Australian Government

Department of Education, Employment and Workplace Relations

AHCARB310A Perform aerial rigging

Release: 1

AHCARB310A Perform aerial rigging

Modification History

Not Applicable

Unit Descriptor

Unit descriptor	This unit of competency covers the process of rigging and defines the standard required to: design and implement a rigging system; use established and documented methods of rigging; perform rigging operations and communicate effectively with work crew.

Application of the Unit

Application of the unit	This unit applies to climbing Arborists and elevated work platform Arborists engaged in the process of rigging and applies to the appropriate selection and use of rigging equipment and methods. Aerial rigging work requires the application of extensive arboricultural knowledge and skills including different techniques of rigging to raise, lower, control or redirect a load in undertaking tree pruning and /or tree removal. Discretion and judgement is required.

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units		

Employability Skills Information

Employability skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Not Applicable

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA

ELEMENT	PERFORMANCE CRITERIA
1. Prepare work site	1.1. The location of worksite and location of the correct tree is confirmed as per the scope of works. 1.2. Required site permits and licences are obtained. 1.3. Tree is inspected for structural defects. 1.4. Site hazards are identified, risks assessed and suitable controls implemented. 1.5. The work zone is confirmed with the work crew and is monitored. 1.6. Traffic management plans for the work site are implemented. 1.7. Communications are initiated, received and confirmed as an ongoing process.
2. Prepare rigging	2.1. Rigging method is determined and communicated to work crew. 2.2. Rigging method confirms the risk controls selected in accordance with established and documented low risk work methods. 2.3. Appropriate rigging equipment is selected. 2.4. Rigging equipment is inspected for equipment defects assembled and installed.
3. Design the rigging system	3.1. The load limit of the rigging system is determined. 3.2. Appropriate anchor and attachment points are selected. 3.3. Load and balance calculations are performed. 3.4. The impact of force under normal/failure conditions is determined and a safety factor is applied. 3.5. Rigging system is designed to allow for the load and impact of the forces. 3.6. Rigging system is communicated to work crew.
4. Perform rigging operations	4.1. Effective communications are maintained between the work crew during the sequence of the rigging process. 4.2. Rigging is attached. 4.3. Appropriate knots are used where required. 4.4. Rigging system is monitored and adjusted in accordance with environmental conditions. 4.5. Load is tensioned and tested. 4.6. Load is controlled and raised, lowered or re-directed. 4.7. The appropriate components of the rigging system are retrieved.

ELEMENT	PERFORMANCE CRITERIA
5. Complete tree rigging operations	5.1. Load frequency and size matches the process capacity of the ground crew. 5.2. Rigging operations are completed as per scope of works. 5.3. Tools, equipment and machinery are cleaned, checked, and replaced if faulty or worn, and stored.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

- technical skills sufficient to:
  - identify, select, assemble, use and maintain a range of rigging equipment and devices in a range of contexts and conditions
  - inspect equipment before and during use and identify problems, defects and faults
  - select appropriate anchor and attachment points
  - perform tip lowering, butt lowering, horizontal lowering or unchanged lowering
  - safely operate rigging equipment
  - carry out rigging operations appropriate to site conditions
  - identify unsafe rigging practices
  - understand equipment terminology and names
  - select and tie a wide range of knots required for rigging
  - operate lowering devices as required
  - practice rescue techniques
  - perform rigging from an elevated work platform (EWP) where an EWP is being used
  - store and maintain rigging equipment
- communication skills sufficient to:
  - use and respond to appropriate communication and interpersonal techniques and methods with colleagues and others
  - use voice, hand and whistle signals with other operators to maintain effective and low risk rigging operations
  - report information about problems, defects and faults.
- literacy skills sufficient to:

REQUIRED SKILLS AND KNOWLEDGE

- accurately locate and report information;
- interpret written text material; and,
- interpret, apply and convey information in written, diagrammatic and/or verbal form.

- spatial skills sufficient to:
  - estimate distances and dimensions of trees and equipment
  - estimate the centre of gravity for balancing a load
  - estimate areas for safe work zones.
- numeracy skills to:
  - understand and recognise numerical terms of equipment breaking strains, safe working loads, manufacturer's specifications and labeling
  - use basic geometry to measure distances and dimensions
- problem solving skills sufficient to:
  - identify work requirements;
  - identifying any faults in tools, equipment or materials
  - recognise own limitations in identifying problems in conditions and trees for rigging
  - demonstrate appropriate response procedures following identification of problems; and, provide alternative rigging solutions
  - identify hazards, assess risk and implement risk controls
  - apply low risk work practices including the use of personal and protective equipment and control of hazards
- teamwork skills sufficient to:
  - use communications to complete complex tasks efficiently and safely
  - coordinate own work with others to action tasks and sequence the work team activities;
  - to relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- the ability to comply with legislation, regulations, standards, codes of practice and established safe practices and procedures for rigging.

Required knowledge

- organisational and site standards, requirements, policies and procedures for rigging
- types and purposes of a range of rigging equipment and devices
- the use, operation and maintenance of rigging equipment in accordance with the manufacturer's specifications and recommendations
- common problems with rigging and their potential consequences and solutions
- established communication and management channels and protocols
- identification and evaluation of structural defects in trees
- methods of using and operational principles and limitations of friction devices

REQUIRED SKILLS AND KNOWLEDGE
• procedures for recording and reporting workplace information • appropriate mathematical procedures for estimating and measuring • common rigging hazards • basic physics for load distribution, gravity, heat, potential and kinetic energy, mass, force and leverage • knowledge and understanding of AS4373-2007 Pruning of amenity trees • Code of Practice relevant to the full range of processes for rigging • environmental protection requirements • tree anatomