacted and level to support plant or equipment, such as cranes and scissor lifts;
- identification of underground services including drainage, for example, for the safe setting up of cranes;
- provision of permanent safety mesh;
- consideration of the use of purlin trolleys to stack and move roof sheeting across the roof structure during installation;
- safe and proper access to and egress from amenities;
- provision of first aid facilities and trained personnel where necessary; and
- the safety requirements for maintenance on the finished building, such as the location of and access to equipment and the movement of materials into the building.

6. Access to and egress from work areas

If people are required to work in areas where there is the risk of falling, employers must provide a safe method for people to get to and from and move around that work area. This should take into account the tools and equipment which people will be required to carry to, from and around the work area and areas where plant is being used.

Safe access, egress and movement around a work area checklist

In providing safe access to and egress from and movement around a work area, the safety considerations include:

- the installation of fixed work platforms, walkways and stairways;
- the use of temporary work platforms such as:
 - scaffolds; and
 - crawl boards (however, these are not fall prevention systems and should only be used when alternative methods are not available);
- the installation of a fall injury prevention system;
- the frequency and number of people who may need to use the access to or egress from the work area. Supervision and regular inspection should also be considered;
- the location and space required for any plant, equipment or materials used or temporarily stored;
- the safety of work surfaces;
- the operation of plant by trained and competent operators who hold relevant certificates of competencies;
- the method of getting plant, equipment and materials to the work area;
- exposure of access ways to the weather (e.g. rain can make surfaces slippery and strong winds can cause loss of hand grip);
- the assessment of manual handling tasks, including considering the provision of mechanical lifting aids;
- the provision of adequate natural or artificial lighting to all access ways; and
- the clearance of obstructions so that persons are able to move easily to and from the workplace.

7. Edge protection

Edge protection (often referred to as a ‘guard rail system’) is used to reduce the risk of a person falling from one level to another.

Edge protection must be provided to the edge of a scaffold, fixed stair, landing, suspended slab, formwork or falsework at the workplace, where a person is at risk of falling two or more metres.

Edge protection or a fall injury prevention system must also be provided at any other edge at the workplace where a person could fall three metres or more, according to set requirements, which are listed in the following checklist.

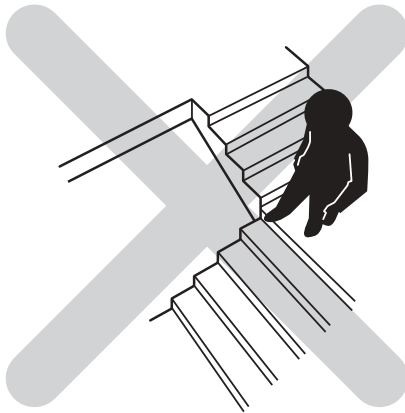
See also Section 8.7
Scaffolding.

See Appendix 3
Regulation 3.55.

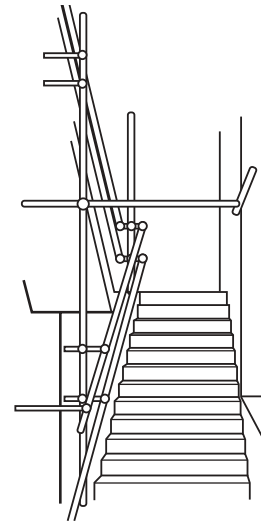
Edge protection checklist

- the guard rail system must be constructed to withstand a force of 0.55 kN (approximately equivalent to 55kg) applied at any point of it. If edge protection is to be used on roofs with pitches exceeding 15° from the horizontal, the edge protection should be able to withstand the added impact forces;
- top rails must be between 900 mm and 1100 mm above the working surface;
- mid rails and toe boards must be provided. However, wire mesh infill panels incorporating a toe board may be used instead of the mid rail;
- a bottom rail above the toe board on some roof slopes may be provided for more severe roof slopes. Both a mid rail and infill mesh panel will assist in preventing persons and objects from sliding off the roof;
- the guard rails should comply with Australian Standard, *AS 1657 Fixed Platforms, Walkways, Stairways and Ladders – Design, Construction and Installation* and/or Australian/New Zealand Standard, *AS/NZS 4576 Guidelines for Scaffolding*;
- if access points are required for equipment (for example, a hoist), they should be protected adequately with gates, safety chains or any other means to prevent a person falling;
- where guard rail systems are intended to be used in conjunction with steel structures or tilt-up construction, designers and builders should plan for the guard rails and fixings to be attached to the panels prior to the structures being raised from the ground; and
- every open edge of a stair, landing, platform or shaft opening must be protected to prevent people falling.

Below: Unprotected stairways are a severe hazard.



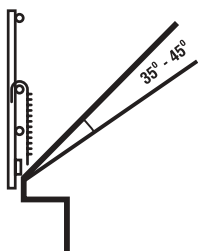
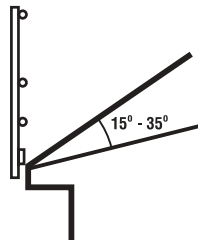
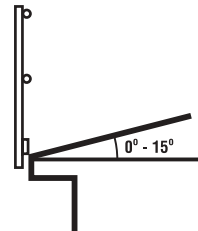
Right: Stairways must have handrails and toe (fender) boards on the landings and bagging fitted over the ends of tubing and over couplings.



Different degrees of roof slopes

With different degrees of roof slopes, the guard rail systems should incorporate the following:

- a top rail, mid rail and toe (fender) board, when roof slopes are between 0 degrees to 15 degrees from horizontal;
- a top rail, mid rail, bottom rail and toe board, when roof slopes are between 15 degrees and 35 degrees from horizontal. The bottom rail should be fitted midway between the mid rail and the roof;
- a top rail, mid rail, bottom rail, toe board and infill mesh panel to mid rail height, when roof slopes are between 35 degrees and 45 degrees. The infill mesh panel may assist in reducing injury to a person sliding down the roof into the railing and will minimise the possibility of objects falling from the roof. Where people are likely to be working below the edge of the roof at ground level, consideration should also be given to the use of infill mesh on roofs with flatter slopes; and
- where roof slopes exceed 45 degrees, the slope is unsuitable to work on without a support system, such as a fall-arrest/restraint system or a scaffold catch platform, to prevent injury.



8. Fall injury prevention systems and anchorages

8.1 An overview

‘Fall injury prevention system’ means a system designed to arrest a person’s fall from one level to another and also minimise the risk of injuries or harm during the fall. ‘Anchorage’ means an anchorage point for a fall injury prevention system (i.e. the means for attaching a lanyard, lifeline or other components of the system to a secure point).

Fall injury prevention systems include:

- restraint systems;
- fall-arrest systems;
- catch platforms;
- scaffolding;
- safety nets; and
- safety mesh.

A fall injury prevention system must be used where a person could fall three metres or more from an edge at a workplace, unless edge protection complying with the Regulations is used.

See Appendix 3
Regulation 3.48.

See Appendix 3
Regulation 3.55.

Key points on the use of the fall injury prevention systems

- choosing the most appropriate fall injury prevention system is essential;
- the correct selection, installation and use of equipment is critical to their effectiveness when arresting a fall;
- the fall injury prevention system and the anchorages must be designed, manufactured, constructed, selected or installed so as to be capable of withstanding the force applied to them as a result of a person’s fall;
- fall injury prevention systems should be such that a person falling travels the shortest possible distance before having the fall arrested;
- ensuring the lanyard and harness are actually connected to the fall injury prevention system is critical (rather than just wearing the equipment); and
- fall-arrest equipment must not be used after it has arrested a fall until it has been inspected and certified as operational by a competent person.

See Appendix 3
Regulation 3.50.

The Australian/New Zealand Standard, AS/NZS 1891 series, *Industrial Fall-Arrest Systems and Devices* should be consulted for further information on fall-arrest systems.

Consideration should be given to slip resistance surfaces or coatings that render the surface trip or slip free to eliminate, where possible, any chance of a slip or trip or fall.

Marking of fall-arrest systems with instructions and other relevant information

Relevant Australian/New Zealand Standards for personal fall-arrest and restraint equipment require that they be permanently marked or labelled to indicate their purpose, correct use and limitations together with other relevant information.

The aim of this marking and labelling is to reduce the incidence of misuse or misfitting of the equipment. It is important to maintain the legibility of these instructions through the life of the equipment.

8.2 Restraint systems

A restraint system comprises:

- anchorage point(s);
- a static line or restraint line of appropriate strength and length; and
- a harness or restraint belt.

Its purpose is to limit horizontal movements from an anchorage point or a horizontal life line or life rail so that the user is totally restrained from reaching a position where either a free fall or limited free fall is possible.

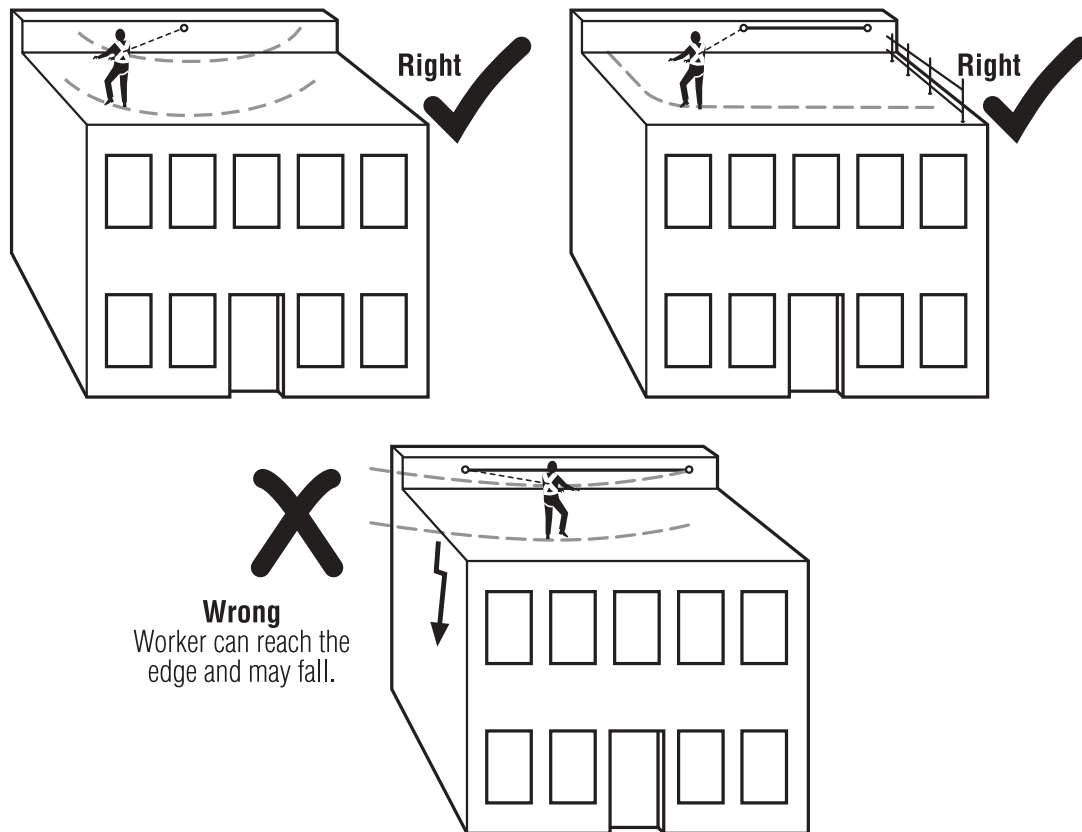
A restraint system is suitable for use where:

- the user can maintain secure footing without having to tension the restraint line and without the aid of any other hand hold or lateral support. When deciding whether secure footing can be maintained, consider:
 - the slope of the surface;
 - the supporting material type; and
 - the surface texture of the surface and whether it is likely to be wet, oily or otherwise slippery;
- the static lines are fitted with an industrial shock absorber when required; and
- the restraint system conforms with the Australian/New Zealand Standard, *AS/NZS 1891* series.

Use of a fall-arrest system *instead of* a restraint system

A fall-arrest system should be used instead of a restraint system if any of the following situations apply:

- the user can reach a position where a fall is possible;
- the user has a restraint line that can be adjusted in length so that a free fall position can be reached;
- there is a danger of the user falling through the surface (e.g. roofing material);
- the slope is over 15°; or
- there is any other reasonably likely misuse of the system which could lead to a free fall.



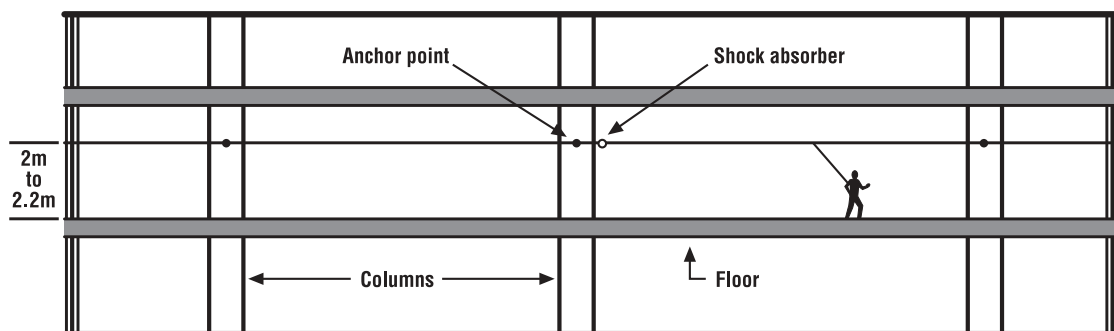
Above: Top two diagrams show acceptable use of a restraint system. Bottom diagram shows unacceptable use of a restraint system.

8.3 Fall-arrest systems

Individual fall-arrest systems are designed to arrest an accidental fall and consist of some or all of the following:

- anchorages;
- lifelines;
- inertia reel;
- lanyard that will not allow a person to fall more than two metres;
- retractable lifelines;
- rope grabs;
- wire grabs;
- rail system;
- shock absorbers – both personal and industrial;
- harness;
- snap hooks (double or triple action to prevent rollout);
- karabiners (double or triple action to prevent rollout); and
- rescue equipment.

See Appendix 5 and Appendix 6 for more details on fall-arrest systems.



Above: Fixed static line fitted with a shock absorber for use with safety harnesses and lanyards.

Fall-arrest system installation checklist

When planning the site layout and sequence of construction for installing a static safety line system, the safety considerations include:

- selection of the most appropriate fall-arrest system and method of installation;
- the system conforms with the Australian/New Zealand Standard, AS/NZS 1891 series;
- provision of anchorage points (see Appendix 6 for details of static lines capable of supporting imposed loads);
- the requirements for lateral and vertical mobility whilst a person is connected to the system and working;
- the potential for different types of falls (e.g. free fall and restrained fall);
- fall distances and clearances (both vertically and laterally);
- provision of safe access to and egress from a work area for persons installing anchorage points;
- installation in a location where it will be possible to assist or rescue a person; and
- development of emergency rescue procedures before setting up and ensuring appropriate emergency equipment is available on-site, including a self-rescue kit if training in use has been provided, although these should not be relied on as the main means of rescue.

Safe access to and egress from the work area

Before work commences, the employer or person who has control of a workplace and employees should ensure that there is safe access to and egress from the work area. This includes:

- assessment of wind and weather;
- organising of:
 - fall prevention equipment;
 - access;
 - personal protective equipment;
 - specific instructions for workers; and

Fall-arrest and industrial rope access systems should be only installed where it is possible to provide prompt assistance or rescue if required.

See Section 20
Emergency Rescue
Procedures.

- means of rescuing persons from safety harnesses following arrested falls;
- and
- provision of a safe means of access to an anchorage point. This should take into account the possibility of a fall prior to the operator connecting securely to the anchorage and after disconnection at the conclusion of the task.

A person using a fall-arrest or industrial rope access system should not work alone.

Signage

Signage should be in place permanently at entry points of static line systems to advise users on the fall prevention system and inspection details.

The signage should include statements on:

- the system it has been designed for (e.g. a restraint system or a fall-arrest system);
- how many people should use the system at any one time;
- any personal protective clothing and equipment the operator should wear;
- the date of the last inspection;
- the date of the next inspection; and
- the name of the person doing the inspections.

8.4 Inspection of fall injury prevention systems

Users of fall injury prevention systems must be aware that fall prevention depends upon the continued efficiency and durability of fall injury prevention systems.

It is essential that all equipment is correctly maintained, with inspections and examination of all components by a competent person at regular intervals.

All fall injury prevention system equipment should have an established inspection regime for an effective inspection by a competent person. The following checklist provides information on inspection regimes.

Inspection of fall injury prevention systems checklist

The safety requirements and considerations include:

- the inspection regime should include details of:
 - the equipment to be inspected (including its unique identification);
 - the frequency and type of inspection (pre-use checks, detailed inspections and, where appropriate, interim inspections);
 - designated competent peoples to carry out inspections;
 - action to be taken on finding defective equipment;
 - means of recording the inspections;

See Appendix 3
Regulation 3.51.

See page i for
a definition of a
competent person.

See Appendix 3
Regulation 3.51.

If a fall injury prevention system has been used to arrest a fall, it must be withdrawn from service immediately and inspected by a competent person.

See Appendix 3
Regulation 3.53.

- training of users; and
- the system of monitoring the inspection regime to verify that inspections are carried out appropriately.

Employers should consult the manufacturer and/or supplier of the equipment for any product-specific requirements.

- the employer must ensure that each component of the system and its means of attachment to an anchorage is inspected by a competent person:
 - after it is installed but before it is used;
 - at regular intervals; and
 - immediately after it has been used to arrest a fall.
- if any signs of wear or weakness are found during the inspection, the employer must ensure that the components or means of attachment are withdrawn from use until they are replaced with properly functioning components. The manufacturer's specifications for inspections should also be checked for their recommendations on inspection intervals;
- all safety belts and harnesses, which are not in regular use during any six month period, are inspected before use;
- the fall prevention systems are inspected at least once every 12 months **and** after any extended storage period;
- consideration is given to environmental factors that may have affected the condition of equipment, such as water, oil, grease, sharp edges and grit; and
- there is consultation with the manufacturer if there is any doubt that a belt or harness could be affected by cleaning materials, atmospheric contaminants or hazardous substances.

Inspection of anchorages

Employers must ensure that a permanently fixed anchorage is inspected by a competent person and it is regularly inspected, at not less than six month intervals, if it is permanently fixed and in regular use.

If a permanently fixed anchorage is not in regular use, it must be inspected before it is used.

When the competent person doing an inspection assesses the anchorage as being impaired, the employer must ensure that:

- the anchorage is not used and is tagged to indicate it is not to be used; and
- the repaired anchorage is not used until it is inspected by a competent person who can confirm that it is safe to use.

All anchorages should be visibly checked prior to use.

Inspections for faults and condition

Inspections of inertia reels checklist

Inspections of inertia reels by the competent person should include inspecting:

- the rope or webbing including anchorage lines in Type 2/3 fall-arrest device (for example, inspecting for any defects or damage and checking the anchorage);
- the fall-arrest device body (for example, inspecting for any damage to the mounting ring or the body, checking the activation of the fall-arrest indicator and that labels are present);
- the locking mechanisms and rope guides (for example, inspecting the visible rope guides for excessive wear and checking that the rope runs freely through the anchorage and that the locking mechanisms work properly);
- the hardware (for example, checking that the snap hooks or links work properly); and
- the snap hooks and double or triple action karabiners (for example, inspecting for any damage and checking the movement of the latch).

Inspection of harnesses checklist

The inspection of the harnesses by the competent person should include inspecting:

- the webbing (for example, inspecting for any damage or defects);
- the D rings (for example, inspecting for any damages or wear and tear and checking the vertical movement); and
- the buckles and adjusters (for example, inspecting for any damage).

The inspection checklist for possible faults and the condition of fall-arrest devices, belts and harness in the Australian/New Zealand Standard, *AS/NZS 1891.4* should be consulted, as well as the inspection checklist for static lines and anchorages in Australian/New Zealand Standard, *AS/NZS 1891.2 Supp 1*.

See also Appendix 6
Components of fall-
arrest and restraint
systems.

Inspections before work starts

Before starting work

Items in the fall injury prevention system to inspect or check before work starts include:

- ensure that the harness attachment point for the lanyards is the correct one, i.e:
 - the fall-arrest lanyards are attached to a D ring at the back between the shoulder blades;
 - fall-restraint lanyards are attached at hip level; and
 - lifeline lanyards or rope grabs are attached to a D ring at the chest.

Note that some harness attachment points may not be rated for fall-arrest;

- if a lifeline is being used with a rope grab, ensure that the rope and all rope grabs are compatible,

especially with regard to rope diameter and direction;

- when setting up the fall-arrest equipment, inspect it for sharp edges, pinch points and sources of heat, which could wear, cut or burn through the lanyard if a worker should fall and be left dangling;
- ensure an emergency rescue procedure is in place;
- ensure that there is always assistance from another person when the fall-arrest equipment is in use. People who are working at a height or an elevated position should not work alone. This is important if there is a risk of a fall;
- ensure that there is no climbing above the anchorage point of a fall-arrest lanyard since the falling distance could double;
- ensure that fall-restraint components are not mixed with fall-arrest components. Fall-arrest components must incorporate a shock absorber;
- do not allow fall-restraint anchorage points, which have a much lower strength requirement, to be confused with fall-arrest anchorage points. Attach signs at each anchorage point indicating the type of anchorage point (i.e. whether it is for fall-restraint or fall-arrest);
- always inspect the snap hook visually after attaching it to a harness or anchorage point; merely hearing it click is not enough. There have been fatal accidents in which it was later found that the connector had not been closed properly;
- always set up the attachment point for fall-arrest or fall-restraint between the safe access point and the hazard. If a worker has to walk past the hazard to reach the attachment point, the purpose of the whole fall-arrest system is defeated; and
- always inspect all fall prevention equipment and hardware before use and, if there any doubts about the equipment, it should not be used because the boundary between safe and unsafe equipment is not well-defined. If the item is damaged, it must be taken out of service and inspected by a competent person prior to re-use.

Welding and the protection of fall injury prevention systems

A large part of the equipment and components of fall injury prevention systems consists of material which may be badly damaged and weakened by hot particles or sparks from welding or any allied process. Therefore, people using the system and the system itself must be protected from hot particles or sparks with, for example, fire retardant harnesses and lanyards, lanyards with a cable wire core or fire retardant blankets.

8.5 Hazards with the use of fall-arrest systems

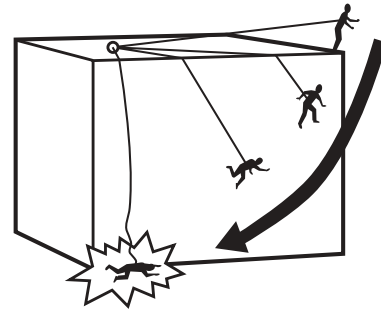
Pendulum effect

With the use of a fall-arrest system, a potential hazard is that, in some situations, the worker may swing onto the ground (which is called 'swing down') or swing back into the building (which is called 'swing back'). These hazards are caused by two lines offsetting one another, i.e. the line from the anchorage point to the worker and the line (direction) of the fall.

Both swing down or swing back can also occur within the interior of a roof.

Swing down

With the hazard of swing down, the fall arrest line extends diagonally from the anchor point, following the perimeter edge of the roof. If the worker falls, the fall arrest line will slide back along the perimeter until it is at a right angle with the edge of the roof. When this happens, the worker will drop and may hit the ground (see diagram right) or the arrest line may break when contacting the edge of the roof and the worker will fall to the ground.



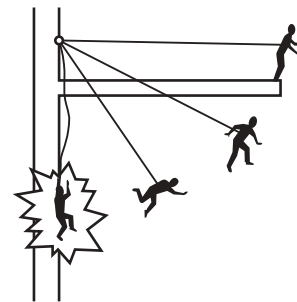
Consideration should be given to the following measures to address the hazard of swing down:

- install guardrails;
- put the anchorage point at a right angle to the position of the line at the perimeter edge. The use of a mobile anchorage will assist; or
- install a second anchorage point and belay devices, which are intermediate anchorages.

Swing back

With the hazard of swing back, in a fall, particularly from a perpendicular edge, the worker will swing back into the building structure and collide with any obstructions in the path of the swing (see diagram right).

If there is a risk of swing back occurring, then the use of an individual fall-arrest should be reassessed.



Consider the 'pendulum effect' before deciding on location of anchorage points.

Assistance of another person

People who are working at a height or an elevated position should not work alone. This is important if there is the risk of a fall. A person suspended in a full body harness must be rescued as soon as possible.

Workers must be trained in rescue techniques and be familiar with on-site rescue equipment and emergency rescue procedures.

Suspension trauma

Suspension trauma may occur when a person has an arrested fall because they are suspended and caught in an upright position. Section 20.1.1 has more information on suspension trauma.

8.6 Catch platforms (fans)

A catch platform is a temporary platform located below a work area. It may be constructed of scaffolding components.

Catch platforms must be solidly constructed and designed to withstand the maximum potential impact load.

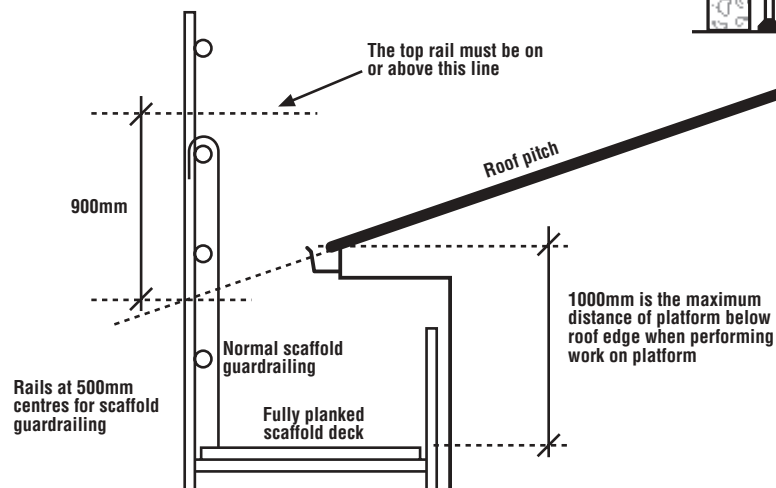
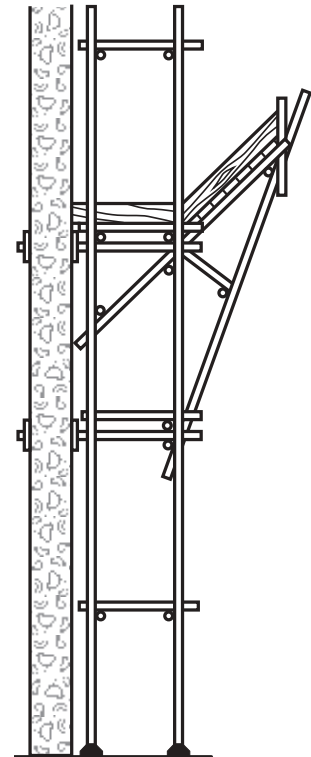
For information on other hazards with fall-arrest systems, see Appendix 6 Components of fall-arrest and restraint systems.

When scaffolding components are used, the catch platform should:

- have a deck that is fully planked out and is as close as possible to the work level;
- be no more than two metres below the work area;
- extend a minimum of two metres beyond all unprotected edges of the work area; and
- at a minimum, be the width of the area being removed (e.g. in roof laying work).

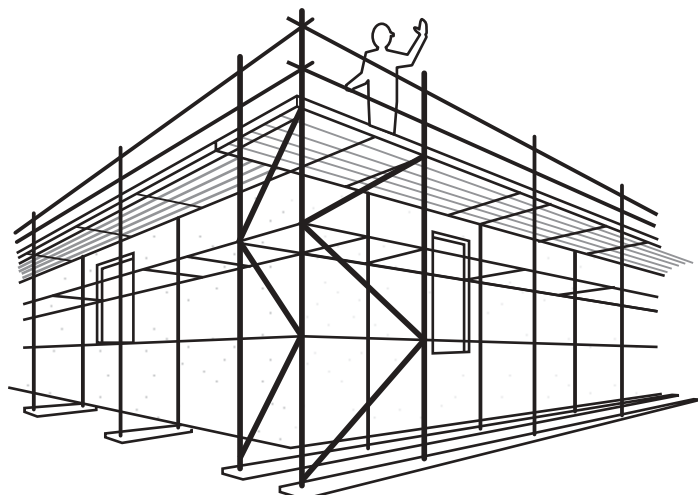
Right: An example of a catch platform below a work area.

Below: Example of a combination of work platform and catch platform for roof pitch of 26° or less.



8.7 Scaffolding

Right: Perimeter scaffold with a fully decked working platform, guard rails and toe boards.



Scaffolding can be very effective protection in preventing falls; however, there are specific requirements that apply to the design, construction and erection of scaffolding.

The Australian/New Zealand Standard, *AS/NZS 4576* and the *AS/NZS 1576* series on scaffolding provide practical guidance on training, safe work practices, inspection and use of scaffolding and scaffolding equipment.

Different duties for scaffolding

Scaffolding work platforms are generally rated as light, medium or heavy duty.

‘Light duty scaffolding’ is scaffolding of up to 225 kg per bay. This is suitable for plastering, painting, electrical work and other light tasks. Platforms must be at least two planks (450 mm) wide.

‘Medium duty scaffolding’ is scaffolding of up to 450 kg per bay. This is suitable for carpentry and most other general trades work. Platforms should be at least four planks (900 mm) wide.

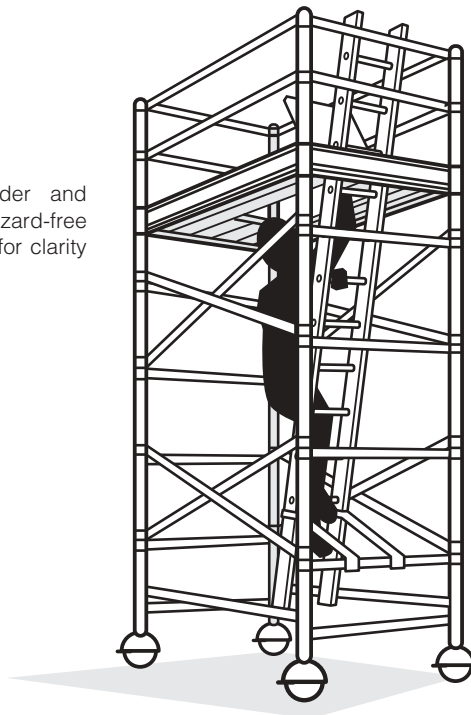
‘Heavy duty scaffolding’ is scaffolding of up to 675 kg per bay. This is needed for bricklaying, concreting, demolition and most work tasks involving heavy loads or heavy impact forces. Platforms should be at least five planks (approximately 1100 mm) wide.

Scaffolding checklist

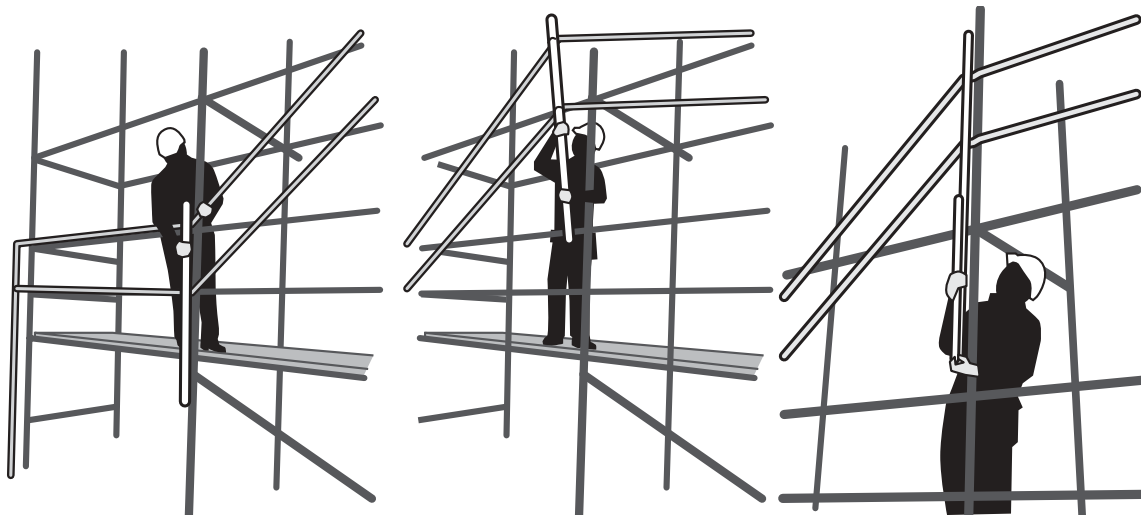
The safety requirements and considerations include:

- scaffolding must conform to Australian/New Zealand, *AS/NZS 4576* and the *AS/NZS 1576* series;
- if scaffolding is to be erected or dismantled at a height exceeding four metres, the scaffolding must be erected or dismantled by a certified scaffolder;
- a person must not alter scaffolding without authority from the main contractor;
- modular scaffolds must be of the same type, not mixed components. Mixed components from different manufacturers have resulted in scaffold incompatibilities and failures, posing significant risks to persons using the scaffolding;
- mobile tower frame scaffolds can be used to provide safe working platforms;
- scaffolding that is incomplete and left unattended should have danger tags and warning signs attached at appropriate locations to prevent use;
- scaffolding exceeding four metres in height should be inspected and tagged by a competent person before use, after any alteration or repair, and at intervals not greater than 30 days;
- additional inspections should be carried out by a competent person following an occurrence such as a severe storm or earthquake;
- safe access to and egress from the scaffold must be provided ; and
- edge protection (guard rails and toe boards) must be provided at every open edge of a work platform. Meshing should be installed over access and egress points.

Right: Mobile scaffold, access ladder and trapdoor to provide the maximum size hazard-free working platform. Toe board not shown for clarity of diagram.



Below: Example of 'advanced edge protection' where guard railing is installed before the person goes up to the next level.



Edges of a roof

Scaffolding may be used as fall protection around the edge of a roof by incorporating guard railing as edge protection into the scaffolding. The following diagrams show common examples of acceptable roof guard railing arrangements on scaffolding. The toe boards are not shown for clarity of diagrams.

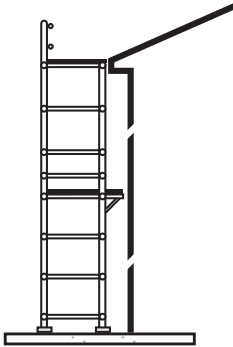


Figure 1
Scaffold platform at edge of roof with hop-up bracket for other trades.

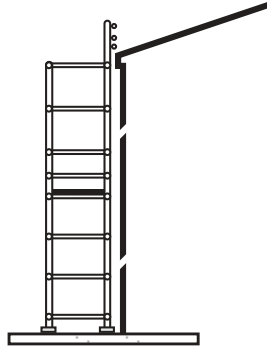


Figure 2
Inside standards supporting guard railing.

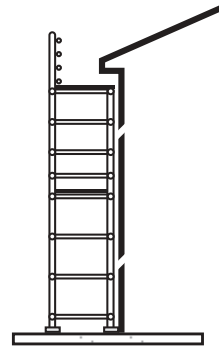


Figure 3
Scaffold platform below edge of roof.

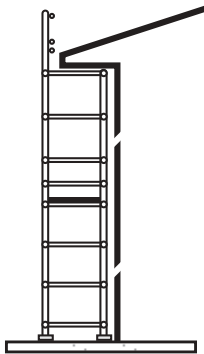


Figure 4
Outside standards supporting guard railing.

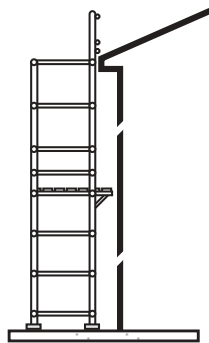


Figure 5
Inside standards supporting guard railing with hop-up bracket for other trades.

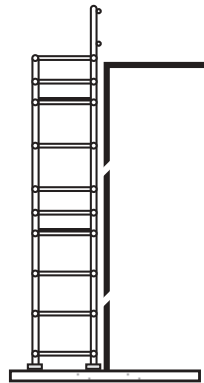


Figure 6
Inside standards supporting guard railing adjacent to a flat roof structure.

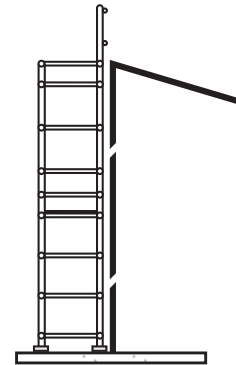


Figure 7
Inside standards supporting guard railing adjacent to a roof structure that slopes away from the top edge.

8.8 Safety nets

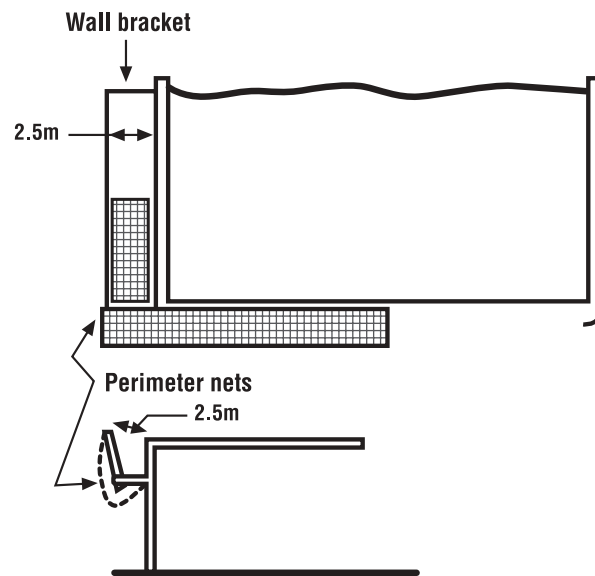
Safety nets can provide a satisfactory means of protection against fall injuries while allowing workers maximum flexibility of movement. They should not be used for access to or egress from a work area or as a working platform.

Information on safety nets is included in Australian/New Zealand Standard, *AS/NZS 4576 Guidelines for Scaffolding*. British Standards, *BSEN 1263.1-2002 Safety Nets: Safety Requirements, Test Methods and BSEN 1263-2:2002 Safety Nets: Safety Requirements for the Positioning Limits* also provide specifications for the safe use and installation of safety nets.

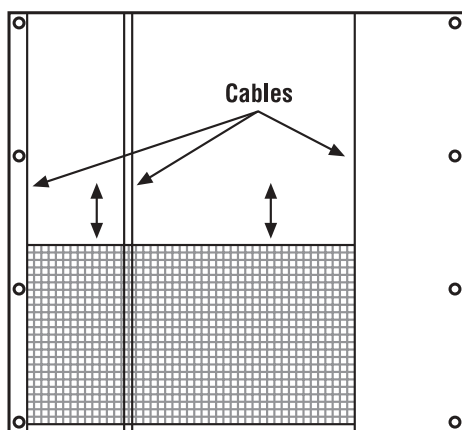
Safety nets checklist

Where safety nets are used as a fall injury prevention system, employers should ensure that:

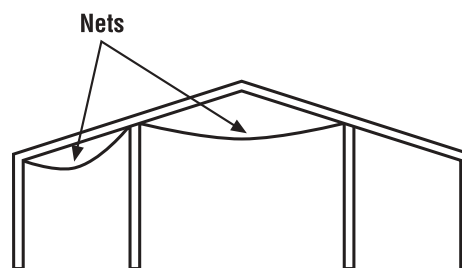
- safety nets are in position before any work is commenced;
- safety nets are constructed of material of sufficient strength to catch a falling person or debris;
- safety nets are installed and maintained by a certificated rigger or scaffolder;
- elevating work platforms (e.g. a cherry picker or scissor lift) are used for the installation. If this is not possible, scaffolding and fall-arrest systems should be used;
- safety nets are hung as close as is practicable to the underside of the working area, but no more than two metres below the working area;
- perimeter safety nets extend at least 2.5 metres beyond the leading edge of the working area (see the diagrams on the next page);
- perimeter safety nets are installed where there is no edge protection to prevent workers falling over the edges;
- where cables are installed along the length of the building or structure, safety nets are hung across these cables and moved along as the work proceeds;
- the safety net has sufficient tension and clearance to prevent a falling person contacting any surface or structure below the net;
- combustible material is not allowed to accumulate in suspended safety nets;
- no welding or oxy cutting is performed above safety nets;
- safety nets are not used in an environment that exposes them to damage from chemicals, sun or heat;
- safety nets are inspected, particularly after installation, relocation or repair; and
- the safety nets are stored correctly in dry, shaded areas. Good air circulation is also necessary.



Safety nets should not be used for access to or egress from a work area or as a working platform.



Safety nets - Plan view



Safety nets - End view

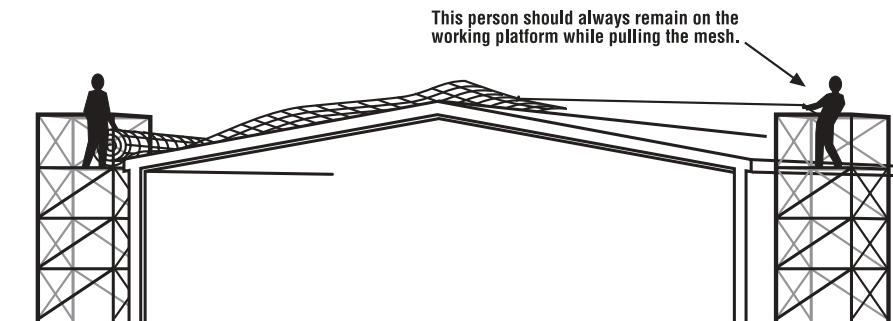
8.9 Safety mesh

Galvanised safety mesh securely fixed provides fall injury protection for roof installers and offers long-term protection for maintenance and repair workers.

The removal of roofing materials and safety mesh for the replacement of the roof or for demolition must be carried out in the reverse sequence to the way it was constructed initially. This means that:

- the sheeting should be removed first so that the safety mesh remains intact to provide maximum protection for the removal workers; and
- then the safety mesh should be removed.

Below: Means of installing safety mesh across the roof, prior to fixing it in position. Rope is used to pull mesh across the roof purlins. Do not walk across open purlins to draw the mesh. Edge protection is not shown for clarity of diagram.



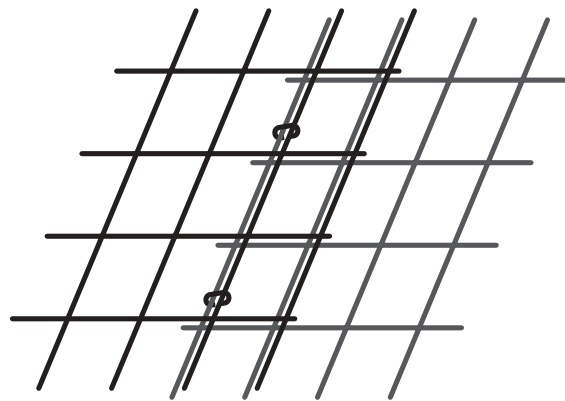
Safety mesh checklist

The safety considerations include:

- safety mesh must be used in conjunction with appropriate guard rails or fall-arrest systems and devices when people are working close to open edges of a roof;
- the safety mesh should comprise 2 mm diameter wire of not less than 450MPa tensile strength welded into a mesh;
- the longitudinal wire spacing should not exceed 150 mm and cross wire spacing should not exceed 300 mm;
- safety mesh should be installed by a competent person;
- Australian/New Zealand Standard, *AS/NZS 4389 Safety Mesh* specifies the minimum requirements for the design, construction testing and installation of safety mesh in domestic, commercial and industrial building applications. Information is also contained in Australian Standard *AS 2424, Plastics Building Sheets - General Installation Requirements and Design of Roof Systems*, which is a superseded (but still available) Australian Standard;
- people engaged in the installation of safety mesh should be protected from falling by scaffolding (as in the diagram above), elevating work platforms and/or fall-arrest systems and devices;
- although not required when installation of safety mesh is carried out from properly erected scaffolding incorporating edge protection, fall-arrest equipment is required to access the roof span;
- installation of safety mesh and roofing material must be carried out in the correct sequence. Safety meshing must be completed and in place before roof sheets are moved into position. Consideration should be given to the use of purlin trolleys to move roof sheets into position where large areas are involved;
- a rope should be used to draw the mesh across the open purlins from one side to the other. Do not walk or jump across the open purlins to draw the mesh across the roof;
- the removal of roofing materials and safety mesh must be carried out in reverse sequence to the way it was constructed initially; and
- safety mesh should not be used for access to or egress from a work area or as a working platform.

Joining of wires in the safety mesh

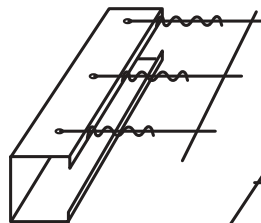
Adjacent runs of mesh must be overlapped one opening width.



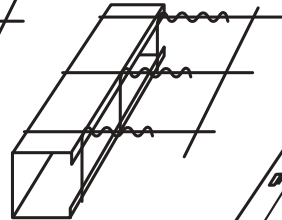
Left: Overlapping of adjacent runs of mesh by one opening width. Steel staples are required to fix runs of mesh where purlin spacing exceeds 1.7 metres.

Below: Means of fixing wire mesh to purlins, tied off with at least four full turns around the wire.

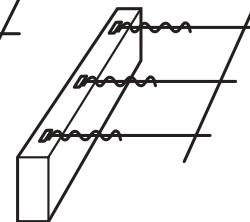
Longitudinal wires passed through holes drilled in steel purlins



Longitudinal wires wrapped around steel or timber purlins



Longitudinal wires passed through steel staples on timber purlins



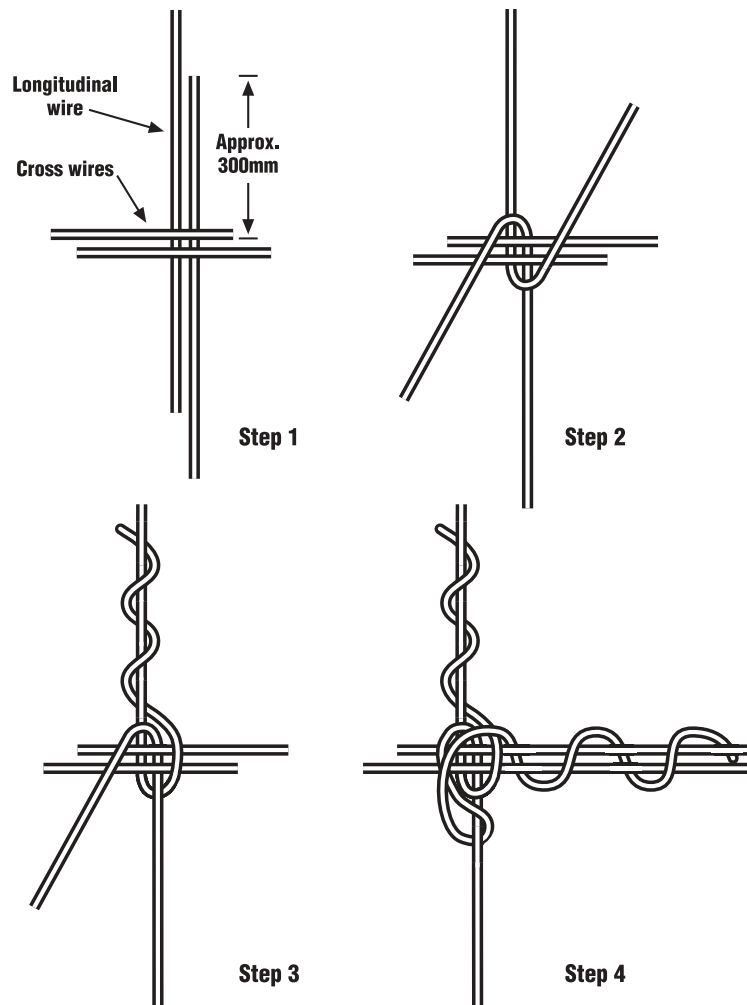
Longitudinal wires

The joining of longitudinal wires must be done in a way that develops the strength of the connection of longitudinal wires to roof members.

If it is necessary to make longitudinal joins, the knot and tie should be the full length of the tail wire, which should be 300 mm in length.

The first tail wire should be tied at least three times around the knot.

The other tail wire is placed under the longitudinal wire and tied around the transverse wire. To get a 300 mm tail wire, cut the longitudinal wire close to a join. The join should be the full width of the mesh, with every longitudinal wire joined. The diagrams on the next page illustrate the tying procedure.



Above: Method for joining longitudinal wires and cross wires (Steps 1-4).

Any variation to the recommended method of tying should be avoided.

Cross wires

The runs of mesh should be side lapped by at least 150 mm (one opening width). If the purlin spacing exceeds 1.7 metres, the runs of mesh should be fixed with 2 mm steel staples or by tying or twitching at intermediate spacings. This is to prevent people falling through the meshed bays.

9. Ladders: portable and fixed

Many falls from heights result from the non-use of ladders, for example, where crates, stools or desks are used to access heights instead of properly setting up a ladder. However, each type of ladder has specific safety requirements and considerations.

Portable ladders

Extension or single ladders should be used as a means of access to or egress from a work area, not as a working platform.

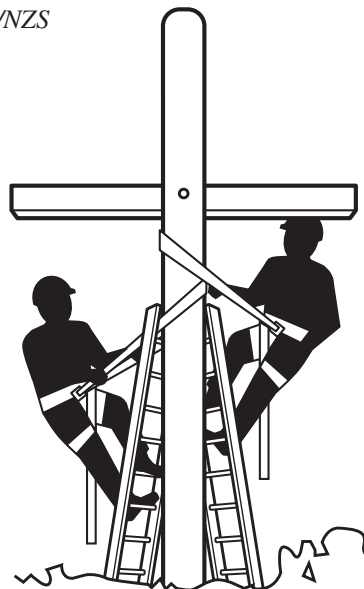
The Regulations set specific requirements for the use of a single or extension ladders, which are included in the checklist on the following pages.

In addition, the minimum recommended safe practices and requirements for the selection, safe use and care of portable ladders are set out in the Australian/New Zealand Standard, *AS/NZS 1892* series.

Other means of preventing falls may be necessary with the use of portable ladders, where a risk assessment determines additional protection will be needed. The additional means of protection include:

- use of a permanent or temporary fall-arrest system attached to a ladder where a person may fall three metres or more;
- use of pole straps (see the following diagram), which should be inspected regularly and at least daily when in use. Refer also to the relevant section in Australian/New Zealand Standard, *AS/NZS 1891.4*; or
- the installation of fixed ladders.

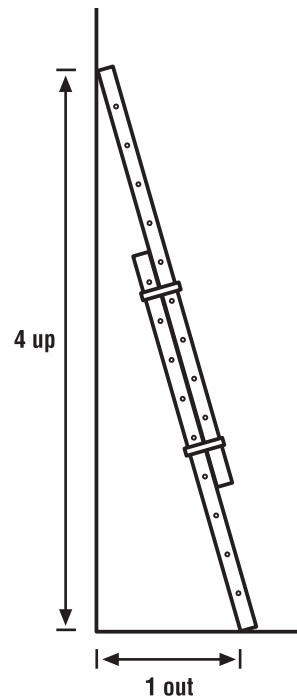
Right: An example of pole straps used with portable ladders to provide fall protection. In this situation, a secondary independent anchor point should be used (this is not shown in the diagram).



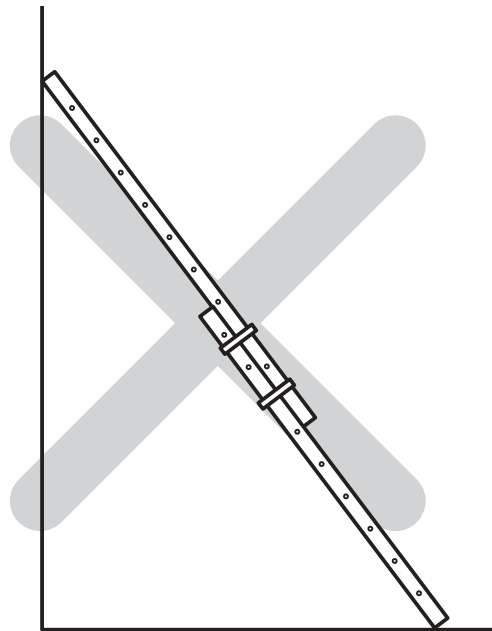
See Appendix 3
Regulation 3.26.

For information on
fall-arrest systems,
see Section 8 and
Appendix 6.

Positioning of portable ladders



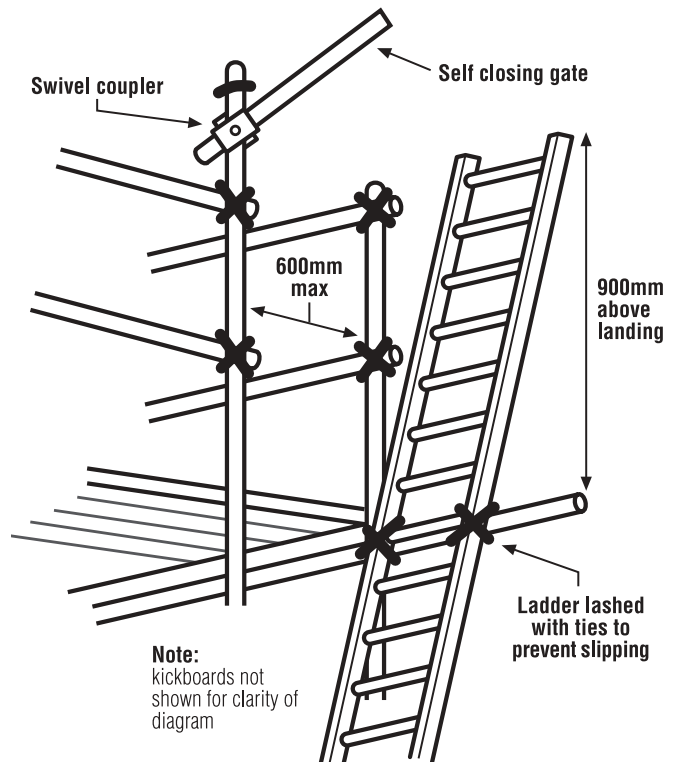
Above: The distance between the ladder base and the supporting structure should be about one metre for every four metres of working ladder height. Horizontal benching of ground ensures vertical alignment of ladder.



Above: Unsafe arrangement of ladder, which will create instability. Base of ladder positioned too far from wall. Sudden slipping can occur.

Always position the ladder so that **the rungs are at a right angle** to the edge of the working platform (i.e. the roof, scaffolding or gutter). The adjacent diagram illustrates this point.

Right: Position the ladder at a right angle to the edge of the working platform.



Ladder checklist

If a ladder is used, check that:

- the type of ladder is appropriate to the task. Do not use 'domestic' or 'home-made' ladders. All ladders must comply with Australian Standard/New Zealand, AS/NZS 1892 series and users should follow the manufacturer's recommendations on safe use;
- the ladder is in good condition. Before it is used, the ladder should be inspected for faults, such as broken rungs, rails and footing. Consult the manufacturer's checklist, if available;
- damaged ladders are removed from service;
- the ladder is on firm, stable and level ground;
- the ladder is the correct height for the task to avoid reaching or stretching. Keep the body centred between side rails at all times. Never over-reach;
- the ladder is not too close or too far from the support structure. The ratio must be one to four. For example, the distance between the ladder base and the supporting structure should be about one metre for every four metres of working ladder height. (See the diagrams on the previous page);
- the ladder is secured against displacement (i.e. slipping or sliding) and/or there is another person holding the base of the ladder;
- if used at a construction site, the ladder must not be suspended from a parapet hook;
- the ladder is not placed so that the weight of the ladder and any person using the ladder is supported by the rungs. (See the diagram on the next page);
- all the locking devices on the ladder are secure;
- the ladder is always faced while climbing up or down;
- materials or tools are not carried while climbing the ladder. Tools should be carried in a tool belt or side pouch;
- only light duty work is undertaken while on the ladder, where three points of contact can be maintained and tools can be operated safely with one hand;
- no person should stand on a ladder any higher than 900 mm from the top of the ladder;
- no other person is allowed on the ladder at the same time;
- slip resistant base, rungs or steps are provided;
- slip resistant shoes are worn;
- metal or wire bound ladders are never used close to energised power lines; non-metallic ladders should be used instead; and
- ladders are not used in access areas or next to doors when the work involves hot work, such as welding or oxy cutting, on scaffolding or an elevating work platform to get extra height, next to power lines, in very wet or windy conditions and next to traffic areas unless the working area is barricaded.

Access or egress

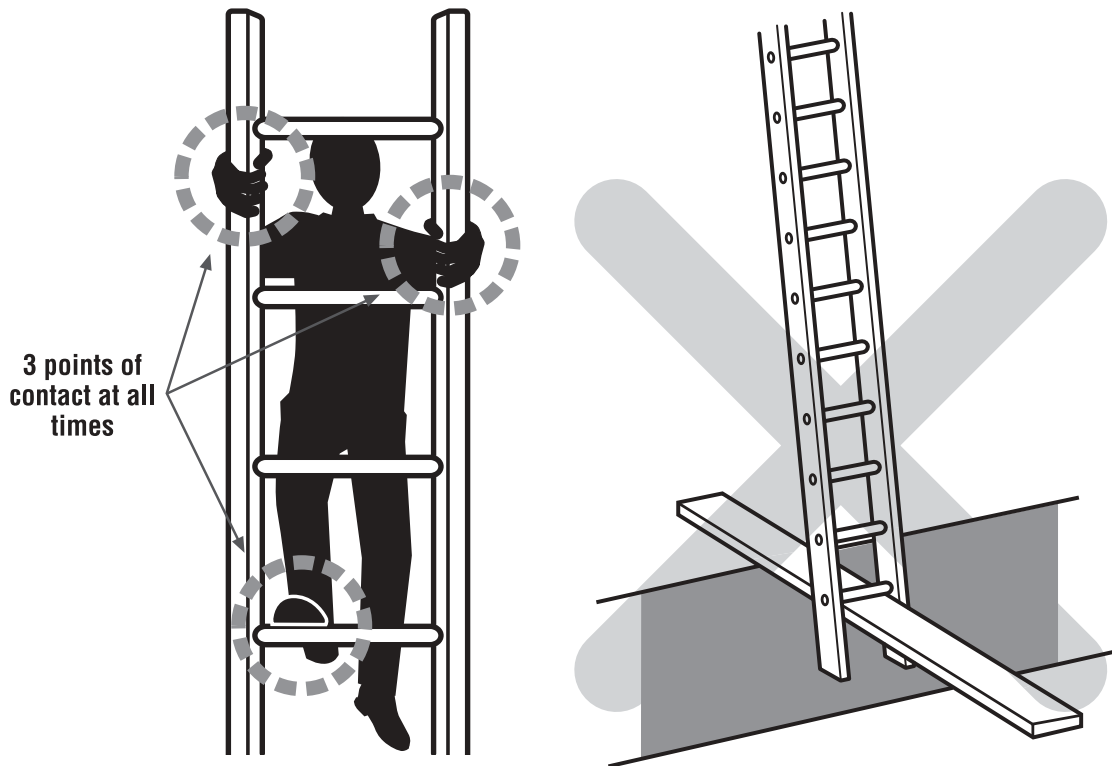
Where fixed/extension ladders are used for access or egress, check that:

- they are used only for access to or egress from a working area, not as a working platform. Consider whether an elevating work platform or scaffolding would be safer;
- there is a firm and level work platform, free from obstructions, to step onto from the ladder;
- the ladder extends at least 900 mm above the stepping-off point on the working platform. Sufficient platform area must be provided at the stepping off point; and
- edge protection is provided at the stepping off point where people access the working platform.

Working platforms

Where portable or fixed ladders are used as working platforms, check that:

- a fall-restraint or arrest system is used, if the person is exposed to a fall of three or more metres. Refer to *AS/NZS 1891.4* for anchorage requirements;
- **three points of contact with the ladder are maintained at all times.** This means that there should be *two feet and one hand* or *two feet and the frontal D ring on the harness attached to the fall-arrest/restraint line or inertia reel* (see the diagram below); and
- no work is carried out over another person. Ensure signage is used to warn people of work above.



Above left: Three points of contact with the ladder should be maintained at all times, i.e. two feet and one hand, two hands and one foot or two feet and the frontal D ring on the harness attached to the arrest/restraint line or inertia reel. Tools and materials should not be carried by hand. They should be in a tool belt or side pouch.

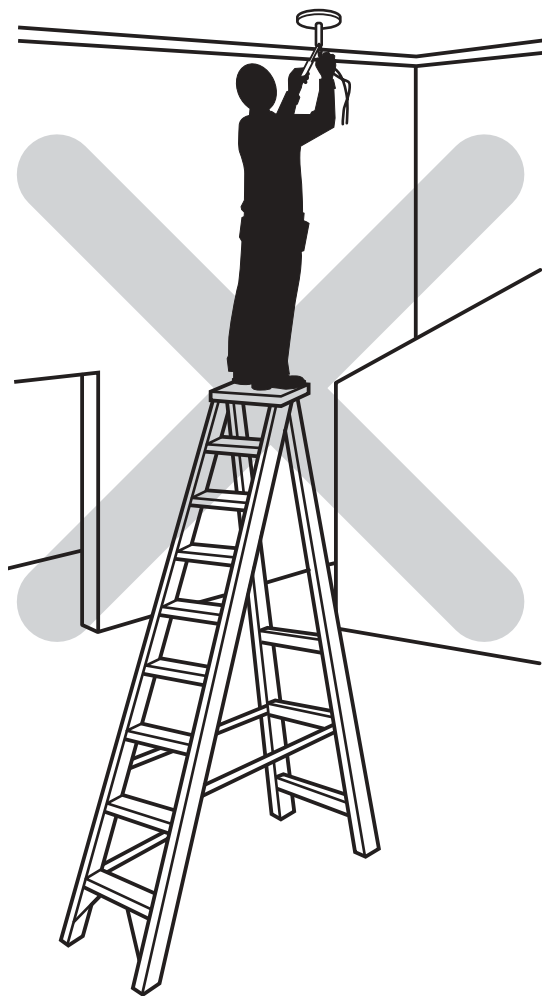
Above right: The ladder should not be placed so that the weight of the ladder and any person using the ladder is supported by the rungs.

Step and trestle ladders

Step and trestle ladders should be used only in the fully open position.

A step ladder may be used in the closed position by leaning against a support; however, care must be taken to ensure that the load is carried by the front stiles only.

Alternatives to trestle ladders should be considered. There is a wide variety of working platforms now available for use in all circumstances, including small scissor lifts, light duty aluminium mobile scaffolds, boom arms and modular scaffolding.



Above: A step platform can provide a stable work surface.

Trestle ladders must be used only for light duty work and the minimum width of the working platform should not be less than 450 mm. Work should not be performed on a trestle platform that is over two metres above ground level unless edge protection is incorporated.

Ladder bracket scaffolds

Alternatives to ladder bracket scaffolds should be considered because there are safer means of accessing heights of two metres, such as light duty scaffolding and elevating work platforms (e.g. scissor lifts).

Ladder brackets must not be used for general construction work.

Ladder bracket scaffolds may be used only for very light work, where an alternative is not practicable, such as sign writing.

When ladder brackets are used, their use must be in accordance with clause 10.2.5 of Australian/New Zealand Standard, *AS/NZS 4576 Guidelines for Scaffolding*.

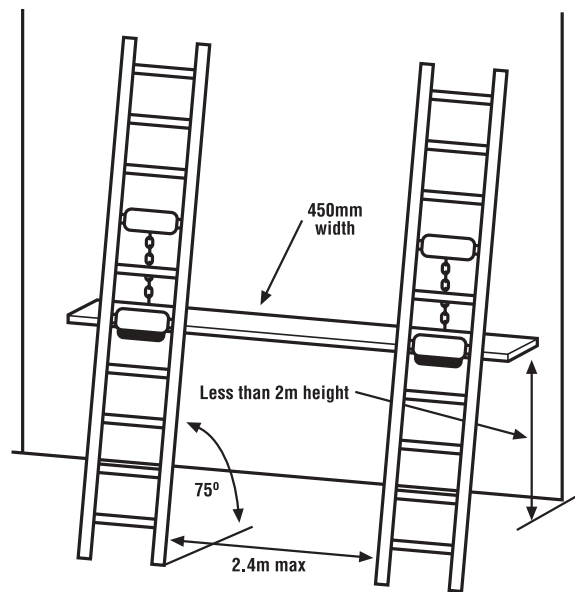
The platform on the brackets should be at least 450 mm wide (the minimum width of a light duty work platform).

Right: An example of unacceptable use of a ladder bracket – the working platform must only be used for work of two metres or less in height.

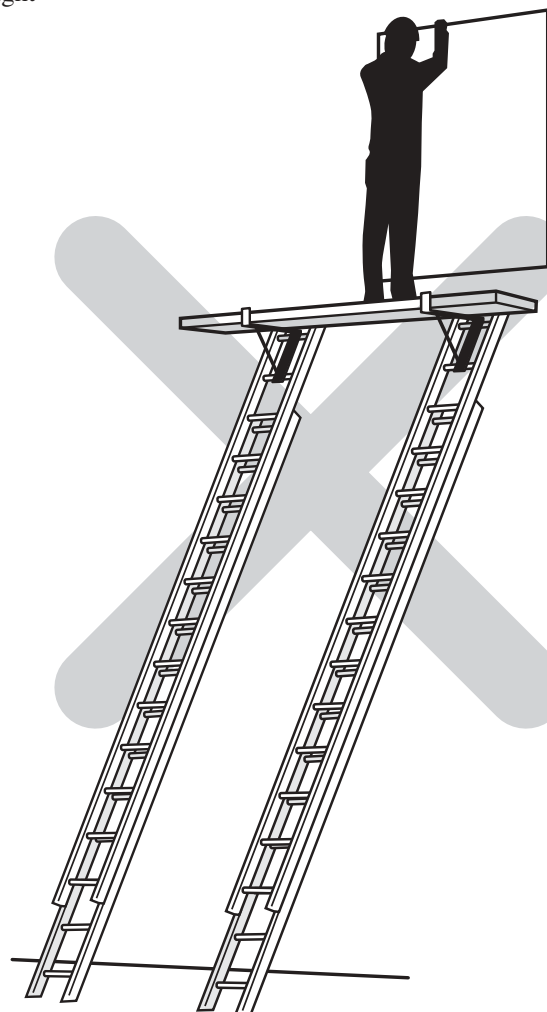
In this example, the brackets are mounted on the outside of the ladders. With the working platform required to be at least 450mm wide, the user would have to climb out over the working platform, without any hand hold points above the platform to support them while gaining access to the top of the working platform.

The leaning angle of the ladders is also greater than one in four (see the earlier diagrams under positioning of portable ladders) and the ladders may slip out at the bottom.

In addition, edge protection and a handrail must be provided if a person can fall two or more metres from the platform (see Regulation 3.55 in Appendix 3).



Above: Example of an acceptable ladder bracket scaffold.



Fixed ladders

Ladder and tower safety systems should be installed on fixed ladders (for example, rung ladders). More information on these systems is provided below and on the next page.

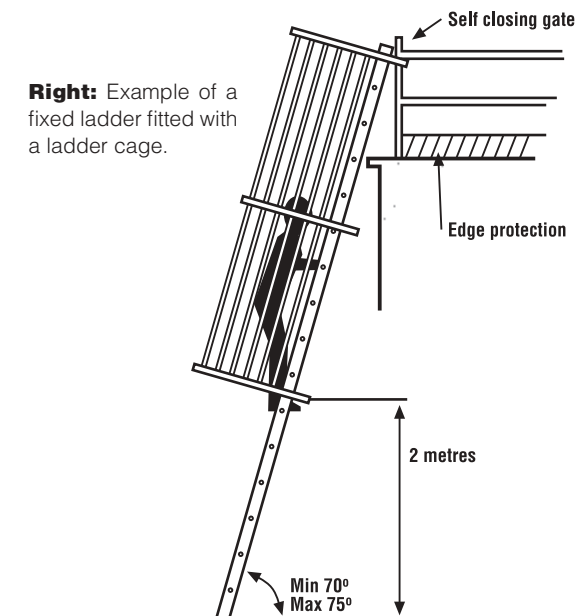
The ladder cages in fixed ladders have been shown not to stop a fall but simply funnel a fall and, in some cases, more injuries can occur from striking the protective backguards on the way down and the cages may also hinder rescues. Therefore, fixed ladders with angles exceeding 75° to the horizontal should be fitted with a permanent or temporary fall-arrest system.

The ladder cages may also increase the risk of falling by giving the climber a false sense of security.

In areas where fixed ladders are installed, they should be in accordance with Australian Standard, AS 1657 *Fixed Platforms, Walkways, Stairways and Ladders - Design, Construction and Installation*.

The angle of slope should not be less than 70° to the horizontal and not greater than 75° to the horizontal. **In no case should the ladder overhang the person climbing the ladder.** If the angle is more than 75° , a safe system of work to prevent falls should be provided such as a permanent fall-arrest system (see ladder and tower systems below) or a double lanyard harness (see the next page).

A specifically designed rescue procedure should be developed for use in ladder cage situations, in consultation with the safety and health representative, if any, and employees. Training in the rescue procedures should occur prior to the use of the fixed ladder.



Ladder and tower safety systems

Ladder and tower safety systems are temporary or permanent fall-arrest systems, which can be installed to provide continuous fall protection for persons using ladders or climbing towers (see diagram opposite). These can be used on different types of plant, such as tower cranes, as well as buildings or structures.

Right: With the use of a ladder tower system, the person climbing has continuous fall protection by being attached to the anchorage by a drop line and harness.



Inertia reels may be used for providing fall protection on fixed ladders.

Ladder and tower safety systems checklist

The safety considerations include:

- temporary systems should comply with the requirements of droplines (see Appendix 6);
- the locking device should be attached to the side or frontal attachment point of the harness and the lanyard assembly should be a maximum of 300 mm length;
- the locking device should not be capable of damaging the line in the event of a fall;
- the point of connection onto the ladder by the climber must be near the base of the ladder to allow the connection before ascending begins and also to provide continuous connection to the disconnecting point when at a safe higher level;
- limited free fall should be to a maximum of 600 mm;
- permanent systems should be of wire or rail construction and should be installed according to the manufacturer's instructions;
- wire systems should be in accordance with Australian/New Zealand Standards, *AS/NZS 1891.3* and *AS/NZS 1891.4* and sited in the middle or side of the ladder;
- the entire device should be capable of sustaining a load of 12 kN (approximately equivalent to 1200 kg); and
- rail devices should be anchored in accordance with Australian/New Zealand Standard, *AS/NZS 1891.3*. They should be sited to allow clearance of the self-locking device. Junction points may be installed to allow both vertical and horizontal movement.

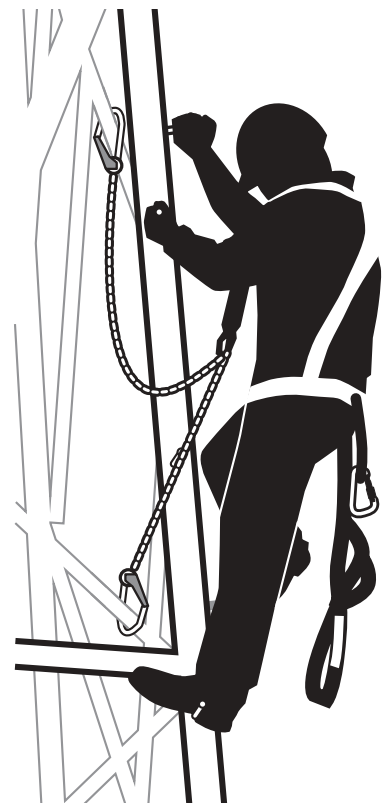
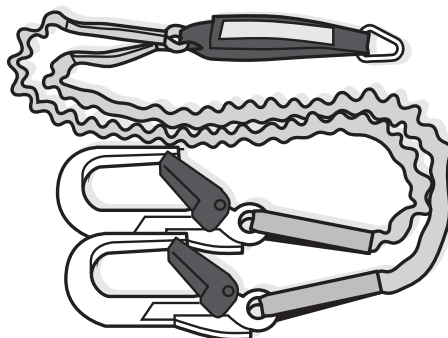
Double lanyards

An alternative to ladder and tower systems is the use of a double lanyard (also known as a twin tail or 'Y' lanyard). The opposite diagram shows how the use of a double lanyard means that the person climbing can always be connected to the ladder or structure and, if there is a fall, it should be a short distance.

However, double lanyards are easy to misuse – there should be no back hooking, they are not suitable for frequent use (because of possible misuse or muscle injury) and the ladder or structure points must be capable of arresting forces generated by a fall with the double lanyard. Adequate training must be provided on their use.

Far right: Person climbing with a double lanyard.

Right: An example of a double lanyard. These must have double action hook gates.



10. Building maintenance units

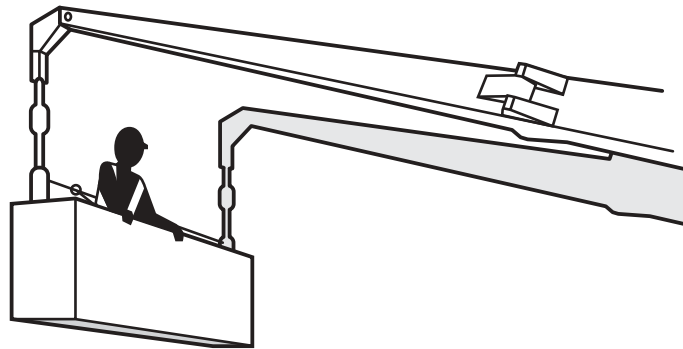
During the planning stage, consideration should be given to the methods by which maintenance, repairs or cleaning will be undertaken on buildings or structures.

Consideration of future maintenance requirements at the early design stage will avoid the possibility of unsafe work practices occurring during routine maintenance. Sloping building exteriors and decline windows require priority consideration to ensure safe maintenance may be carried out.

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

Both the design of the building maintenance unit and the actual unit must be registered with WorkSafe.

Right: An example of a building maintenance unit with safety harness and restraint line.



Building maintenance units checklist

The safety considerations include:

- the platform must have sufficient, clearly designated safety harness anchorage points designed to withstand the forces caused by a fall of any person located anywhere on the platform;
- building maintenance units should be operated by trained and competent operators;
- Australian Standards, *AS 1418.13 Cranes (including Hoists and Winches) – Building Maintenance Units* and *AS 2550.13 Cranes – Safe Use – Building Maintenance Units* should be consulted for guidance on design and safe use; and
- refer to Australian/New Zealand Standard, *AS/NZS 1891.4 Industrial Fall-Arrest Systems and Devices: Selection, Use and Maintenance* for guidance on fall protection on moveable platforms.

For an example of a bosun's chair, see the swing seat in the diagram in Section 18.

11. Other types of temporary working platforms

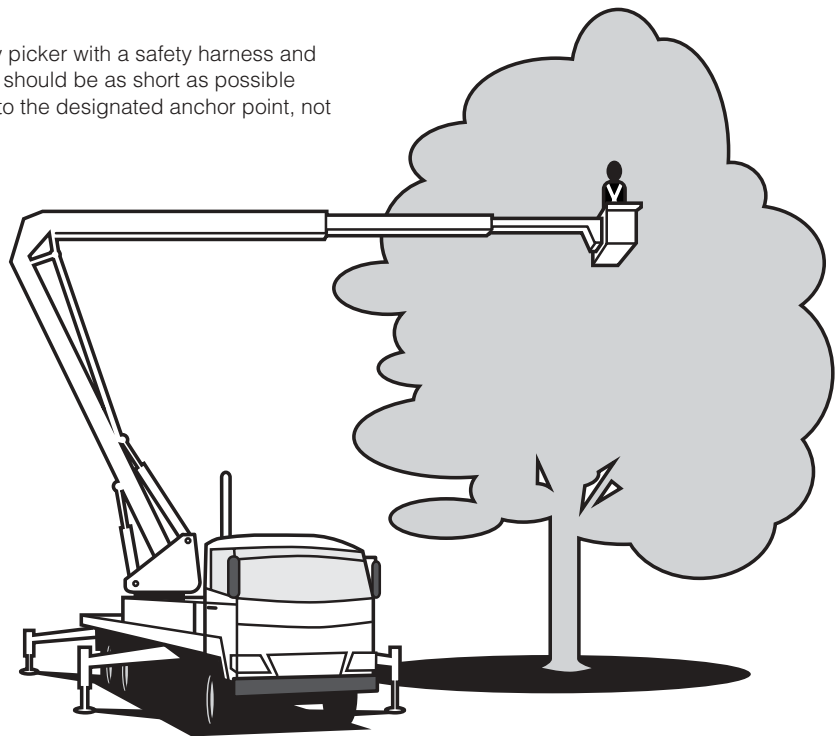
Depending on the situation, other types of working platforms can be considered. These include elevating work platforms (for example, cherry pickers, scissor lifts and order pickers), personnel carrying devices (i.e. mancages or work boxes), bosun's chairs, light duty suspended stages (for example, swing stages) and false cars (platforms used for work in lifts before lift cars are installed).

Where these devices are being used, ensure signage is used to warn people of work above.

Elevating work platforms

Elevating work platforms are available in a wide variety of types and sizes. They include scissor lifts and cherry pickers (see diagram below). Some are only designed for hard and flat surfaces, while others are designed for operation on rough terrain.

Right: An example of a cherry picker with a safety harness and lanyard assembly. The lanyard should be as short as possible and must be attached directly to the designated anchor point, not attached to the handrail.



See Regulation 4.54
– available at
www.safetyline.wa.gov.au

The person in charge of the workplace must ensure that the elevating work platform is maintained, inspected and operated:

- in accordance with the manufacturer or designer's written instructions; or
- if it is not practicable to obtain those instructions, in accordance with written instructions approved by the WorkSafe Western Australia Commissioner; or
- if it is not practicable to do either of the above, in accordance with Australian Standards, *AS 2550* or *AS 1418*; however, there are exclusions for certain types of elevating work platforms – refer to Regulation 4.54 (4) for more details.

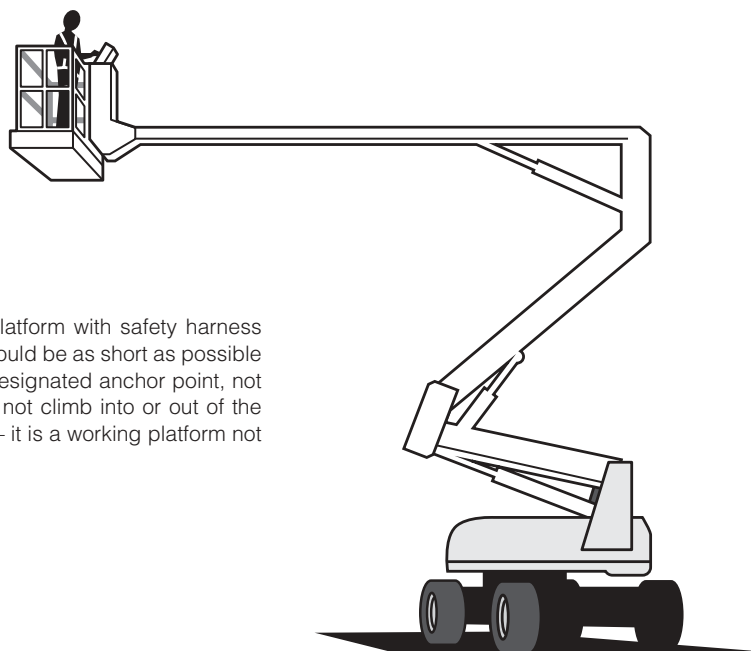
The Australian Standards applicable to elevating work platforms are *AS 2550.1 Cranes, Hoists and Winches – Safe Use – General Requirements*; *AS 1418.1 Cranes, Hoists and Winches – General Requirements* and

parts of AS 2550.10 *Cranes – Safe Use – Elevating Work Platforms* and AS 1418.10 *Cranes (Including Hoists and Winches) – Elevating Work Platforms*.

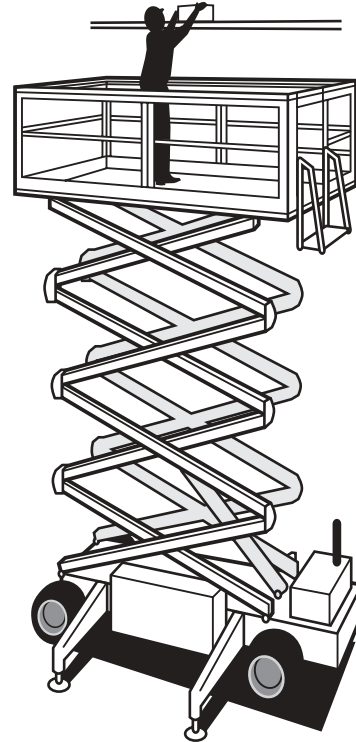
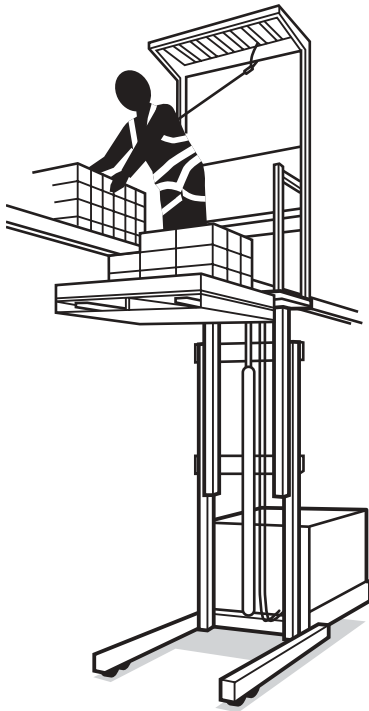
Elevating work platforms checklist

The safety requirements include:

- workers operating the platforms must be trained and instructed in safe operating procedures for the particular brand and type of equipment;
- the platforms should only be used as working platforms not as a means of access to and egress from a work area;
- unless designed for rough terrain, the platforms should be used only on a solid level surface;
- the surface area should be checked to make sure that there are no penetrations or obstructions which could cause uncontrolled movement or overturning of the platform;
- when designed as rough terrain platforms, the manufacturer's instructions must be consulted for information on safe operation;
- the training provided should include safe use of the fall-arrest equipment and emergency rescue procedures;
- people working in cherry pickers must wear an anchored safety harness and lanyard incorporating a shock absorber as precaution against mechanical failure of the basket. The lanyard should be as short as possible. Fall-arrest systems are not required to be worn on scissor lift type elevating work platforms; and
- people operating cherry pickers with boom lengths exceeding 11 metres must have an appropriate certificate of competency.



Right: An example of a boom arm platform with safety harness and lanyard assembly. The lanyard should be as short as possible and must be attached directly to the designated anchor point, not attached to the handrail. People must not climb into or out of the bucket when it is an elevated position – it is a working platform not a means of access and egress.



Above left: An example of an order picker using a safety harness and restraint line (lanyard).

Above right: An example of a scissor lift elevating work platform. A fall injury prevention system is not required on this item of plant, unless advised by manufacturer or person in control of the workplace and a suitable anchor point is provided.

Work boxes

A work box is a personnel carrying device designed to be suspended from a crane for the purpose of providing a working area for persons elevated by and working from the box.

Work boxes on cranes checklist

The safety requirements and considerations include:

- other working platforms, such as an elevating working platform or scaffold, are used as an alternative to the work box, if they are practical;
- the work box should not be suspended over persons;
- a suitable and adequate work box, designed for the purpose, is used and securely attached to the crane. The work box design must be registered with WorkSafe. The workbox, lifting attachments and records should be checked by a competent person before use;
- the work box is fitted with a suitable anchorage capable of withstanding the fall forces specified in *AS/NZS 1891.4*. Workers must be attached to the anchorage by a lanyard and harness unless the workbox is fully enclosed;
- workers should not enter or leave the workbox when it is elevated unless a risk assessment is conducted (except in an emergency);
- the crane is fitted with the means to safely lower it in an emergency or a power supply failure;

- the crane is suitably stabilized at all times while the work box is used;
- the crane has ‘drive up’ and ‘drive-down’ controls on both the hoisting and luffing motions and those controls are used. No declutching allowing free fall to be used while a workbox is in use;
- an effective means of communication, between any person in the work box and the operator, is provided;
- the crane is fitted with a safety hook and moused accordingly; and
- the operator remains at the controls of the crane at all times.

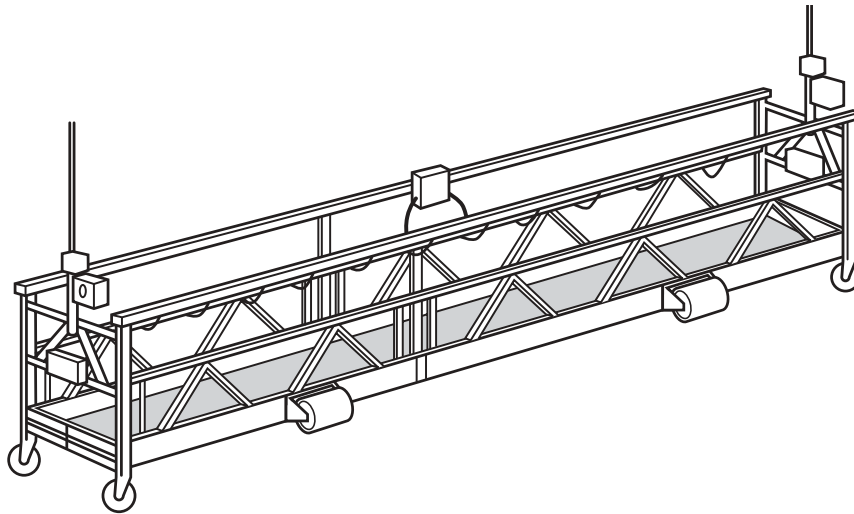
Light duty suspended stage (i.e. swing stages)

Light duty suspended stage checklist

The safety considerations include:

- specifications should be in accordance with Australian Standard, *AS 1576.4 Scaffolding – Suspended Scaffolding*;
- the design should take into account wind load created by covers and screening etc., and the need for overhead and side protection for the occupants;
- the working load should be in accordance with Australian Standard, *AS 1576.4*;
- the suspension and secondary rope should be:
 - terminated at the rig end with a thimble eye splice or ferrule secured eye termination or other rope coupling device that does not damage the rope and gives a strength of not less than 80 per cent of the breaking load of the rope;
 - a rope clamping device should be fitted to the tail end of the rope (where appropriate);
 - the rope should be long enough so that the system will not run out of rope. It should extend one metre beyond the motor in the fully extended position;
 - the secondary rope should be attached independently to the suspension rig and have the strength of not less than the relevant suspension rope;
- edge protection (top rail, mid rail and toe board or top rail, mesh panel and toe board) complies with Regulation 3.55(5);
- people installing or servicing a light duty suspended stage should hold an appropriate certificate of competency in advanced rigging or advanced scaffolding. Persons operating light duty suspended stages must be trained in safe operation;
- safety harness and restraint lanyard, attached to an independent anchored life line, should be worn by any person working in a swing stage suspended with one wire rope to each winch;
- where the swing stage is suspended by two wire ropes to each winch, a safety harness and restraint lanyard should be attached to a suitable anchor point of the swing stage;
- the maintenance should be in accordance with the manufacturer’s specifications and performed by a competent person; and
- refer to Australian/New Zealand Standard, *AS/NZS 1891.4 Industrial Fall-Arrest Systems and Devices: Part 4: Selection, Use and Maintenance* for guidance on fall protection on moveable platforms.

See Appendix 3
Regulation 3.55(5).



Above: Example of a light duty suspended stage with two wire ropes to each winch. A vertical life line should be used. It must be ensured that the platform remains horizontal, when moving it up or down.

False cars

False cars are platforms used for work in lifts before lift cars are installed.

False cars checklist

The safety considerations include:

- if lanyard assemblies are used on false cars, they should be as short as practicable and not connected to guard rails;
- these should have edge protection according to Regulation 3.55(5); and
- a purpose made anchorage designed to withstand the force applied to it as a result of a person's fall should be attached to a suitable area of the false car. Australian/New Zealand Standard, *AS/NZS 1891.4* requires anchor points for safety harnesses to withstand a force of 15 kN (approximately equivalent to 1 500kg).

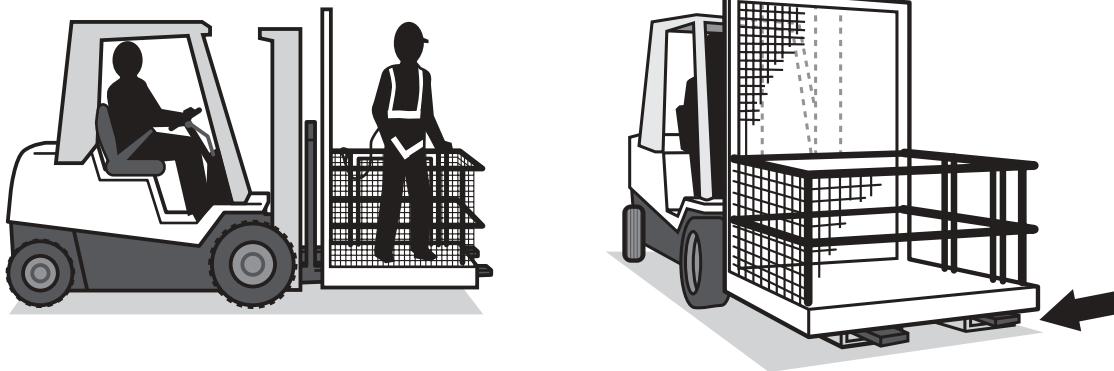
12. Forklift trucks

Forklifts fitted with personnel carrying devices (i.e. mancages or work boxes) provide a safe means of raising personnel and equipment to an elevated work area, when they are correctly attached to the forklift carriage and engineer-designed and constructed in accordance with Australian Standard, *AS 2359 Powered Industrial Trucks*.

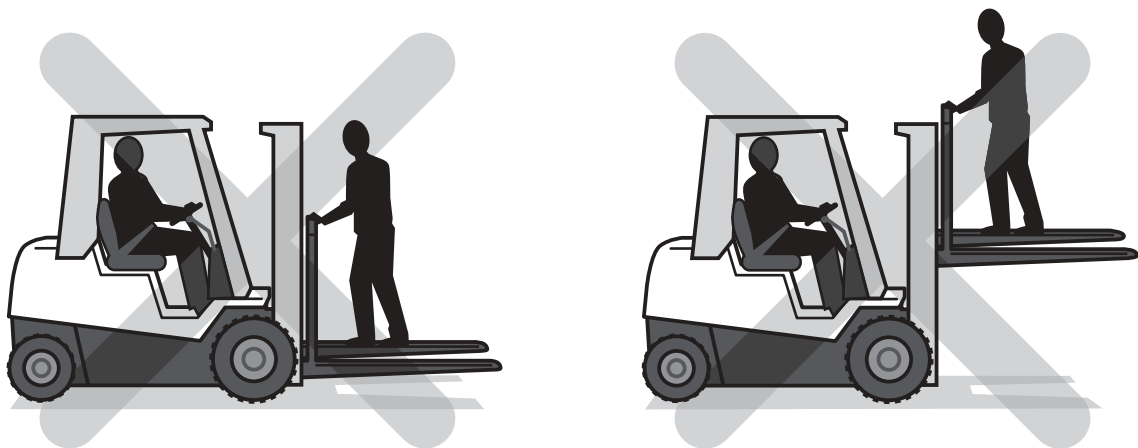
Personnel carrying devices on forklifts checklist

The safety considerations include:

- people **must not** be raised on the tynes of forklift trucks or the pallet;
- people should remain inside the personnel carrying device at all times;
- no other device (e.g. ladder, box or raised platform) should be used to gain additional height (see the diagram on the following page);
- the safety gate should be self-locking and kept shut when in the elevated position; and
- pallets should never be used as work platforms on the tynes of forklifts.



Above: An example of an engineer-designed personnel carrying device, with safety harness and lanyard assembly, correctly positioned on the forklift tynes.



Above: Personnel *must not* be raised or carried on forklift tynes. Using a forklift as a working platform or to gain extra height is an unacceptable practice unless a proper personnel carrying device (workbox) is used.



Above: Unacceptable practice with ladder on forklift.

13. Purlin trolleys

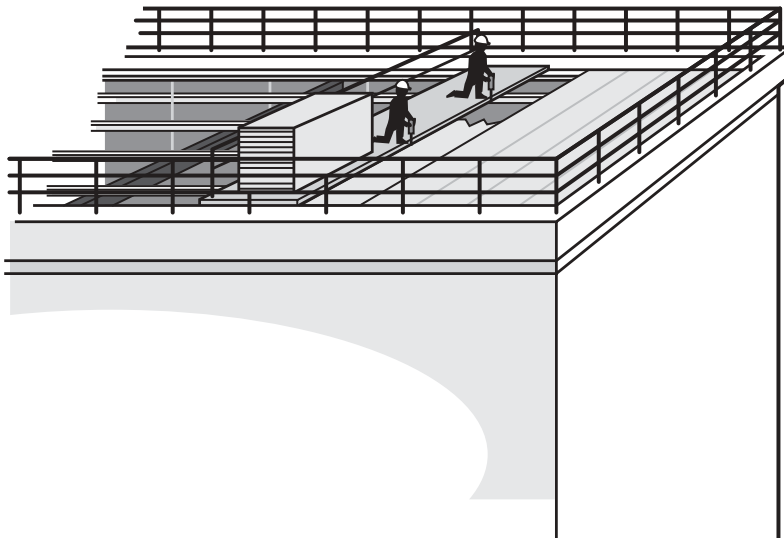
Purlin trolleys travel on top of purlins and can be used to support materials and roof workers. They may be used during installation or removal of roof coverings.

Purlin trolleys are particularly useful when handling lengthy sheets, removing the need to traverse the purlins to fetch, carry and place each sheet. The benefits are increased during adverse weather conditions.

Purlin trolleys checklist

The safety considerations include:

- before considering their use, it should be established that the roof structure is suitable for the particular trolley and the loads to be involved;
- the purlin trolley should be designed and constructed to withstand the loads placed upon it and for the purpose of the safe movement of persons and materials across the roof surface;
- the trolley should be prevented from uncontrolled movement when loaded;
- the trolley should be provided with a holding brake and a device to prevent it from accidentally dislodging from the supporting purlins;
- fall protection, such as guard rails, should be provided; and
- when a safety harness and anchorage are used, they should comply with Australian/New Zealand Standard, *AS/NZS 1891.1 Industrial Fall Arrest Systems and Devices*.



Above: Trolley designed to travel on top of purlins and support materials and/or roof workers. Individual fall protection not shown for clarity of diagram.

14. Protection of holes and openings

See Appendix 3
Regulation 3.54.

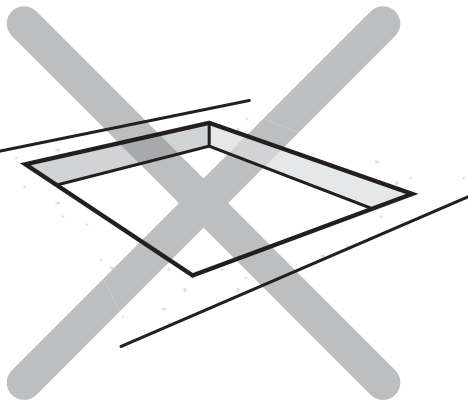
All holes and openings (other than a lift well, stairwell or vehicle inspection pit) with dimensions greater than 200 mm x 200 mm, but less than 2 metres x 2 metres or with a diameter greater than 200 mm but less than 2 metres, must be protected.

Holes or openings in **concrete floors** must, where practicable, be protected with embedded wire mesh and covered with material of adequate strength to prevent persons or things entering or falling through.

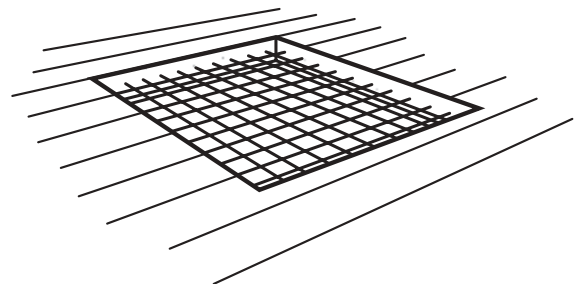
Holes or openings in any **other type of (non-concrete) floor** must be covered with material of adequate strength to prevent entry by objects or persons and be fixed securely to the floor.

The suitability of polystyrene as a material of adequate strength in any particular situation must be considered carefully prior to use. For example, if scissor lifts are to be used on the floor, the polystyrene will be incapable of supporting the load and could collapse. Petrol and many solvents often used on construction sites will dissolve polystyrene.

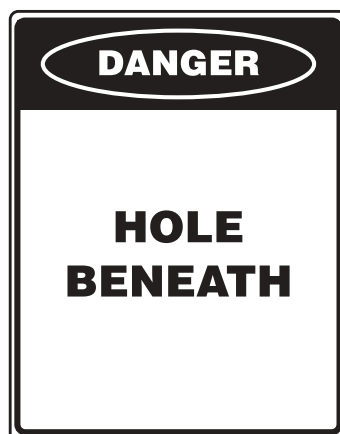
Holes or openings covered with wire mesh must not be used as a work platform. When installing services, only the part of the wire mesh that allows access for installation can be removed. The cover should be modified to fit around the installed service.



Above: Unprotected holes are a severe hazard and must be covered.



Above: 4 mm mesh embedded in the concrete floor. The hole must also be covered to prevent things falling through. There are requirements for wire mesh in Regulation 3.54(2). See Appendix 3.



Left: Sign to be affixed to the hole cover.

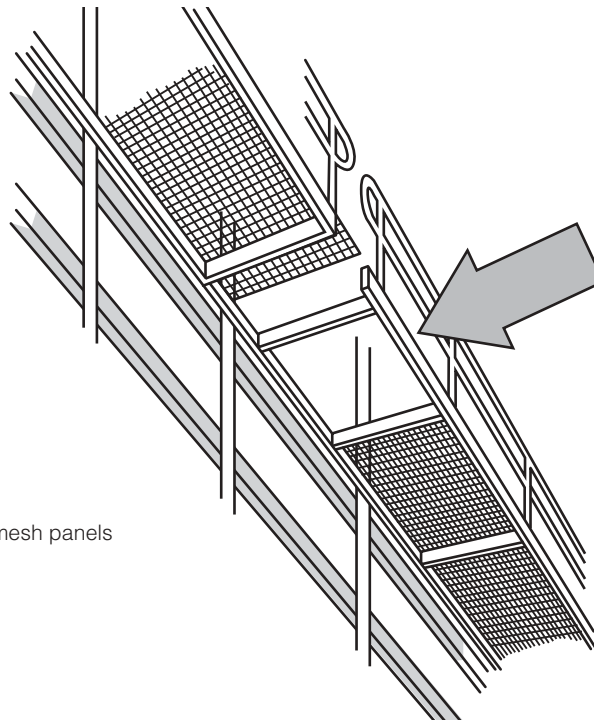
All covers must be fixed securely and marked clearly with the words 'Danger – hole beneath'.

15. Grid mesh and checker plate flooring panels

Grid mesh and checker plate flooring is used for walkways, access ways and working platforms.

The hazards associated with this type of flooring are:

- panels are easy to dislodge if not fixed securely;
- missing grid mesh panels are a severe hazard and, consequently, access to areas with missing panels, except for repair work, must be denied; and
- if multiple levels are used, a person working on one level can become disoriented.



Right: Missing grid mesh panels are a severe hazard.

Grid mesh and checker plate flooring panels checklist

The safety considerations include:

- flooring panels must be securely fixed and assembled in accordance with manufacturer's specifications;
- where possible, they should be fitted to the structure, prior to it being lifted into permanent position;
- each panel must be fixed securely before the next panel is placed in position;
- during installation, this type of flooring should be secured by tack welding, panel grips or other means to prevent movement before being fixed permanently; and
- if panels of grid mesh or checker plate flooring are removed, and there is a risk of falling more than three metres, edge protection must be provided. Dimensions of the removed panels may result in openings or holes and these must be protected in accordance with Regulation 3.54.

See Appendix 3
Regulation 3.56.

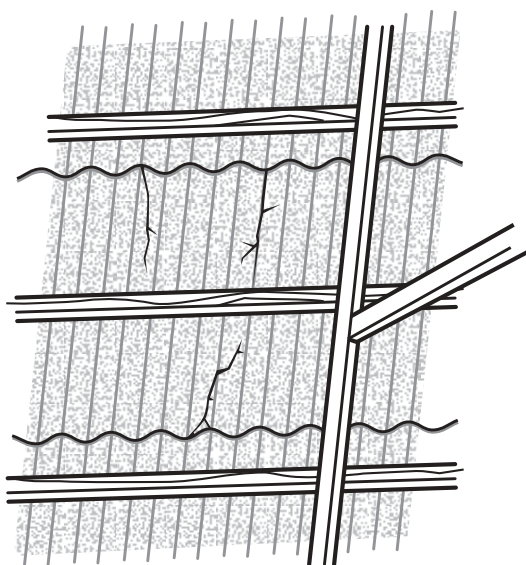
See Section 14
Protection of holes
and openings.

No one should walk directly on fragile material.

16. Brittle or fragile roofing

Brittle or fragile roofing materials include roofing made of asbestos, cellulose cement roof sheets, glass, fibreglass, acrylic or other similar synthetic moulded or fabricated material used to sheath a roof or in a roof, which are likely to endanger a person standing on them.

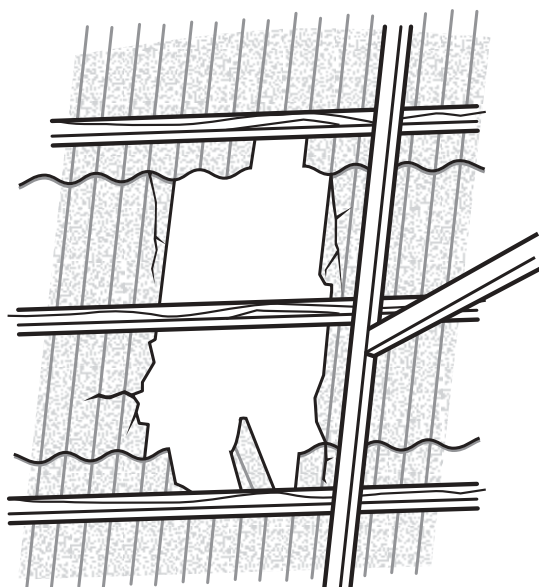
Box gutters made of asbestos cement products, skylights in old buildings and corroded sheet metal roofing are further examples of brittle or fragile roofing.



Left: Severe deterioration of roofing materials may not be readily apparent from the upper surface. Inspect the underside of brittle roofing materials for hazards.

Bottom left: Danger signs to be fixed at points of access to the roof.

Bottom right: Broken sheets are a severe hazard. Many old roofs have no wire mesh under brittle sheets.



Work on brittle or fragile roofing materials checklist

If a person is required to work on or from a roof of material that can break, easily snap or shatter or is weak or perishable, the employer, or the person who has control of the workplace must ensure:

- the person is informed that there is fragile or brittle roofing;
- safe access to the work area is provided, as set out in Section 6 of this code, to enable employees to step directly onto a safe platform or area;
- work is carried out from a safe working platform that is located and constructed to allow work to be performed safely;
- an adequate fall injury prevention system is installed and used;
- there is another person present at all times when work is being performed on a brittle roof in case there is an emergency;
- training and instruction is provided on precautions to be taken and safe access;
- training in rescue techniques has been provided and rescue equipment is readily available for use at the workplace;
- warning signs are displayed at access points to any work area where fragile material is present;
- warning signs are fixed securely in a position where they will be clearly visible to persons accessing the working area; and
- before the roof is removed, the brittle or fragile areas are identified and the stability of the structure and soundness of the roof is assessed as part of the risk management process.

Maintenance and repairs

Where it is necessary for maintenance or repairs to be carried out on an area containing fragile materials, the employer of those persons should:

- inspect the under-side of the work area to determine the extent of fragile material, presence of safety mesh and the structural soundness of the work area and the safety mesh;
- provide temporary walkways of at least 450 mm width with edge protection as a means of access to and egress from any work area, where permanent walkways are not provided;
- provide timber cleats on temporary walkways where the slope of a walkway exceeds 7° or one vertical to eight horizontal. Timber cleats of 50 mm (width) x 25 mm (thickness) should be fixed to the top side of the walkway planks at distances of 450 mm along the walkway. The walkway should be secured adequately;
- provide temporary roof ladders or crawl boards of sufficient strength, where any person is required to carry out work on or adjacent to any part of a sloping roof sheathed in fragile material;
- provide individual fall-arrest systems and devices for any person required to work on or adjacent to any fragile material, when safety mesh, safety nets or similar fall protection have not been provided. Safety harnesses should be attached by an individual fall-arrest device to a static line positioned above the ridge line or an individual anchorage point; and
- provide training and instruction in the correct use of fall protection and ensure that employees understand the information.

See Appendix 3
Regulation 3.57.

For risk
management
obligations, see
Appendix 3
Regulation 3.49.

Where the work involves removal of a considerable amount of fragile material, fall-arrest systems and devices should be worn by **all personnel** engaged in the work, if the perimeter of the roof is not guarded by a solid balustrade, scaffolding or a guard rail that extends not less than 900 mm or more than 1100 mm above the roof level at the perimeter and includes a mid rail and toe board.

17. Freight transport and general plant

Generally, the hazards from falls from freight transport and general plant are encountered during either:

- access to and egress from vehicles and plant; and
- loading and unloading work, including positioning loads, securing freight, moving tarpaulins and minor maintenance work.

The risks include:

- a fall from the top of the load;
- a fall when climbing on or off vehicles, trays or gates etc;
- impact injuries from jumping down from the load or equipment;
- a fall or slip due to poor lighting;
- a fall when climbing up the outside or on top of a stock crate;
- a fall or slip due to loading on uneven ground; and
- a fall while accessing the top of rail cars because of the heights involved.

Severe injuries have also resulted from workers stepping off moving vehicles, such as rubbish removal trucks carrying out kerbside rubbish collection, instead of waiting for the vehicle to come to a stop. This is an unacceptable practice.

Large trucks

Serious injuries may result from falls from large trucks, such as milk tankers and petrol tankers while, for example:

- accessing or opening tank hatches;
- accessing the top of freight containers on road transporters; and
- fitting 'hungry boards' to increase grain storage capacity or using vacuum loaders on grain transporters.

Plant

Fall injuries may occur during access to and egress from large items of plant, such as farm machinery, large vehicles and earthworks equipment (for example, bulldozers, scrapers, graders and excavators) and heavy equipment, including during manufacture, maintenance and cleaning.

Safe systems of work

Employers must provide safe systems of work so that, as far as practicable, employees are not exposed to hazards. Employers must also provide employees with information, instruction and training so that they can carry out their work in such a manner that they are not exposed to hazards.

Where people are required to gain access to high areas of trucks, road transporters, tankers or rail cars for purposes of securing, restraining, loading or unloading freight, and there is a risk of falling, employers must provide a safe system of work for them to get to and from the work area.

Using the preferred order of risk control measures, the risks of falls may be eliminated or reduced by implementing the following control measures:

- **elimination** of hazards is the preferred control measure wherever practicable, e.g. as much work as possible should be carried out from ground level;
- **substitution** by replacing a hazard or hazardous work practice with a less hazardous one is the next preferred control measure, e.g. implementation of safe load restraining methods;
- if the hazard cannot be eliminated, substituted or isolated, **engineering controls** should be introduced, with consideration given to providing safe access and egress to farm machinery, trucks and heavy plant and equipment, such as steps, permanent access ladders, walkways, loading gantries, guard rails and slip resistance surfaces or coatings that render the surface trip or slip free. Wherever practicable, access and egress should be located to ensure egress does not entail a 'backward drop' by the operator from the last step to the ground; and
- **administrative controls** are the least preferred control measures. They include providing information, instruction, training and a safe system of work for preventing falls, supervising workers who are required to work at heights and monitoring the risks to ensure they remain as low as possible.

In some instances, a combination of control measures may be appropriate.

Loading and unloading facilities and equipment

Employers must also give consideration to the equipment and facilities available at both the initial loading point and unloading destination to ensure safe access and egress is provided to workers involved in the operation.

Weather conditions and night work

The safe system of work must be designed to prevent falls from all identified hazards in the work operation, including wet, windy and slippery conditions and work at night when lighting may be poor.

Farm machinery

The provision of seating for passengers in farm machinery is important to prevent falls from equipment, especially when traversing uneven ground. Using the cab window to lean against for support will not be sufficient to prevent a fall under uneven ground conditions. Consideration should also be given to the servicing and maintenance requirements of the machinery to ensure there is safe access and egress.

Tarpaulins

A safe method for placing tarpaulins on large road transport vehicles, with the use of a forklift truck is shown on the following pages. This method avoids the need for personnel to access the top of the truck. Other methods might include installing large permanent ramps from which personnel work at each side of the truck at the loading bay or the provision of purpose designed gantries.

Vehicle cabs

For safer access to and egress from the cab, operators should:

- climb in and out of the cab and not jump down from the cab; and
- always maintain three points of contact when climbing.

Confined spaces

The Regulations has specific requirements for the entry into confined spaces and compliance with Australian Standard, *AS 2865 Safe Working in a Confined Space*. *AS 2865* provides guidance in eliminating or minimising the need to enter a confined space and in avoiding exposure to hazards that may be experienced where entry to a confined space is necessary.

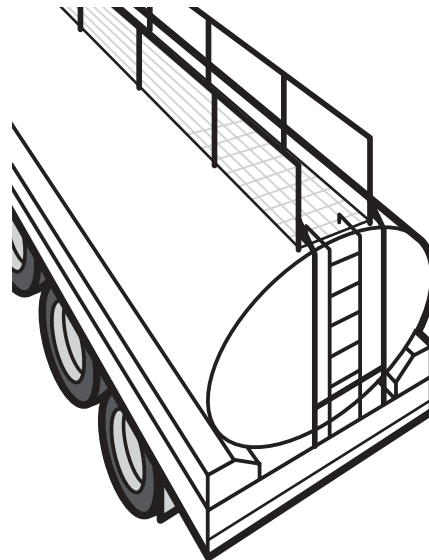
Specific emergency rescue procedures will be required when persons are required to work in confined spaces. First aid facilities must be available.

Examples of where hazardous access and egress has been overcome

Tankers



Above: Tanker showing fold down hand rails. Midrail and toe board are not shown for clarity of diagram.



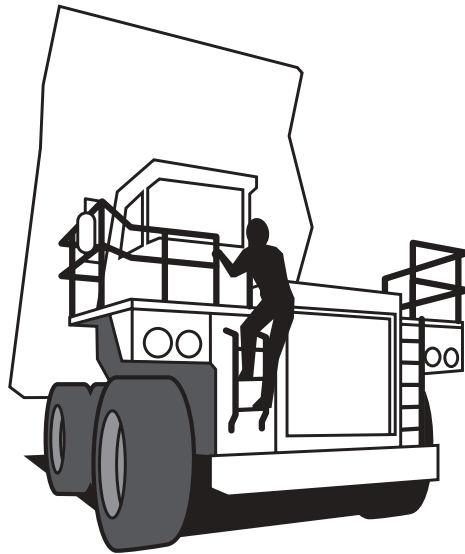
Above: Tanker showing handrails in fully erect position. Midrail and toe board are not shown for clarity of diagram.

Road transporters

Right: Road transporter with freight container. Arrows indicate steps and hand hold positions.

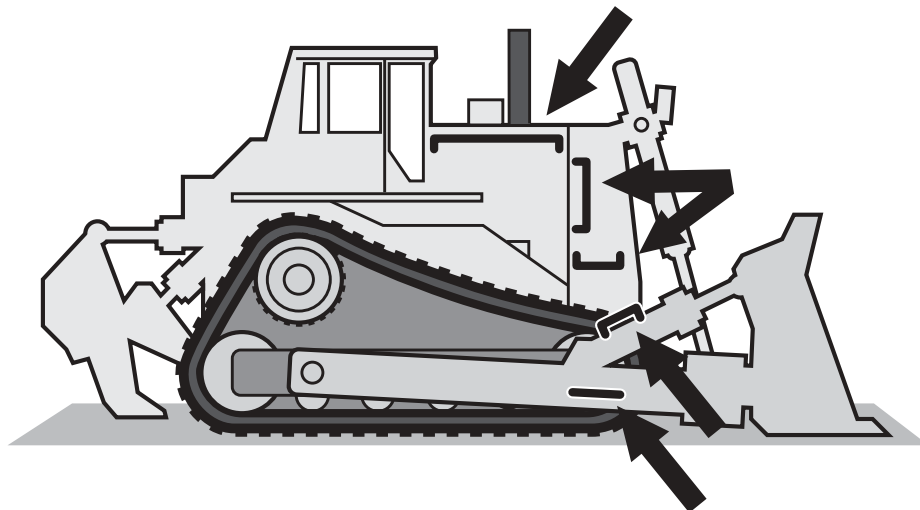


Dump trucks



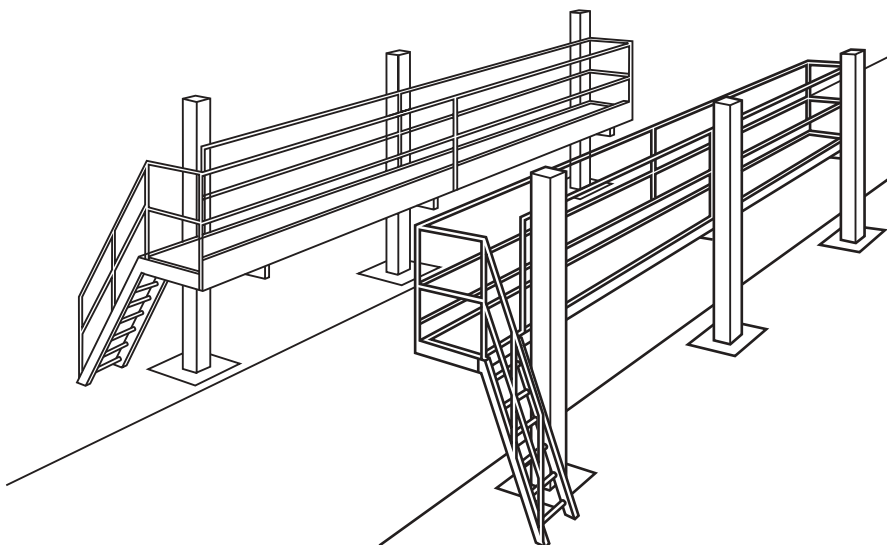
Above: Large rear dump truck.

Bulldozers



Above: Large bulldozer with arrows indicating steps and hand hold positions. Consideration should be given during a risk assessment to the safety requirements when doing maintenance and cleaning.

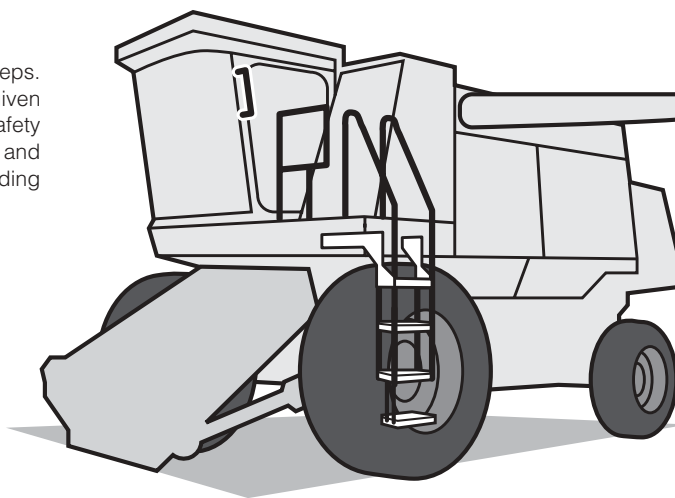
Sheeting vehicles



Above: Sheeting gantry providing safe access for sheeting vehicles.

Harvesters

Right: Farm header with steps. Consideration should be given during a risk assessment to the safety requirements for maintenance and cleaning of harvesters, including cleaning of windscreens.

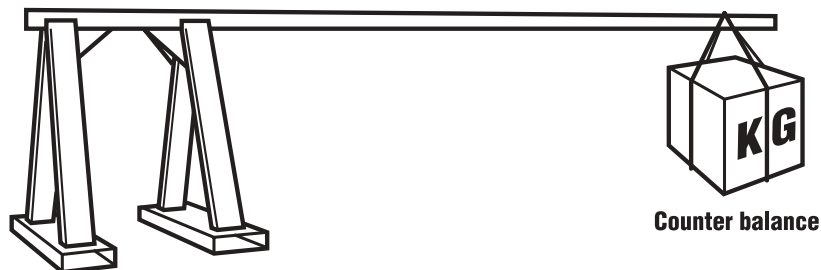


Tarpaulins

Right: Safe method of erecting or removing tarpaulins over high loads on trucks using a purpose designed device attached to a forklift truck. Tying off is carried out from the ground. Personnel do not need to access the top of the truck.



Right: Unsafe method of erecting tarpaulins. Personnel at risk of falling.



Above: Stability of the forklifts, including the effect of high winds, may require incorporation of a counterbalance to the device (as shown in the diagram) or to the forklift itself.

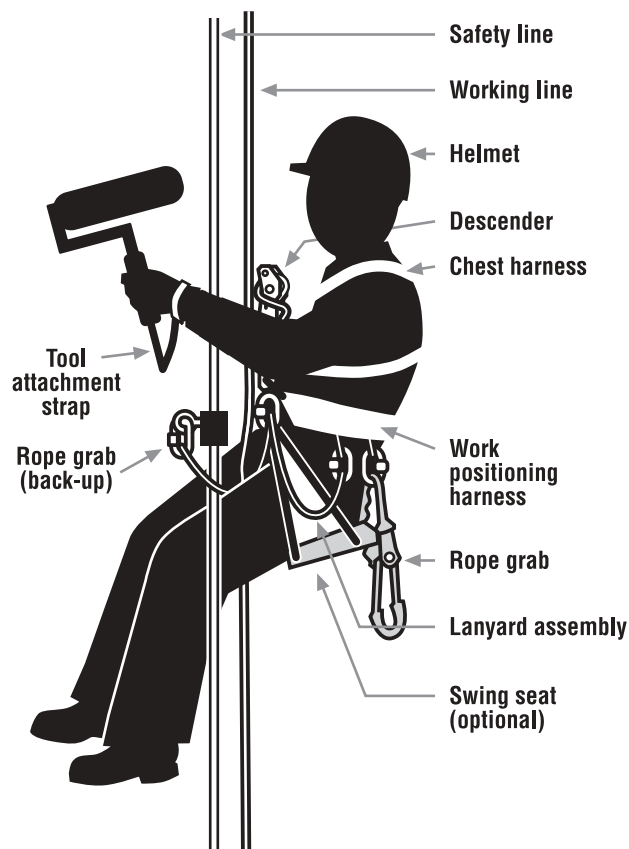
18. Industrial rope access systems (abseiling)

Industrial rope access systems are used for gaining access to a work face, usually by means of vertical suspended ropes. Other methods of accessing a work face should be considered as these systems require skill and can be dangerous. Elevating work platforms and building maintenance units are a preferable means of accessing a work face.

Industrial rope access systems checklist

Where it is necessary for industrial rope access systems to be used:

- personnel must receive training and instruction in the technique and be competent;
- operators must be adequately supervised;
- operators should not work alone, in case they require assistance in an emergency;
- industrial rope access systems should be installed only in a location where it is possible to provide prompt assistance or rescue if required (see also Section 20 Emergency Rescue Procedures);
- all equipment must be checked regularly by a competent person;
- prior to use, all fixed anchorage points must be checked by a competent person before attaching the rope access lines;
- a back up system must be used to protect the operator;
- two independently anchored ropes must be used for each person;
- any person within three metres of an unguarded edge must be adequately secured;
- all operators should wear a full body harness;
- supervisors must ensure communication between personnel is sufficient for the task;
- procedures must be clearly understood by the operator;
- appropriate personal protective equipment must be used, such as helmets, gloves, hearing protection, goggles and masks; and
- barricades and signposts should be placed on all access areas below the working area and anchorage locations to exclude and alert the public and tradespeople.



Above: Operator using descender in an industrial rope access system.

Where the task requires it, appropriate personal protective equipment must also be used, such as gloves, hearing protection, goggles and mask.

Refer to the Australian/New Zealand Standard, *AS/NZS 4488* series and *The Australasian Industrial Rope Access Standard* published by the Construction Safety Managers and Officers' Association of Queensland Inc. for guidance on competencies, training, checklists and specifications.

19. Tree climbing

Tree climbing for tree pruning and trimming may present hazards, which will require specific training and careful planning of activities. There are certain basic requirements concerning equipment and method of operation which must be followed by personnel involved in climbing trees for the purpose of pruning and trimming.

Climbing ropes and safety harnesses should be used. Accidents in tree pruning and trimming operations should not occur if appropriate equipment is used.

Consideration should be given to the use of the following equipment:

- the correct type of harness, e.g. a sit harness with leg straps;
- a pole strap with steel core;
- a Kernmantle climbing rope;
- double or triple action lockable karabiners;
- eye and ear protection;
- steel cap boots;
- climbing spikes;
- safety helmet; and
- tool strap for chainsaw.

For equipment to use to prevent or arrest falls, refer to the AS/NZS 1891 Series. Appendix 1 has more details.

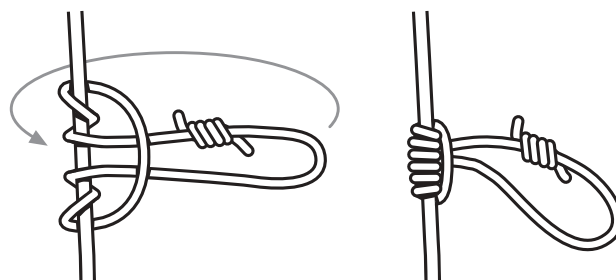
Chainsaws

Care must be taken when using chainsaws in trees. Chainsaws must be attached to a lanyard of sufficient length to allow the chainsaw to drop below the climber's feet. Chainsaws must be of an appropriate size and in good operating condition. Chainsaws must be turned off when not being used.

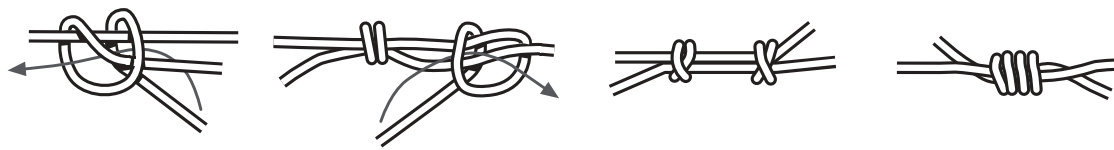
Climbing rope

Ascending a tree by footlocking usually involves the use of a prusik loop attached to the climbing rope by a prusik knot (or equivalent knot).

The prusik knot should be used only by trained, competent and fit operators.

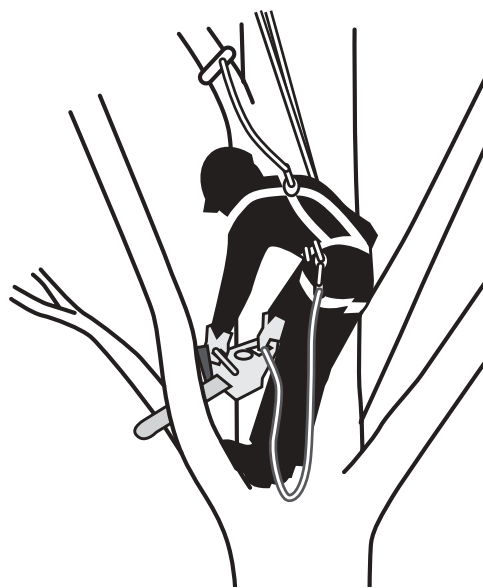


Above: The prusik knot (or equivalent knot) is used to tie in to the climbing line. This variation of the prusik knot utilised three wraps.



Above: A prusik loop is formed using a double fisherman's knot.

Climbing ropes should be of synthetic fibre (such as a Kernmantle rope) with a minimum diameter of 11 mm, of three strand or braided construction and be durable under conditions of friction and heat. Climbing ropes must have a minimum breaking strength of 10 times the combined weight of the climber and equipment.



Above: When using a chainsaw in a tree, it should be attached to a lanyard that will allow the saw to drop below the climber's feet.

Tree climbing checklist

The safety considerations include:

- inspection of ropes, harnesses, lanyard and equipment prior to use;
- another person to be in attendance on the ground;
- wearing of appropriate personal protective clothing and equipment;
- climber is always attached to tree by climbing rope or pole strap;
- pole straps with steel cores should be used with a safety harness for additional security;
- climbing rope under tension as far as practicable;
- work with climbing rope as vertical as practicable and anchor point located so climber will swing away from any hazard;
- climbing rope to be of sufficient length to enable climber to descend to ground;

- care must be taken to ensure rope lines are attached to substantial limbs, free from rot or decay, and sufficient to take the worker's weight. The climber should always tie in around the parent limb or trunk and over the lateral limb. Personnel should not rely on the strength of the tree or limb to support their weight without careful consideration of the tree's capacity and integrity;
- when ascending large trees, it may be necessary to reset the climbing line several times, often requiring the climbing line to be set in a crotch of the tree well above the climber's head. One way to reset the climbing line is to throw the rope over the limb. Training should include a range of methods for resetting climbing lines;
- consider using a supporting structure, such as an elevating work platform, for activities such as pruning and trimming. (However, site access difficulties and tree configuration will often make the use of work platforms impracticable, necessitating tree climbing);
- where a boom-type elevating work platform is used, all personnel working from the platform must wear a safety harness and fall-arrest lanyard connected to a sufficient anchor point; and
- use of a step ladder to access the lower portion of a tree and free climbing to higher levels should not be permitted.

Electrical safety

The dangers of electricity must be considered prior to any work being carried out in the vicinity of power lines, whether it is from an elevating work platform or when using climbing ropes and safety harnesses.

The electrical safety requirements include:

- ground crews must always remain alert to any possible dangers from electric wires to personnel working at heights;
- persons carrying out or assisting in vegetation control work near powerlines must be trained to carry out this work according to the Office of Energy's *Code of Practice for Personnel Electrical Safety for Vegetation Control Work Near Live Power Lines*;
- untrained personnel must never work above power lines or cut branches which can swing down, fall or come in contact with live power lines; and
- metal ladders must never be used for tree climbing near electric wires.

20. Emergency rescue procedures

Appropriate rescue procedures must be in place for the rescue of a person in an emergency situation.

Employees must be provided with:

- information on emergency rescue procedures;
- procedures in the event of different emergencies such as rescues, accidents or injuries;
- an induction on the emergency rescue procedures;
- training in the emergency rescue procedures; and
- training in the use of fall-arrest systems (where used).

First aid facilities

Employees must be provided with first aid facilities and first aid training for those who may be required to provide first aid.

The Commission for Occupational Safety and Health's code of practice, *Codes of Practice First Aid Facilities and Services, Workplace Amenities and Facilities, Personal Protective Clothing and Equipment* should be consulted for guidance on the legislative requirements for first aid facilities and workplace amenities.

The document is available on the Internet [www.safetyline.wa.gov.au] or for purchase from WorkSafe at the Westcentre, 1260 Hay Street, West Perth [Tel. 08 9327 8777].

20.1 Fall-arrest systems

Emergency rescue procedures for fall-arrest systems

Procedures should take into account the need for:

- a plan and timeframe to carry out any rescues;
- the immediate rescue of a person after an arrested fall, without the need to rely on emergency services. See the following section for information on suspension trauma, which can occur when a person is suspended in a harness;
- the necessary equipment required to carry out a rescue. This should include an emergency rapid response kit with man-made fibre rope, according to Australian/New Zealand Standard, AS/NZS 4142.3 and auto-stop descent devices according to Australian/New Zealand Standard, AS/NZS 4488.2;
- the installation of individual fall-arrest systems and individual rope access systems in locations where it is possible to assist or rescue a person quickly if required;
- ensuring that all workers who will be working with the fall injury prevention system receive information, instruction and training in emergency rescue processes and are familiar with fall-arrest systems and devices, prior to work commencing;
- ensuring that any persons using a fall-arrest system or industrial rope access are not working alone. This is important if there is a risk of a fall;

Emergency rescue procedures should be developed before setting up a fall-arrest or industrial rope access system.

- the availability of and access to first aid facilities or services, including trained first aiders. The rescue team should include a person or people trained in the provision of first aid so that it can be administered to the fall victim in the event of an injury occurring during a fall;
- the details of additional support facilities, including the location, contact information and availability (hours open) of emergency services, such as fire brigade, ambulance and hospitals; and
- an effective and readily available means of communication.

20.1.1 Suspension trauma

‘Suspension trauma’ can occur when a person’s legs are immobile in an upright posture for a prolonged period because the lower legs have a large storage capacity for blood and gravity pulls blood into them. The return blood flow to the heart is reduced as blood accumulates in the legs. Because the blood supply to the heart is then restricted, the body suddenly slows the heart causing the person to faint.

With the use of a fall-arrest system, suspension trauma may occur when a person has an arrested fall because they are suspended and caught in an upright, vertical position and the harness straps cause pressure on the leg veins. The blood flow to the heart is reduced, resulting in fainting, restriction of movement or loss of consciousness in a few minutes. This may lead to renal failure and eventually death, depending on a person’s susceptibility. The condition may be worsened by heat and dehydration.

Susceptibility to suspension trauma may be unrelated to fitness level or any other obvious physical conditions. Therefore, the quick rescue of a person suspended in a full body harness, as soon as is possible, is vital. For this reason, workers should be capable of conducting a rescue of a fallen worker and be familiar with onsite rescue equipment and procedures.

Workers and emergency response personnel must be trained in the rescue procedures and be able to recognise the risks of suspension trauma and act quickly in the rescue of a person.

Preventing suspension trauma

Recommendations for preventing suspension trauma as a result of an arrested fall include:

- workers should never work alone when using a harness as fall protection;
- workers spending time hanging in a harness should use a sit type harness, which allows legs to be kept horizontal;
- the time a worker spends in suspension after a fall should be limited to less than five minutes. When a suspension is longer than five minutes, foothold straps or a way of placing weight on the legs should be provided.
- Workers should be trained to do the following when they are hanging in their harness after a fall:
 - try to move the legs in the harness and push against any footholds, where these movements are possible. In some instances, the harness design and/or any injuries received may prevent this movement; and

-
- try to move the legs as high as possible and the head as horizontal as possible, where these movements are possible. These movements are not possible in some of the harnesses available. This factor should be considered when selecting a harness for use at the workplace; and
 - harnesses should be selected for specific applications, with consideration given to comfort, potential injuries and suspension trauma.

Training for rescues

The training for rescues of persons who have fallen and are suspended in an upright position should address the following factors to prevent suspension trauma:

- the rescue process should be quick to start because a suspension in an upright position for longer than five minutes has the potential to cause death; and
- the victim should be moved from suspension in stages, i.e. the procedure should take 30-40 minutes with the victim moved first into a kneeling position, then into a sitting position, and finally into a horizontal position. The victim should not be moved too quickly into a horizontal position because this can kill them.

Appendix 1: References and other sources of information**STANDARDS****Australian Standards and Australian/New Zealand Standards**

AS 1319	<i>Safety Signs for the Occupational Environment</i>
AS 1418.1	<i>Cranes, Hoists and Winches – General Requirements</i>
AS 1418.10	<i>Cranes (Including Hoists and Winches) – Elevating Work Platforms</i>
AS 1418.13	<i>Cranes (including hoists and winches) – Building Maintenance Units</i>
AS 1418.17	<i>Cranes (including hoists and winches) – Design and Construction of Workboxes</i>
AS/NZS 1576 series	<i>Scaffolding</i>
AS 1657	<i>Fixed Platforms, Walkways, Stairways and Ladders – Design, Construction and Installation</i>
AS/NZS 1891.1	<i>Industrial Fall-Arrest Systems and Devices: Safety Belts and Harnesses</i>
AS/NZS 1891.2	<i>Industrial Fall-Arrest Systems and Devices: Horizontal Lifeline and Rail Systems</i>
AS/NZS 1891.2 Suppl	<i>Industrial Fall-Arrest Systems and Devices: Horizontal lifeline and Rail systems: Prescribed Configurations for Horizontal Lifelines</i>
AS/NZS 1891.3	<i>Industrial Fall-Arrest Systems and Devices: Fall-Arrest Devices</i>
AS/NZS 1891.4	<i>Industrial Fall-Arrest Systems and Devices: Selection, Use and Maintenance</i>
AS/NZS 1892 series	<i>Portable Ladders</i>
AS 2317	<i>Collared Eyebolts</i>
AS 2319	<i>Rigging Screws and Turnbuckles</i>
AS 2359 series	<i>Powered Industrial Trucks</i>
AS 2550.1	<i>Cranes, Hoists and Winches – Safe Use – General Requirements</i>
AS 2250.10	<i>Cranes – Safe Use – Elevating Work Platforms</i>
AS 2550.13	<i>Cranes – Safe Use – Building Maintenance Units</i>
AS 2626	<i>Industrial Safety Belts and Harnesses – Selection, Use and Maintenance</i>
AS 2865	<i>Safe Working in a Confined Space</i>
AS 3569	<i>Steel Wire Ropes</i>
AS 3838	<i>Guidelines for the Erection of Building Steelwork</i>
AS 4142 series	<i>Fibre Ropes</i>
AS/NZS 4389	<i>Safety Mesh</i>
AS/NZS 4488 series	<i>Industrial Rope Access Systems</i>

AS/NZS 4576

Guidelines for Scaffolding (an approved code of practice by the Commission for Occupational Safety and Health).

Available from:

Standards Australia

165 Adelaide Terrace, East Perth WA 6004

Tel.: 1300 30 89 89

Internet address: www.standards.com.au

National Standard

National Occupational Health and Safety Certification Standard for Users and Operators of Industrial Equipment. [NOHSC: 1006 (2001)]

Internet address: www.nohsc.gov.au

British Standards Institution

BSEN 1263-1:2002 Safety Nets: Safety Requirements, Test Methods

BSEN 1263-2:2002 Safety Nets: Safety Requirements for the Positioning Limits

Internet address: www.bsi-global.com

Codes of practice and guidance material

Commission for Occupational Safety and Health

Code of Practice: Excavation

Plant in the Workplace: Making it Safe: a Guide for Employers, Self-Employed Persons and Employees.

Plant Design: Making it Safe: a Guide for Designers, Manufacturers, Importers, Suppliers and Installers of Plant.

These can be obtained from WorkSafe and are also available on the Internet at www.safetyline.wa.gov.au

DOCEP Energy Safety Directorate

Code of Practice for Personnel Electrical Safety for Vegetation Control Work Near Live Power Lines.

This can be obtained from:

Energy Safety

20 Southport Street LEEDERVILLE WA 6007

Tel: (08) 9422 4200

It is also available on the Internet at www.energysafety.wa.gov.au

References on suspension trauma

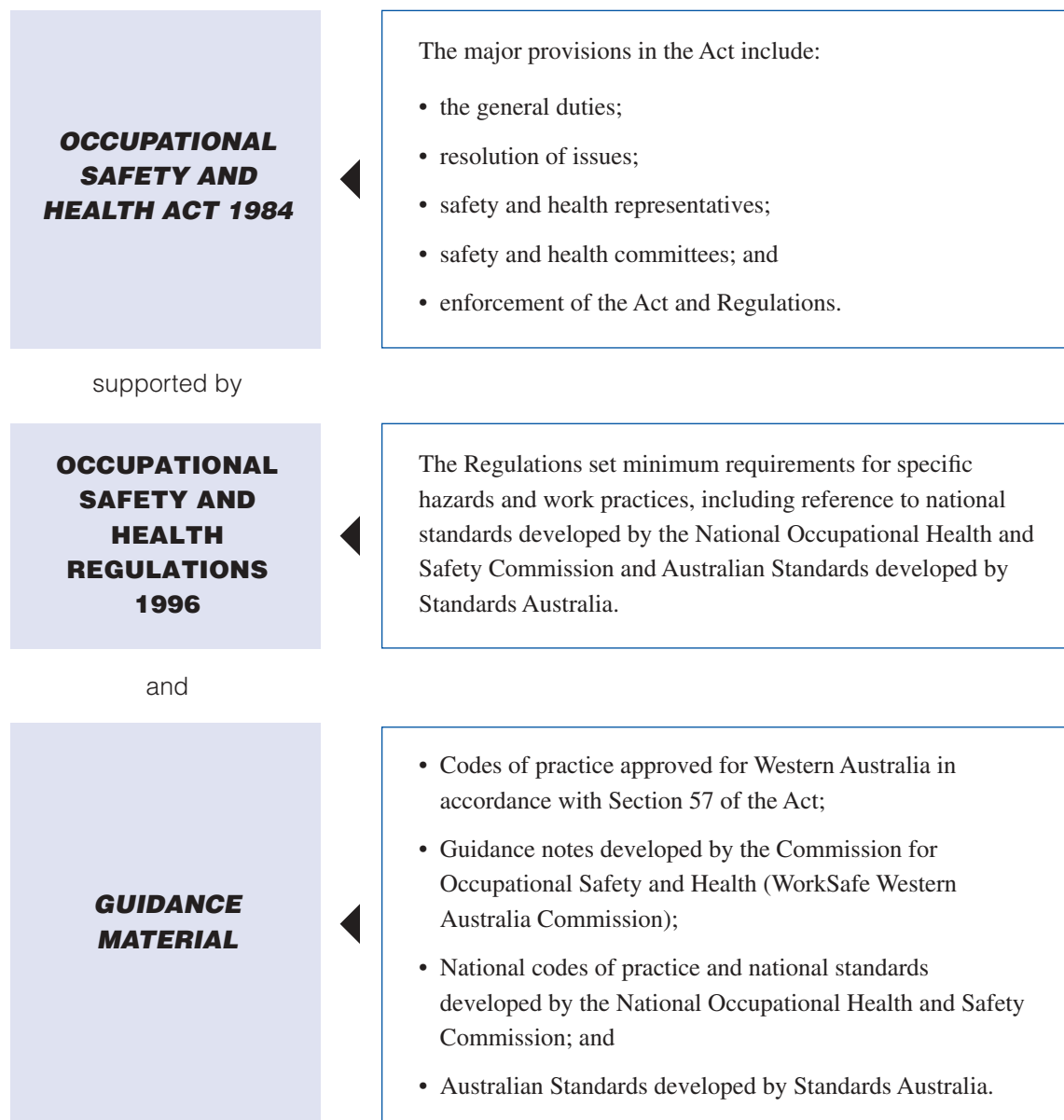
Seddon, Paul (2002). *Harness Suspension: Review and Evaluation of Existing Information*. Health and Safety Executive Contract Research Report 451/2002.

Weems, Bill and Phil Bishop (2003). 'Will your safety harness kill you?' In: *Occupational Health and Safety* 72(3), p. 86-90.

Appendix 2: Legislative framework for safety and health in Western Australia

Legislative framework

The *Occupational Safety and Health Act 1984* sets objectives to promote and improve occupational safety and health standards. The Act sets out broad duties and is supported by more detailed requirements in the Occupational Safety and Health Regulations 1996. The legislation is further supported by guidance material such as approved codes of practice. This legislative framework is depicted below.



The meaning of practicable

Some of the general duty provisions in the Act and some requirements in the Regulations are qualified by the words “so far as is practicable”.

‘Practicability’ applies to general duties for employers, self-employed people, people with control of workplaces, designers, manufacturers, importers, suppliers, erectors and installers and to certain requirements in the Regulations. These people are expected to take practicable and reasonable measures to comply with the requirements.

If something is practicable, it is capable of being done. Whether it is also reasonable takes into account:

- the severity of any injury or harm to health that may occur;
- the degree of risk (or likelihood) of that injury or harm occurring;
- how much is known about the hazard and the ways of reducing, eliminating or controlling it; and
- the availability, suitability and cost of the safeguards.

The risk and severity of injury must be weighed up against the overall cost and feasibility of the safeguards needed to remove the risk.

Common practice and knowledge throughout the relevant industry are taken into account when judging whether a safeguard is ‘reasonably practicable’. Individual employers could not claim that they did not know what to do about certain hazards, if those hazards are widely known by others within industry, and safeguards were available.

The cost of putting safeguards in place is measured against the consequences of failing to do so. It is not a measure of whether the employer can afford to put the necessary safeguards in place. While cost is a factor, it is not an excuse for failing to provide appropriate safeguards, particularly where there is risk of serious, or frequent but less severe, injury.

Where a regulation exists and is not qualified by the words “as far as is practicable”, the regulation must be complied with as a minimum requirement.

Provision of information

Employers must identify and provide information to employees to make them aware of areas where the risk of falling may exist and to enable them to perform their work safely in these areas.

Information should be provided in a form that all employees at the workplace can understand.

Ways should be developed so that employees with a non-English speaking background or those with disabilities can be provided with information and included in the consultation process. These may include:

- organising information to be provided in groups for people with the same language;
- using interpreters;
- using audio-visual aids;
- using graphics;
- using short, simple English phrases; and
- demonstrating points.

Ensuring that a person understands the information is extremely important. Checks will be necessary to ensure this.

Access to the Act, Regulations and other relevant documents

Employers are required to provide information to employees, to alert them to areas where hazards may exist and to improve their understanding of safe systems of work and work practices.

Regulation 3.2 nominates specific documents, which must be made available upon request, for perusal by employees at the workplace. The documents include an up-to-date copy of:

- the Act;
- the Regulations;
- all Australian Standards, Australian/New Zealand Standards and NOHSC documents or parts of those standards or documents referred to in the Regulations that apply to that workplace;
- all codes of practice approved under Section 57 of the Act that apply to the workplace; and
- certain guidelines or forms of guidance referred to in Section 14 of the Act.

Copies of the *Occupational Safety and Health Act 1984* and Occupational Safety and Health Regulations 1996 and codes of practice and guidance notes published by the Commission for Occupational Safety and Health can be purchased from WorkSafe, Westcentre, 1260 Hay Street, West Perth [Tel. (08) 9327 8777].

These documents are also available on the Internet at: www.safetyline.wa.gov.au

Appendix 3: Sections of the Act and Regulations referenced in this Code of Practice

Duties of employers

Section 19 of the Act states

- (1) *An employer shall, so far as is practicable, provide and maintain a working environment in which his employees are not exposed to hazards and in particular, but without limiting the generality of the foregoing, an employer shall –*
- (a) *provide and maintain workplaces, plant, and systems of work such that, so far as is practicable, his employees are not exposed to hazards;*
 - (b) *provide such information, instruction, and training to, and supervision of, his employees as is necessary to enable them to perform their work in such a manner that they are not exposed to hazards;*
 - (c) *consult and co-operate with safety and health representatives, if any, and other employees at his workplace, regarding occupational safety and health at the workplace;*
 - (d) *where it is not practicable to avoid the presence of hazards at the workplace, provide his employees with, or otherwise provide for his employees to have, such adequate personal protective clothing and equipment as is practicable to protect them against those hazards, without any cost to the employees; and*
 - (e) *make arrangements for ensuring, so far as is practicable, that –*
 - (i) *the use, cleaning, maintenance, transportation and disposal of plant; and*
 - (ii) *the use, handling, processing, storage, transportation and disposal of substances, at the workplace is carried out in a manner such that his employees are not exposed to hazards.*
- (2) *In determining the training required to be provided in accordance with subsection (1)(b) regard shall be had to the functions performed by employees and the capacities in which they are employed.*
- (3) *If, at a workplace, an employee incurs an injury, or is affected by a disease, that –*
- (a) *results in the death of the employee; or*
 - (b) *is of a kind prescribed in the regulations for the purposes of this subsection,*
- the employer of that employee shall forthwith notify the Commissioner in the prescribed form giving such particulars as may be prescribed.*
- (4) *For the purposes of this section, where, in the course of a trade or business carried on by him, a person (in this section called “the principal”) engages another person (in this section called “the contractor”) to carry out work for the principal –*
- (a) *the principal is deemed, in relation to matters over which he has control or, but for an agreement between him and the contractor to the contrary, would have had control, to be the employer of-*
 - (i) *the contractor; and*

Western Australian legislation is produced by permission of the owner, the State of Western Australia, but such legislation does not purport to be the official or authorised version.

- (ii) *any person employed or engaged by the contractor to carry out or to assist in carrying out the work;*
 - and*
 - (b) *the persons mentioned in paragraph (a)(i) and (ii) are deemed, in relation to those matters, to be employees of the principal.*
- (5) *Nothing in subsection (4) derogates from –*
 - (a) *the duties of the principal to the contractor; or*
 - (b) *the duties of the contractor to persons employed or engaged by him.*
- (6) *An employer who contravenes subsection (1) commits an offence and is liable to a fine of \$100 000.*
- (7) *An employer who contravenes subsection (1) and by that contravention causes the death of, or serious harm to, an employee commits an offence and is liable to a fine of \$200 000.*
- (8) *An employer who contravenes subsection (3) commits an offence and is liable to a fine of \$25 000.*(9) *An employer charged with an offence against subsection (7) may, instead of being convicted of that offence, be convicted of an offence against subsection (6).*

Duties of employees

Section 20 of the Act states

- (1) *An employee shall take reasonable care –*
 - (a) *to ensure his own safety and health at work; and*
 - (b) *to avoid adversely affecting the safety or health of any other person through any act or omission at work.*
- (2) *Without limiting the generality of subsection (1), an employee contravenes that subsection if he –*
 - (a) *fails to comply, so far as he is reasonably able, with instructions given by his employer for his own safety or health or for the safety or health of other persons;*
 - (b) *fails to use such protective clothing and equipment as is provided, or provided for, by his employer as mentioned in section 19(1)(d) in a manner in which he has been properly instructed to use it;*
 - (c) *misuses or damages any equipment provided in the interests of safety or health; or*
 - (d) *fails to report forthwith to his employer –*
 - (i) *any situation at the workplace that he has reason to believe could constitute a hazard to any person and he cannot himself correct; or*
 - (ii) *any injury or harm to health of which he is aware that arises in the course of, or in connection with, his work.*
- (3) *An employee shall co-operate with his employer in the carrying out by his employer of the obligations imposed on him under this Act.*

- (4) *An employee who contravenes subsection (1) or (3) commits an offence and is liable to a fine of \$10 000.*
- (5) *An employee who contravenes subsection (1) or (3) and by that contravention causes the death of, or serious harm to, any person commits an offence and is liable to a fine of \$20 000.*
- (6) *An employee charged with an offence against subsection (5) may, instead of being convicted of that offence, be convicted of an offence against subsection (4).*

Duties of employers and self-employed persons

Section 21 of the Act states

- (1) *An employer or a self-employed person shall –*
 - (a) *take reasonable care to ensure his own safety and health at work; and*
 - (b) *so far as is practicable, ensure that the safety or health of a person not being his employee is not adversely affected wholly or in part as a result of the work in which he or any of his employees is engaged.*
- (2) *A person who contravenes subsection (1) commits an offence and is liable to a fine of \$100 000.*
- (3) *A person who contravenes subsection (1) and by that contravention causes the death of, or serious harm to, any person commits an offence and is liable to a fine of \$200 000.*
- (4) *A person charged with an offence against subsection (3) may, instead of being convicted of that offence, be convicted of an offence against subsection (2).*

Duties of manufacturers, etc.

Section 23 of the Act states (in part):

- (1) *A person who designs, manufactures, imports or supplies any plant for use at the workplace shall, so far as is practicable –*
 - (a) *ensure that the design and construction of the plant is such that persons who properly install, maintain or use the plant are not in doing so, exposed to hazards;*
 - (b) *test and examine, or arrange for the testing and examination of, the plant so as to ensure that its design and construction are as mentioned in paragraph (a); and*
 - (c) *ensure that adequate information in respect of –*
 - (i) *any dangers associated with the plant;*
 - (ii) *the specifications of the plant and the data obtained on the testing of the plant as mentioned in paragraph (b);*
 - (iii) *the conditions necessary to ensure that persons properly using the plant are not, in so doing, exposed to hazards; and*
 - (iv) *the proper maintenance of the plant,*
- is provided when the plant is supplied and thereafter whenever requested.*

- (2) *A person who erects or installs any plant for use at a workplace shall, so far as practicable, ensure that it so erected or installed that persons who properly use the plant are not subjected to any hazard that arises from, or is increased by, the way in which the plant is erected or installed.*
- (3a) *A person who designs or constructs any building or structure, including a temporary structure, for use at a workplace shall, so far as is practicable ensure that the design and construction of the building or structure is such that –*
- (a) persons who properly construct, maintain, repair or service the building or structure; and*
 - (b) persons who properly use the building or structure, are not, in doing so, exposed to hazards.*
- (4) *A person who contravenes subsection (1), (2), (3) or (3a) commits an offence and is liable to a fine of \$100 000.*
- (5) *A person who contravenes subsection (1), (2), (3) or 3(a) and by that contravention causes the death of, or serious harm to, any person commits an offence and is liable to a fine of \$200 000.*
- (6) *A person charged with an offence against subsection (5) may, instead of being convicted of that offence, be convicted of an offence against subsection (4).*

Identification of hazards, and assessing and addressing risks, at workplaces

Regulation 3.1 states

A person who, at a workplace, is an employer, the main contractor, a self-employed person, a person having control of the workplace or a person having control of access to the workplace must, as far as practicable –

- (a) identify each hazard to which a person at the workplace is likely to be exposed;*
- (b) assess the risk of injury or harm to a person resulting from each hazard, if any, identified under paragraph (a); and*
- (c) consider the means by which the risk may be reduced.*

Penalty: \$25 000.

Movement around workplaces

Regulation 3.6 states

A person who, at a workplace, is an employer, the main contractor, a self-employed person or a person having control of the workplace must, where practicable, ensure that the workplace is arranged so that –

- (a) persons are able to move safely within the workplace; and*
- (b) passages for the purpose of enabling persons to move within the workplace are at all times kept free of obstructions.*

Penalty: \$25 000.

Access to and egress from workplaces

Regulation 3.7 states

A person who, at a workplace, is an employer, the main contractor, a self-employed person or a person having control of access to the workplace must, where practicable, ensure that the means of access to and egress from the workplace –

- (a) enable persons to move safely to and from the workplace; and*
- (b) are at all times kept free of obstructions.*

Penalty: \$25 000.

Portable ladders

Regulation 3.26 states

(1) If, at a workplace, a person uses either a single or extension ladder then the person must ensure that the ladder –

- (a) is placed so that the distance from the ladder base to the base of the support wall is about 1/4 of the working length of the ladder;*
- (b) is located on a firm footing;*
- (c) is secured into position so as to prevent slipping or sideways movement;*
- (d) if being used to approach a platform, protrudes at least 900 mm beyond the landing for the platform; and*
- (e) if being used at a workplace that is a construction site, is not suspended from a parapet hook.*

(2) If, at a workplace, a person uses –

- (a) a portable metal ladder then the person must ensure that the ladder is designed and constructed in accordance with the general requirements of AS/NZS 1892.1 and the specific requirements of that Standard in relation to the type of ladder; or*
- (b) a portable wooden ladder then the person must ensure that the ladder is designed and constructed in accordance with the general requirements of AS 1892.2 and the specific requirements of that Standard in relation to the type of ladder.*

(3) A person must not use a ladder-bracket scaffold at a workplace unless the ladder-bracket scaffold is set up and used in accordance with clause 10.2.5 of AS/NZS 4576.

Penalty applicable to subregulations (1), (2) and (3) for a person who commits the offence as an employee: \$5 000.

Penalty applicable to subregulations (1), (2) and (3) in any other case: \$25 000.

Definition of anchorage and fall injury prevention system

Regulation 3.48 states

“anchorage” means an anchorage point for a fall injury prevention system;

“fall injury prevention system” means a system designed to –

- (a) arrest a person’s fall from one level at a workplace to another; and*
- (b) minimise the risk of injury or harm to a person who falls from one level at a workplace to another.”*

Identification and assessment of hazards in relation to falling

Regulation 3.49 states

Without limiting regulation 3.1, a person who, at a workplace, is an employer, the main contractor, a self-employed person, a person having control of the workplace or a person having control of access to the workplace must –

- (a) identify each hazard to which a person at the workplace is likely to be exposed in relation to the person falling from one level to another at the workplace;*
- (b) assess the risk of injury or harm to a person resulting from each hazard, if any, identified under paragraph (a); and*
- (c) consider the means by which the risk may be reduced.*

Penalty: \$25 000.

Anchorage and fall injury prevention systems to be capable of withstanding forces caused by a fall

Regulation 3.50 states

An employer, main contractor, self-employed person or the person having control of the workplace must ensure that an anchorage or a fall injury prevention system at a workplace is designed, manufactured, constructed, selected, or installed so as to be capable of withstanding the force applied to it as a result of a person’s fall at the workplace.

Penalty: \$25 000.

Inspection etc. of fall injury prevention systems

Regulation 3.51 states

A person who, at a workplace, is an employer, the main contractor, a self-employed person or the person having control of the workplace must ensure, in relation to each fall injury prevention system provided at the workplace that –

- (a) each component of the system and its means of attachment to an anchorage is inspected by a competent person –*
 - (i) after it is installed but before it is used;*

(ii) at regular intervals; and

(iii) immediately after it has operated or should have operated in relation to a person's free fall at the workplace;

and

- (b) any component of the system or its means of attachment to an anchorage that, on an inspection referred to in paragraph (a), shows wear or weakness is withdrawn from use until it is replaced with a properly functioning component.

Penalty: \$25 000.

Fall injury prevention system to be protected where welding etc. being done

Regulation 3.52 states

If welding or an allied process is being done at a workplace where a fall injury prevention system is in operation then a person who, at the workplace, is an employer, the main contractor or a self-employed person must ensure that –

- (a) a person using the system is protected from hot particles or sparks resulting from the welding or allied process; and
- (b) the system is protected from hot particles or sparks resulting from the welding or allied process.

Penalty: \$25 000.

“allied process” includes cutting, grinding and gouging associated with welding (defined in Regulation 3.94).

Inspection of anchorages

Regulation 3.53 states

A person who, at a workplace, is an employer, the main contractor, self-employed person or the person having control of the workplace must ensure –

- (a) that an anchorage at the workplace is inspected by a competent person and –
- (i) in the case of an anchorage that is permanently fixed and in regular use, inspected at intervals not greater than 6 months; and
- (ii) in the case of an anchorage that is permanently fixed but not in regular use, inspected before it is used;
- (b) where, in the opinion of the competent person, an anchorage is worn or the load bearing capacity of the anchorage may be impaired –
- (i) that the anchorage is not used while it is in that condition; and
- (ii) while the anchorage is in that condition, that it is tagged to indicate that it is not to be used;
- and

- (c) *that an anchorage that has been repaired is not used unless it has been inspected by a competent person who is of the opinion that the anchorage can be used again.*

Penalty: \$25 000.

Protection in relation to holes and openings

Regulation 3.54 states

- (1) *A person who, at a workplace, is an employer, the main contractor, a self-employed person or a person having control of the workplace must ensure that any hole or opening (other than a liftwell, stairwell or vehicle inspection pit) with dimensions of more than 200 mm x 200 mm but less than 2 metres x 2 metres or with a diameter greater than 200 mm but less than 2 metres –*
- (a) *in a floor, other than a concrete floor, of a building or structure at the workplace is covered with a material that is –*
- (i) *strong enough to prevent persons or things entering or falling through or into the hole or opening; and*
- (ii) *securely fixed to the floor;*
- or*
- (b) *in a concrete floor of a building or structure at the workplace –*
- (i) *has, if practicable, wire mesh that meets the requirements of subregulation (2); and*
- (ii) *is covered with a material that is –*
- (I) *strong enough to prevent persons or things entering or falling through the hole or opening; and*
- (II) *securely fixed to the floor.*
- (2) *The wire in the wire mesh referred to in subregulation (1)(b)(i) is required to –*
- (a) *be at least 4 mm in diameter;*
- (b) *have maximum apertures of 75 mm x 75 mm;*
- (c) *be embedded, at least 200 mm in the edges of the surrounding concrete; and*
- (d) *be embedded either –*
- (i) *in the upper half of the slab with a minimum concrete cover of 20 mm; or*
- (ii) *in the lower half of the slab with a minimum cover of 30 mm.*
- (3) *A person to whom subregulation (1) applies must ensure that –*
- (a) *wire mesh referred to in subregulation (1)(b)(i) –*
- (i) *is not used as a working platform; and*
- (ii) *is only removed for the purposes of installing services in circumstances where the removal*

takes place immediately before the installation of a service and the only portion removed is the minimum portion required to be removed for the installation;

and

(b) any cover referred to in subregulation (1)(a) or (b)(ii) –

(i) is marked in clearly legible lettering with the words “DANGER – HOLE BENEATH”; and

(ii) is only removed for the purposes of installing services in circumstances where the removal takes place immediately before the installation of a service.

Penalty applicable to subregulations (1) and (3): \$25 000.

Edge protection

Regulation 3.55 states

(1) A person who at a workplace, is an employer, the main contractor, a self-employed person or a person having control of the workplace must ensure that edge protection that complies with subregulation (5) is provided and kept in place whenever there is a risk that a person could fall 2 or more metres from the edge of –

(a) a scaffold, fixed stair, landing or suspended slab at the workplace; or

(b) formwork or falsework at the workplace.

Penalty: \$25 000.

(2) A person who, at a workplace, is an employer, the main contractor, a self-employed person or a person having control of the workplace must ensure that either –

(a) edge protection that complies with subregulation (5) is provided and kept in place whenever there is a risk that a person could fall 3 or more metres from an edge at the workplace other than an edge referred to in subregulation (1); or

(b) a fall injury prevention system is provided and in operation whenever there is a risk that a person could fall 3 or more metres from an edge at the workplace other than an edge referred to in subregulation (1).

Penalty: \$25 000.

(3) When a fall injury prevention system that is designed to be attached to a person is provided in accordance with subregulation (2)(b), a person who is at risk of falling from the structure must use the system.

Penalty: \$5 000.

(4) When a fall injury prevention system that is not designed to be attached to a person is provided in accordance with subregulation (2)(b), a person who is at risk of falling from the structure must ensure, before the person ascends the structure, that the system is in operation.

Penalty: \$5 000.

(5) *Edge protection must have -*

(a) *a top rail of –*

(i) *positioned not less than 900 mm and not more than 1 100 mm above the working surface; and*

(ii) *that is capable of withstanding a force of 0.55 kN applied to any point of the guard rail system;*

and

(b) *either –*

(i) *a mid rail and a toe board; or*

(ii) *a toe board and a mesh panel that comprises wire that is not less than 3 mm in diameter and apertures not greater than 75 mm x 50 mm and that fills the space between the top rail and the toe board.*

Grid mesh and checker plate flooring panels

Regulation 3.56 states

A person who, at a workplace that is a construction site, is the main contractor, an employer, or a self-employed person must ensure that if grid mesh or checker plate flooring panels are being installed at the workplace –

(a) *subject to paragraph (b), then each panel is securely fixed, in accordance with the manufacturer's specifications, to a supporting structure before the support structure is placed into position on the building or structure under construction; and*

(b) *where it is not practicable to fix the panels to a supporting structure, then each panel is securely fixed to the building or structure under construction immediately after the panel is placed into position.*

Penalty: \$25 000.

Working on or from brittle or fragile roofing

Regulation 3.57 states:

(1) *A person who, at a workplace, is an employer, the main contractor, a self-employed person or a person having control of the workplace must ensure that if a person is required to work on or from a roof at the workplace where brittle or fragile material forms the whole or any part of the roof then –*

(a) *the person to work on or from the roof is informed that the roof is wholly or in part brittle or fragile, as is relevant to the case;*

(b) *the person to work on or from the roof is provided with a safe working platform and safe access way;*

(c) *the person to work on or from the roof is trained and instructed on –*

(i) *the precautions to be taken;*

(ii) *how and where to access the roof; and*

(iii) *how and where to gain access to the working platform or access way referred to in paragraph (b);*

and

(d) *to the extent practicable, a warning notice bearing the words “DANGER – FRAGILE ROOFING – USE WORKING PLATFORM” is placed at each place where a person who is to work on or from the roof is to access the roof.*

Penalty: \$25 000.

(2) *Without limiting regulation 3.1, if at a workplace brittle or fragile material forms the whole or part of a roof that is to be removed, a person who, at the workplace, is an employer, the main contractor, a self-employed person or a person having control of the workplace must before the roof is removed –*

(a) *identify which areas of the roof are made of a brittle or fragile material; and*

(b) *assess the stability of the structure that supports the roof and the soundness of the roof.*

Penalty: \$25 000.

(3) *A person who, at a workplace, is an employer, the main contractor, a self-employed person or a person having control of the workplace must ensure, if a person is required to work on or from a roof at the workplace where brittle or fragile material forms the whole or any part of the roof and there is a risk that that person might fall through the roof, and if there is no other practicable means of preventing the person falling through the roof, that –*

(a) *non-corrosive safety mesh that is capable of preventing a person falling through the roof is securely fixed directly over the top of, or directly underneath, the brittle or fragile areas; or*

(b) *barriers are securely fixed and adequately maintained around the brittle or fragile areas.*

Penalty: \$25 000.

(4) *A person must not remove a notice referred to in subregulation (1) without the authority of the person who caused the notice to be placed.*

Penalty for a person who commits the offence as an employee: \$5 000.

Penalty in any other case: \$25 000.

Definitions

Regulation 3.94

In this Subdivision –

“allied process” *includes cutting, grinding and gouging associated with welding;*

“welding” *means the joining of material by means of heat or pressure or both so that the material is united in a homogenous mass.*

Appendix 4: Job Safety Analysis (JSA)

Working with a JSA

Safety management is about reducing the risk of injury or harm for any person who may be affected by the work. This includes employers, contractors, all workers, visitors and members of the public who may be at or near a work site.

The work should be organised so that all of these people can carry out their usual activities safely.

Coordination

A JSA is one way of providing information to everyone involved in a particular task. It sets out the method that will be used and the way that hazards associated with the task will be managed on that site.

JSAs also provide the information that is needed for principal contractors and site supervisors to coordinate the work. They can refer to the JSAs to ensure that everyone is following the steps to be taken to complete the job safely.

Preparing for work

JSAs are an important part of preparing for each job.

JSAs should be completed before work begins.

Each worker involved with the job should know what is in the JSAs for the work they are doing.

Taking it step-by-step

Completing a JSA does not have to be a complicated process. It can be as simple as writing a few dot points under each of the headings in the blank JSA form on the next page.

Taking it one step at a time will make the whole process easier. It is best done with the people who usually carry out the tasks because they know the job well and they will have to follow the JSA when it is completed.

1. Break the job down into steps and record the steps in the Work activity column in the order that they would usually occur on site.
2. In the Hazard column, list the ways that anyone could be injured or harmed during each step. Think about all workers and any visitors or members of the public that may be affected.
3. Work out what could be done to make the job safer and prevent the injuries or harm that may occur. Write this in the Risk control column.
4. In the Persons responsible column, write down the name of the person who has to make sure

the risk controls are actually carried out on the site.

5. Make sure everyone understands that the JSA should be changed if there is a change to the site and different risk controls are required. The JSA should be reviewed and updated regularly.

Training and supervision

A JSA provides a written record of the way a particular task should be done.

The JSA does not replace the information, instruction, training and supervision that are required to ensure the task is done that way.

It is up to the employer/principal contractor to ensure that each person has the skills to work safely and there is adequate supervision of the work underway at each site.

Introducing JSAs

It is a good idea to start with high-risk work activities. Gradually the number of situations where JSAs are used will grow and they will become a regular part of managing safety on the site.

Job Safety Analysis – Blank form – Copy for use at the workplace

Name of organisation completing the work:		Job name:	
Task:		Job number:	
Principal contractor:		Job location:	
Date the JSA was prepared:		Number of pages in this JSA:	
This JSA has been reviewed by:		This JSA has been discussed with:	
Principal Contractor or Representative (signature)		Employee/subcontractor (signature)	
Position		Date	
Item Number	Work activity Break the job down into steps	Hazard What could harm someone?	Risk control What can be done to make the job safe?
		Persons responsible Who will make sure it happens?	Completion Date and signoff

Job Safety Analysis – Blank form – Copy for use at the workplace cont...

Item Number	Work activity Break the job down into steps	Hazard What could harm someone?	Risk control What can be done to make the job safe?	Persons responsible Who will make sure it happens?	Completion Date and signoff

Job Safety Analysis – Example 1 – Cleaning gutters

Note this is only an example and may not address all the hazards for this particular work activity at a specific site. A JSA that is relevant to an individual site should be prepared.

Name of organisation completing the work: <i>ABC Gutters</i>		Job name: <i>Smith's residence</i>			
Task: <i>Cleaning gutters on a single storey house using a portable ladder</i>		Job number: <i>Project 001</i>			
Principal contractor: <i>ABC Gutters</i>		Job location: <i>Rio Road, Cottesloe</i>			
Date the JSA was prepared: <i>20/05/03</i>		Number of pages in this JSA: <i>3</i>			
This JSA has been reviewed by: <i>Joe Bloggs, Site Supervisor</i>		This JSA has been discussed with: <i>Joe Bloggs, Site Supervisor and Jack Brown, Employee</i>			
Principal Contractor or Representative (signature) <i>J.F.Bloggs</i>		Employee/subcontractor (signature) <i>J.S.Brown</i>			
Position <i>Supervisor</i>		Date <i>20/05/03</i>		Position <i>Supervisor</i> <i>Employee</i> Date <i>20/05/03</i>	
Item Number	Work activity Break the job down into steps	Hazard What could harm someone?	Risk control What can be done to make the job safe?	Persons responsible Who will make sure it happens?	Completion Date and signoff
<i>1.</i>	<i>Move ladder from vehicle to location.</i>	<i>Back injury (twisting and over-reaching). Being hit by oncoming traffic. Hitting other people.</i>	<i>Assistance by another person. Plan lift to avoid back injury. Park vehicle in safe area to avoid being hit by oncoming traffic and hitting persons. Keep safe distance from power lines.</i>	<i>Jack Brown (employee) Joe Bloggs (supervisor)</i>	

Item Number	Work activity Break the job down into steps	Hazard What could harm someone?	Risk control What can be done to make the job safe?	Persons responsible Who will make sure it happens?	Completion Date and signoff
2.	Check ladder:	Ladder collapse	Use industrial type ladder: Ladder conforms with AS/NZS 1892. Inspect ladder for cracks and damage in accordance with the manufacturer's instructions.	Jack Brown (employee) Joe Bloggs (supervisor)	
3.	Set up ladder on gutter:	Power lines nearby. Uneven ground. Sun exposure. Public being hit.	Ensure ladder is not close to electrical danger zone. If needed, use boards or suitable material to ensure a firm footing. Use sun protection. Bunt the area around ladder to isolate the public. Set up ladder at 1/4 distance from the height of the gutter (i.e. if the gutter is four metres high, the foot of the ladder should be one metre away from the gutter line).	Jack Brown (employee) Joe Bloggs (supervisor)	
4.	Climb ladder:	Slip, trips and falls off ladder. Ladder slipping or sliding.	Ladder secured at the gutter or have someone else footing the ladder. Three points of contact with the ladder at all times (two feet and one hand). Wear shoes with good, slip resistant soles. Use bag or pouch to carry tools and equipments.	Jack Brown (employee) Joe Bloggs (supervisor)	

Item Number	Work activity Break the job down into steps	Hazard What could harm someone?	Risk control What can be done to make the job safe?	Persons responsible Who will make sure it happens?	Completion Date and signoff
5.	Clean gutter.	Hand injury. Fall off ladder.	Use suitable gloves. Remain between the ladder rails (do not over-reach). Keep one hand on ladder at all times. Lower material before descending the ladder.	Jack Brown (employee) Joe Bloggs (supervisor)	
6.	Climb down ladder.	Slip, trips and falls.	Three points of contact with the ladder at all times. Other recommendations from Item 4 (if applicable).	Jack Brown (employee) Joe Bloggs (supervisor)	
7.	Remove ladder.	Power lines nearby. Uneven ground. Public being hit.	See Point 3.	Jack Brown (employee) Joe Bloggs (supervisor)	
8.	Clean up area.	Hitting others.	Maintain isolation of area from public until clean up is finished.	Jack Brown (employee) Joe Bloggs (supervisor)	
9.	Move ladder back to vehicle.	Back injury (twisting and over-reaching). Being hit by oncoming traffic.	Assistance by another person. Other recommendations from Item 1 (if applicable).	Jack Brown (employee) Joe Bloggs (supervisor)	

Job Safety Analysis – Example 2 – Roof Sheeting

Note this is only an example and may not address all the hazards for this particular work activity at a specific site. A JSA that is relevant to an individual site should be prepared.

Name of organisation completing the work: <i>XYZ Roofing</i>		Job name: <i>Smith's Warehouse</i>	
Task: <i>Roof sheeting on commercial shed</i>		Job number: <i>Project 001</i>	
Principal contractor: <i>ABC Construction</i>		Job location: <i>Coast Road, Joondanna</i>	
Date the JSA was prepared: <i>11/03/00</i>		Number of pages in this JSA: <i>4</i>	
This JSA has been reviewed by: <i>Joe Bloggs, Site Supervisor</i>		This JSA has been discussed with: <i>Joe Bloggs, Site Supervisor and Jack Brown, Employee</i>	
Principal Contractor or Representative (signature) <i>J.F.Bloggs</i>		Employee/subcontractor (signature) <i>J.F.Bloggs</i> <i>J.S.Brown</i>	
Position	<i>Site Supervisor</i>	Position	<i>Employee</i>
Date	<i>11/03/00</i>	Date	<i>11/03/00</i>
Item Number	Work activity Break the job down into steps	Hazard What could harm someone?	Risk control What can be done to make the job safe?
1.	Lay down area for work materials.	Slip, trips and falls. Unsafe access/egress for other workers.	Organise safe lay down area before material arrives. <i>Joe Bloggs (supervisor)</i> <i>Jack Brown (employee)</i>
2.	Access/egress to working platforms and work areas.	Fall from heights when accessing to and egressing from work areas on the roof.	Provide and maintain safe stair access. Maintain good housekeeping throughout the job. <i>Joe Bloggs (supervisor)</i> <i>Jack Brown (employee)</i>
		Completion Date and signoff	

Item Number	Work activity Break the job down into steps	Hazard What could harm someone?	Risk control What can be done to make the job safe?	Persons responsible Who will make sure it happens?	Completion Date and signoff
3.	Lifting roof materials to work areas with crane.	Load falling on workers and/or public. Crane overturning. Roof collapse. Power lines nearby.	Suitable gantry or overhead protection. Lift area suitably barricaded. Suitable capacity crane for the job. Crane set up correctly and isolated from other people and structures. Certified persons slinging and operating crane. Suitable spreader beams to lift roof sheets. Check weather conditions (e.g. wind, rain). Tag lines attached to load. Safety helmets. Roof is assessed by competent person to avoid overloading (prop up if needed). Ensure no parts from crane enter the electrical danger zone.	Joe Bloggs (supervisor) Jack Brown (employee)	
4.	Installing safety mesh to purlins.	Electric shock. Manual handling injuries. Fall from heights. Hand injury. Sunburn. Falling objects.	Ensure tools and extension leads are tagged and current. Ensure temporary power board is fitted with Residual Current Devices (RCD). Ensure leads do not extend more than 30 metres from the temporary power board. Provide gloves. Mesh lifted by crane or by hoist to the working area. Mesh installed by competent persons in accordance with AS 4389. Use suitable working platform while installing mesh (i.e. scaffold, scissor	Jack Brown (employee) Joe Bloggs (supervisor)	

Item Number	Work activity Break the job down into steps	Hazard What could harm someone?	Risk control What can be done to make the job safe?	Persons responsible Who will make sure it happens?	Completion Date and signoff
			<i>lift or cherry picker.</i> <i>Use fall arrest equipment (if appropriate).</i> <i>Ensure persons are trained on the safe use of the equipment and an emergency rescue plan is ready on site.</i> <i>Safety mesh not to be used as a working platform.</i> <i>Wear hats, shirt, sunscreen and UV rated sunglasses.</i> <i>Ensure no one is working below.</i>	<i>Joe Bloggs (supervisor)</i> <i>Jack Brown (employee)</i>	
5.	<i>Installing fibreglass or glasswool insulation.</i>	<i>Eye, skin and upper respiratory irritation.</i> <i>Fall from heights.</i>	<i>Persons handling fibres to be provided with appropriate personal protective equipment (i.e. masks, overalls and gloves).</i> <i>All persons installing fibres to be aware of manufacturer's requirements and first aid procedures.</i> <i>Install signs and barricades while installing fibres.</i> <i>Ensure that Material Safety Data Sheets (MSDS) are available on site.</i>	<i>Joe Bloggs (supervisor)</i> <i>Jack Brown (employee)</i>	

Item Number	Work activity Break the job down into steps	Hazard What could harm someone?	Risk control What can be done to make the job safe?	Persons responsible Who will make sure it happens?	Completion Date and signoff
6.	Cleaning up fibreglass or glasswool from roof area.	Falling debris. Eye, skin and upper respiratory irritation.	Bag and remove all loose fibres and dispose of in accordance with the site requirements. Remove all metal off cut and material and dispose in bins.	Joe Bloggs (supervisor) Jack Brown (employee)	
7.	Moving and installing roof sheets.	Fall from heights. Electrical shock. Manual handling injuries (sprain and strains).	Use mechanical means to move material where possible. Adopt correct lifting techniques i.e. team lifting. Ensure tools and extension leads are tagged and current. Ensure temporary power board is fitted with Residual Current Devices (RCD). Ensure leads do not extend more than 30 metres from the temporary power board. Provide edge protection or fall injury prevention system (ensure person using fall-arrest are suitably trained). Isolate the electrical danger zone.	Joe Bloggs (supervisor) Jack Brown (employee)	
8.	Installation of down pipes and gutters.	Fall from heights. Hand injury.	Provide gloves and adequate tools. Provide adequate working platform (i.e. scaffold, scissor lift, cherry picker).	Joe Bloggs (supervisor) Jack Brown (employee)	

Appendix 5: Terms used in fall injury prevention systems

Systems

Active fall protection – is a system where individuals must take action to use equipment either to prevent them entering a fall hazard area or to arrest their fall (for example, a fall-arrest or fall restraint system).

Individual fall-arrest systems – are designed to arrest an accidental fall and consist of some or all of the following:

- anchorage;
- lifeline;
- inertia reel;
- lanyard;
- retractable lifeline;
- rope grabs;
- wire grabs;
- rail system;
- shock absorbers – both personal and industrial; and
- harness.

Passive fall protection – is a system where the equipment installed provides fall protection, such as the installation of edge protection, safety nets, purlin trolleys and catch platforms, and individuals using the system do not have to take action to use equipment specifically designed to prevent falls. See also the above definition of active fall protection.

Restraint systems (individual travel restricting systems) – these systems are designed to prevent the user from moving into a fall hazard area and consist of:

- anchorage;
- lanyard;
- belt or harness; and
- horizontal lifeline.

Work positioning systems – provide a primary means of support in relative comfort and consist of:

- anchorage;
- lifeline (dropline) x 2;
- descender;
- ascender;
- back-up device;
- bosun's chair; and
- harness.

Terms

Anchorage – means an anchorage point for a fall injury prevention system. It is the means for attaching a lanyard, lifeline or other components to a secure point.

Arrest force – is the force imposed upon the worker and the anchorage point, the moment the fall-arrest system stops the fall, measured in kilonewtons (kN).

Body containment devices – are designed to contain the body of a falling worker and to distribute forces resulting from an arrested fall to minimise the likelihood of injury. They consist of a full body harness (parachute type) together with associated components such as a lanyard and personal energy absorber. Harnesses can be used for restraint systems and work positioning systems according to relevant sections in AS/NZS 1891.1 and AS/NZS 1891.4.

Droplines – are vertical lifelines.

Double or triple action device – is a self-closing hook or karabiner with a keeper latch which will automatically close and remain closed until manually opened. These units have a minimum of at least two distinct and deliberate consecutive actions to manually open them.

Fall-arrest devices – there are three types: Type 1 fall-arrester device, Type 2 and Type 3 fall-arrest device (see definitions on following page).

Fall indicator – is a visual indicator that shows that the fall-arrest system or device has been used to arrest a fall.

Fall injury prevention system – means a system designed to arrest a person's fall from one level at a workplace to another and minimise the risk of injury or harm to a person who falls from one level at a workplace to another.

Force – this is measured in technical terms in Newtons (N). The weight of something in Newtons (N) is calculated by multiplying its mass in Kilograms (kgs) by the value of Gravity, which is 9.81 (m/s²). A Kilogram (kg) is a unit of mass (i.e. the weight of a static object).

Force = Mass X Acceleration

For rough calculation purposes:

1000N=1kN

1kN=100 kg

10kN=1 000 kg

Free fall – is any fall or part of a fall where the person suffering the fall is under the unrestrained influence of gravity over any fall distance, either vertically or on a slope on which it is not possible to walk without the assistance of a handrail or hand line. The maximum allowed free fall is 2 metres.

Inertia reel (also known as a self-retracting lanyard or fall-arrest block) – is a mechanical device that arrests a fall by locking onto a dropline and at the same time allows freedom of movement.

Job Safety Analysis (JSA) – these are a means of setting out the ways that hazards associated with a task will be managed on a site and the work methods that will be used. They are usually a standardised form produced by an association, employer or State Government agency. Refer to Appendix 4.

Karabiners – these are metal types of connectors that can be attached to anchorage points. They come in a variety of sizes, shapes and locking mechanisms to suit various applications and provide the most

convenient type of connector as they can be easily attached and detached. They should be self-closing and self- or manual-locking and capable of being opened only by at least two consecutive deliberate manual actions.

Lanyard – is a line usually used as part of a lanyard assembly to connect a harness to an anchorage point or static line in situations where there is risk of a fall.

Lanyard assembly – is an assembly of a lanyard and a personal energy absorber.

Locking traveller (horizontal) – is a travelling anchorage. It has a walking sprocket device that connects the user to a static line system allowing the user to travel the entire length of the line without having to unclip and re-clip when passing the line supports.

Locking traveller (incline) – arrests falls on surfaces up to an angle of 30 degrees.

Personal energy absorber (deceleration device) – this is an attachment designed to reduce the deceleration force imposed by a suddenly arrested fall. A personal energy absorber is designed to be used with a fall-arrest harness and lanyard.

Restraint line – is the line securing workers to a point of anchorage and is used to prevent a person from reaching a point from which he or she could fall.

Safety factor – this factor accounts for complex and variable dynamic forces and unknowns, such as rope ageing, metal fatigue, abrasion, bending and structure contact. It can, for example, be used to work out:

- the ratio of the ultimate strength of the material to the permissible stress;
- the ratio between the weakest link in the system compared to the maximum expected static load; or
- the minimum breaking load and the safe working load.

Formulas $SF = \frac{BF}{SWL}$ $SWL = \frac{BF}{SF}$ $BF = SF \times SWL$

(SF IS SAFETY FACTOR, BF IS BREAKING FORCE AND SWL IS SAFE WORKING LOAD)

Static line – is a horizontal or substantially horizontal line to which a lanyard may be attached and which is designed to arrest a free fall.

Total fall distance – is the total distance a person is likely to fall during both the free and restrained parts of a fall and includes the maximum dynamic extension of all supporting components.

Type 1 fall-arrester device (includes rope and rail grabs) – this is a fall-arrest device that travels along an anchorage line and, when loaded, locks to the line. The user is connected via a short lanyard to the activating lever, which locks the device in the event of a fall. A typical use of a Type 1 device is as a ladder fall-arrest system, using a rigid rail or a flexible line attached to the ladder.

Type 2 and Type 3 fall-arrest device (also known as an inertia reel or self-retracting lifeline) – this is a fall-arrest device from which a spring loaded anchorage line pays out, and which locks when loaded and releases when the load is removed. When incorporating a retrieval winch, it becomes a Type 3 fall-arrest device.

Appendix 6: Components of fall-arrest and restraint systems

Key points on components of fall-arrest and restraint systems include:

- all components of a fall-arrest system must be compatible;
- do not 'mix and match' systems with different components made by different manufacturers; and
- check with the manufacturer and/or supplier to ensure compatibility of components.

See Appendix 5 for definitions of some terms.

See also Section 8.4 Inspection of fall-injury prevention systems.

i) Cable (in the fixed static safety line)

The safety requirements for the use of the cable include:

- the cable used in the installation of safety lines should comply with Australian Standard, *AS 3569 Steel Wire Ropes*;
- the cable should be of a minimum diameter of 10 mm and provide a minimum safety factor of 10;
- the cable should have a guaranteed breaking strain (GBS) of 60 kN (approximately equivalent to six tonne);
- the cable support at each column should be in accordance with an engineer's specification;
- consideration should be given to the many variables important in the erection of fixed static lines. These include:
 - the number of people on the system at any one time;
 - the length of the system; and
 - the length between intermediate supports, length of lanyard of the user and distance below the user.

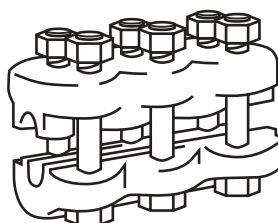
Engineer-designed systems are necessary to consider all these variables;

- industrial shock absorbers should be used to ensure the force generated in simultaneous falls on the safety system will not generate more than 12 kN (approximately equivalent to 1 200 kg) at the anchorage points, unless the anchorage points have been designed by an engineer to withstand a greater force;
- tensioning of the fixed static line should be achieved by installing turnbuckles or other appropriate means. Where turnbuckles are used, they should be installed as recommended on the following pages; and
- the cable should be placed to eliminate the risk of tripping. Where practicable, the cable should be located between two metres and 2.2 metres above the floor of the work area.

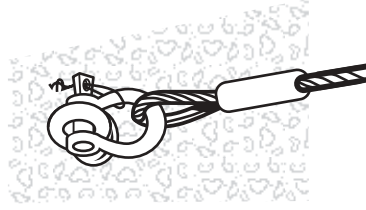
ii) Cable end (termination of the fixed static lines)

The termination of the cable should be by the installation of a thimble eye. Where practicable, the ends should be secured by one of the following:

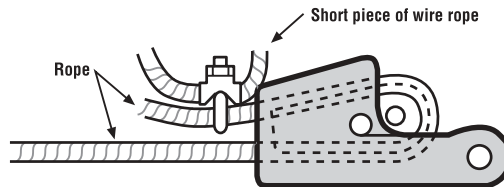
- double base clamps, with a minimum of three installed at equal spaces, with a minimum 200 mm tail past the last clamp;



- a hand splice with thimble eye or a machine splice with thimble eye; or



- wedge sockets.



Note: Cables and fittings may be secured directly to anchorage points with D or bow shackles of a minimum size of 12 mm or by having a safe working load of not less than 20 kN (approximately equivalent to two tonnes). The pin of the shackle should be moused (lashed) to the shackle.

iii) Anchorage points

Anchorage points are secure points of attachment for the fixed static line and lanyards.

The safety requirements for the use of anchorage points include:

- anchorage points used should be located as high as equipment permits, as it is dangerous to work above the point of anchorage;
- the diameter of the threaded sections of bolts and their anchorages should not be less than 16 mm; all eyebolts should comply with Australian Standard, *AS 2317 Collared Eyebolts*; and
- all anchorages should be visibly checked prior to use.

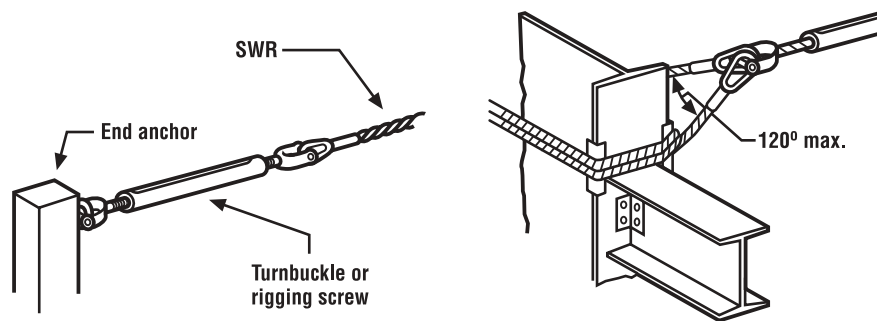
The following types of anchorage points are acceptable when used in concrete:

- anchorage points cast 'in situ':
 - a wall tie (shee bolt) purpose designed; or
 - an engineer-designed anchorage point;
- chemical-type anchorage points incorporating a 16 mm diameter bolt and 110 mm embedment and used in shear; and
- friction-type anchorage points with a collared eye or eyebolt, used in shear, with the threaded section being no less than 16 mm diameter. The collared eye nut should be fastened tightly against the concrete surface.

Chemical or friction-type anchorages should be used in shear only, i.e. the bolt should be at right angles to the static cable.

Anchorage points should have a design capacity of 15 kN (approximately equivalent to 1 500 kg) each, except where verification of a lesser design load provides for a minimum safety factor of 10.

Anchorage points must be designed, manufactured, constructed, selected, or installed so as to be capable of withstanding the force applied as a result of a person's fall at the workplace.



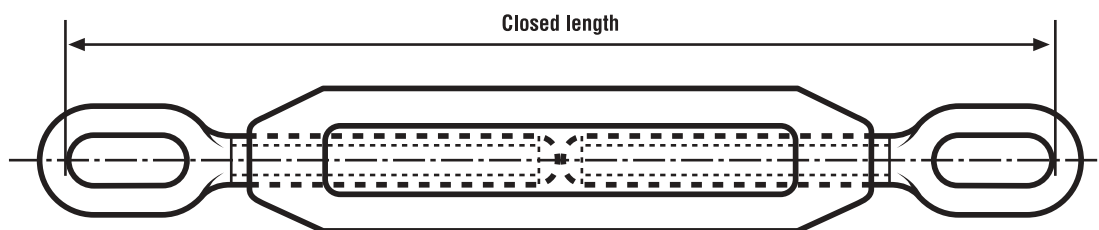
Above: (Left) Direct connection anchorage and (Right) Sling anchorage.

iv) Turnbuckles (to adjust the tension in the fixed static line)

Turnbuckles are an open body consisting of two integral rods connecting two bosses that are threaded internally on the central axis in opposite hand and into which end fittings of optional with screwed clamps type (e.g. round eye, elongated eye or clevis) are fitted.

The safety requirements for the use of turnbuckles include:

- the threaded section shall be a minimum of 12 mm diameter;
- turnbuckles should be of a type that will allow visual inspection of the condition and extension of the threaded sections;
- the frame should be locked or moused (lashed) to the eye bolt to prevent slackening due to vibration, shock or spin in the line attached; and
- turnbuckles should be in accordance with Australian Standard, *AS 2319 Rigging Screws and Turnbuckles*.



Above: Turnbuckle assembly with elongated eyes.

v) Temporary static lines (horizontal life line systems)

Temporary static lines are linear anchorages, which allow users of fall-arrest equipment the flexibility of lateral movements without having to disconnect from the anchorage.

The safety requirements for the use of temporary static lines include:

- a 16 mm diameter nylon rope of Kernmantle construction that complies with Australian Standard, *AS 4142.3 Fibre Ropes – Man-made Fibre Rope for Static Life Rescue Lines* and which provides a minimum safety factor of 10 may be used. The line must have a guaranteed breaking strain (GBS) of 80 kN (approximately equivalent to eight tonnes);

- tension may be achieved by using a self-tensioning block, which must be capable of automatically locking the line and manually releasing the line. Too much tension on the line will affect the overall strength of the system, too little will affect the ground clearance required;
- for shock absorption, the self-tensioning block must be designed to reduce shock loading by means of a dynamic friction facility which guarantees that the maximum force generated on the line will not be greater than 6 kN (approximately equivalent to 600 kg);
- the line end (termination of the temporary static line) should be secured by one of the following:
 - a hand splice with a thimble eye;
 - a machine splice (ferrule); or
 - a figure of eight knot;
- the maximum span between anchorage points for a temporary static line should be no greater than four metres, unless specifically designed by an engineer to be a longer length. This is due to the dynamic sag factor of the temporary static line and should be taken into account when calculating the maximum ground clearance (MGC) requirement for a fall-arrest system;
- total fall distance is defined in the Australian/New Zealand Standard, *AS/NZS 1891.1 Industrial Fall-Arrest Systems and Devices: Safety Belts and Harnesses* as the total distance a person is likely to fall during both the free and restrained parts of a fall and includes the maximum dynamic extension of all supporting components.

Designers of temporary static lines should ensure the system is designed so that persons falling will not crash to the ground. Calculations should consider:

- tension on the static line;
- a person's height;
- lanyard length and extension;
- shock absorber extension;
- personal energy absorber of the person's lanyard; and
- slide of the D ring.

The person's weight will have a significant effect on the sag of the temporary static line. Other factors to be considered include:

- climate (temperature and wet or dry);
- type of knots; and
- age of the system.

Rail systems

Rail systems are rigid systems which are generally comprised of a steel or other metallic structural member, along which one or more mobile attachment devices run, each providing a travelling anchorage for connection of a personal lanyard assembly on a fall-arrest system.

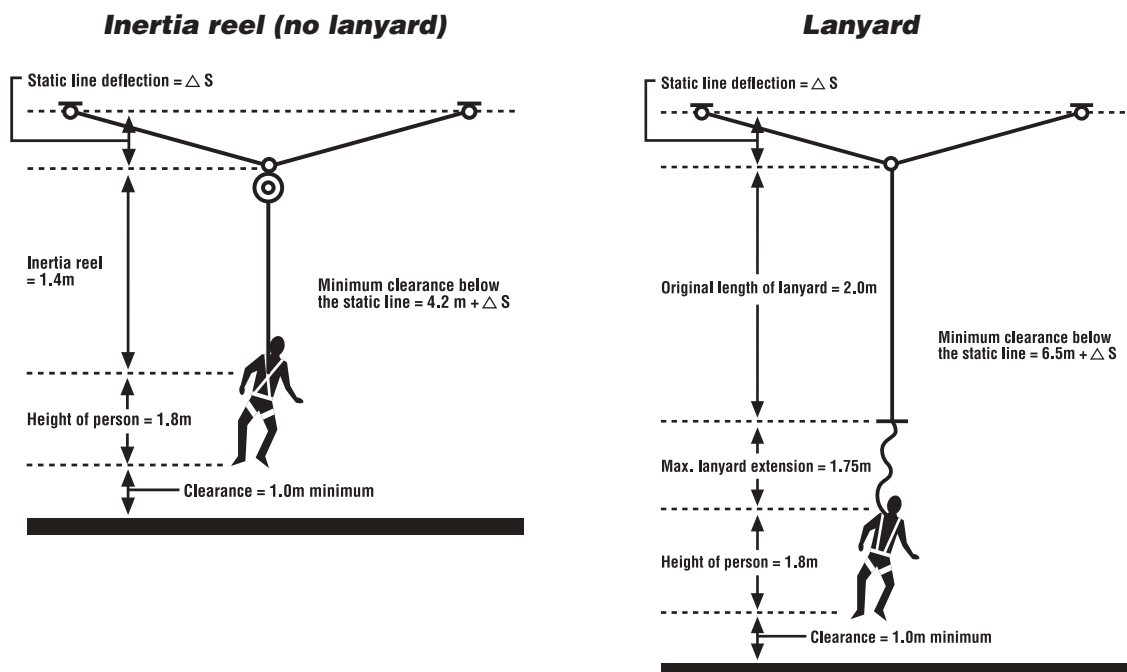
Safety requirements for the use of a temporary static line and rail system include:

- unless there is a ground clearance under the temporary static line of at least 6.55 metres plus the distance

of sag in the line under load, the user of fall-arrest equipment will probably not have their fall arrested and will strike the ground. (See the diagram on the right below);

- inertia reels (self-retracting lanyards) on temporary static line systems could be used. These will significantly reduce the 6.5 metre ground clearance due to the inertia reel lock-out. (See the diagram on the left below);
- in some circumstances, the ground clearance might be reduced. Using the 'preferred order of control measures', a combination of different equipment (such as a restraint system, elevating work platform and scaffolding) should be considered to give different results and create maximum ground clearance;
- personal energy absorbers must be worn at all times where there is a possibility of a fall; and
- Australian/New Zealand Standard, AS/NZS 1891.2 *supp:1-2001* should be consulted.

See the table of preferred order of control measures in Section 2.4.



Above: Required minimum fall clearance below the level of the line anchorage.

vi) Harnesses, lanyards and equipment

Waist-type belts and sit harnesses must not be used as a fall-arrest system.

The lanyard is a line, usually used as part of a lanyard assembly, to connect a fall-arrest safety harness to an anchorage point or permanent or temporary static line, in situations where there is a risk of a fall.

The safety requirements for the use of harnesses, lanyards and equipment include:

- body-type harnesses of the parachute-type should be used;
- the length of any lanyard assembly should not exceed two metres;
- the harness should be connected to the lanyard or temporary static line at the top dorsal (back) position or front (sternum) fall-arrest attachment point;
- if a temporary or permanent static line and rope grab device are used on steeply sloping surfaces, the user

needs to have the device in the front fall-arrest attachment point. This will allow safe manual operation of the mechanism;

- lanyards should be checked for the faults listed in the following checklist;

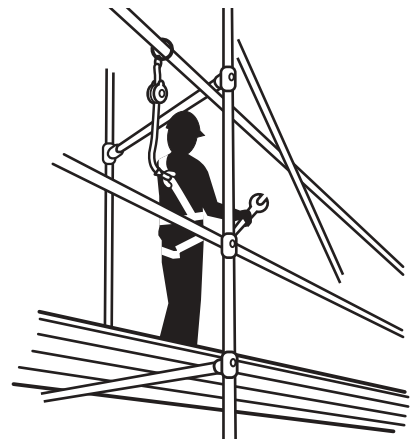
Defects and damage to lanyards checklist

Lanyards should be checked for defects or damage, including:

- cuts of 1 mm or more at the edges of the webbing lanyards (e.g. where the lanyard may have been choked hitched around steelwork);
- surface abrasion across the face of the webbing and at the webbing loops, particularly if localised;
- damage to stitching (e.g. cuts or abrasion);
- a knot in the lanyard, other than those intended by the manufacturer;
- chemical attack resulting in local weakening and softening, which is often indicated by flaking of the surface. There may also be a change to the colour of the fibres;
- heat or friction damage indicated by fibres with a glazed appearance, which may feel harder than surrounding fibres;
- UV degradation, which is difficult to identify, particularly by visual appearance, but there may be some loss of colour (if dyed) and a powdery surface;
- a partially-deployed energy absorber (e.g. short pull out of tear webbing);
- contamination (e.g. from dirt, grit, sand or paint etc.) which may result in internal or external abrasion;
- damaged or deformed fittings (e.g. karabiners, screw link connectors, scaffold hooks or shackles etc);
- damage to the sheath and core of a Kernmantle rope (e.g. rucking of the core detected during tactile inspection); and
- internal damage to a cable laid rope.

For additional information, refer to the Australian/New Zealand Standard, *AS/NZS 1891* series and/or the manufacturer's recommendations.

- anchorage points shall not be sited below the attachment point of the harness, e.g. not below the dorsal (back) position;
- there should be a minimum of slack in the temporary static line between the person and attachment to the anchorage. The fall-arrest system should be so designed to limit a free fall to a maximum of two metres;
- lanyards must incorporate a shock absorber and be fitted with double action devices and, as an assembly, they must comply with Australian/New Zealand Standard, *AS/NZS 1891.1*;
- the attachment hardware should be checked for susceptibility to roll-out. A possible problem with the use of attachment hardware is inadvertent roll-out release caused by either:

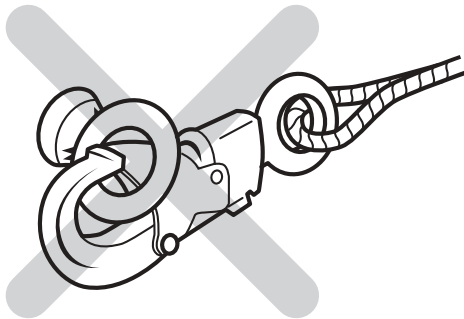


Above: Scaffolders must have a safe system of work or use fall protection devices, including harnesses and inertia reels.

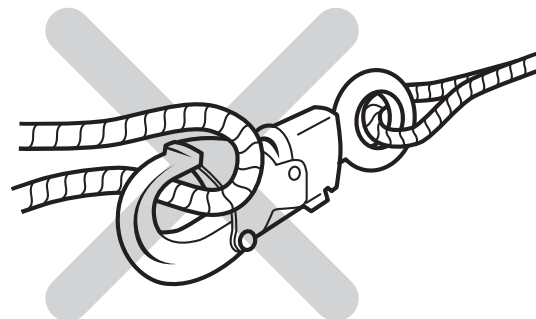
- a simple roll-out, when either a small diameter eyebolt or a rope loop can roll-out of a single action snaphook or a double action snaphook if the locking gate is first tripped (see the top diagrams below); or
- when gate loading occurs, which is when two or more large cross-section components in a snaphook of inadequate size exert undue force on the gate when loaded (see the bottom diagrams below); or
- inadvertent tripping of the locking gate occurs.

To check a connection for possible susceptibility to roll-out:

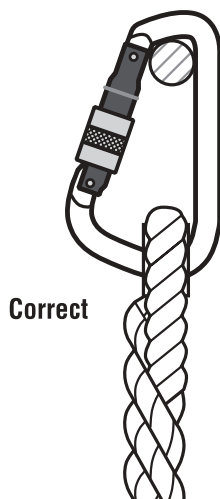
- firstly, determine how easily moving contact with clothing or equipment can cause initial tripping of the locking gate; and
- if it looks like tripping is relatively easy, simultaneously twisting the connection in all possible directions will determine whether subsequent roll-out is possible after the locking gate has been tripped.



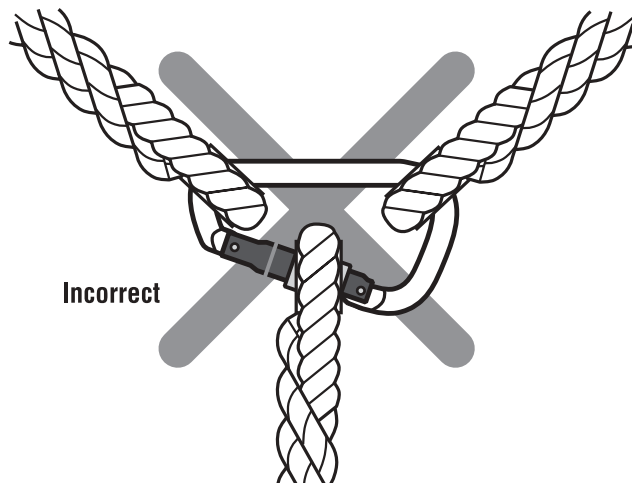
Above: Roll-out on small diameter eyebolt.



Above: Roll-out on rope.



Correct



Incorrect

Above: Side and gate loading of a karabiner.

Australian/New Zealand Standard AS/NZS 1891.4 should be consulted for information on common usage problems;

Snaphooks or karabiners without a double or triple locking device or action must not be used.

- consideration must be given to any special requirements of the materials used in manufacture of the equipment, when choosing the most appropriate fall-arrest equipment for a particular application. For

example, when fall-arrest equipment is used while operating chain saws (e.g. tree pruning, trimming or removal operations), pole straps or belts should be steel core to minimise the effects of accidental cutting;

- equipment must be inspected regularly, including inspecting for signs of any damage from cutting, abrasion or heat sources. See also the defects and damage to lanyards checklist in *vi) Harnesses, lanyards and equipment*;
- workers using safety harnesses, who are outside the safety of handrails, must be attached to an anchorage point or a fall-arrest safety system at all times;
- workers using safety harnesses should not work alone; and
- emergency rescue procedures must be developed before work commences.

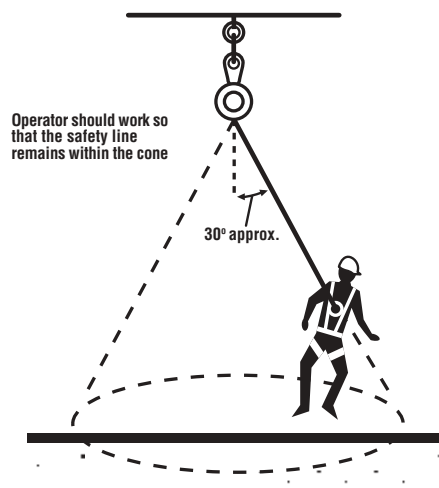
vii) Inertia reels (self-retracting lanyards)

Inertia reels attach to an anchorage point and pay out a line that is attached to the person's harness. The line is controlled by a spring-loaded reel, which adjusts the line length as the person moves up and down while working. Under fall-arrest conditions, the reel locks in position by the same principle as a car seatbelt.

Inertia reels can be used to prevent falls, where workers are required to carry out their work near an unprotected edge.

The safety requirements for the use of inertia reels include:

- the line of the inertia reel must be attached directly to the D ring of the harness;
- when using an inertia reel, do not use a lanyard;
- 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; and
- inertia reels may be less effective for certain applications, such as stopping a person falling down an inclined surface. They should be sited only from vertical to 30 degrees, unless specified otherwise in the manufacturer's instructions.



Above: Inertia reel and safety harnesses can be used with a static line or fixed anchorages.

viii) Drop lines

Drop lines are vertical temporary static lines.

The safety requirements for the use of drop lines include:

- drop lines should be of a minimum knotted strength of 22 kN (approximately equivalent to 2200 kg) and be of a nominal diameter of 11-12 mm;
- drop lines should have a fixed eye at one end for attachment to an anchorage point or temporary static line and be knotted at the other end to stop a rope grab device from becoming detached; and
- a drop line should be of Kernmantle or three strand construction.

Vertical lifelines

A vertical lifeline is a secondary safety drop line used as a back up to arrest a limited free fall in the event of failure of the working line or its attachments.

The safety requirements with the use of a vertical lifeline include:

- use vertical lifelines in connection with work from a swing seat (bosun's chair) or ladder; and
- only one person should be attached to any one lifeline.

Appendix 7: Contacts for further information

Chamber of Commerce and Industry Western Australia

180 Hay Street EAST PERTH WA 6004

Tel.: (08) 9365 7415 Fax: (08) 9365 7550

Email: osh@cciwa.com

Internet site: www.cciwa.com

UnionsWA

Level 4, 79 Stirling Street PERTH WA 6000

Tel.: (08) 9328 7877 Fax: (08) 9328 8132

Email: unionswa@tlcwa.org.au

WorkSafe

Department of Consumer and Employment Protection

1260 Hay Street WEST PERTH WA 6005

Tel.: 1300 307 877 Fax: 08 9321 8973

Email: safety@worksafe.wa.gov.au

Internet site: www.safetyline.wa.gov.au

TTY: (08) 9327 8838



commission
for occupational
safety and health

Westcentre 1260 Hay Street West Perth
PO Box 294 West Perth 6872
Ph: (08) 9327 8777 Fax: (08) 9321 8973

2004

ISBN 1920836039

Comprehensive work safety and health information
can be found at:

www.safetyline.wa.gov.au

Safetyline is a service provided by the
Department of Consumer and Employment Protection

(www.docep.wa.gov.au)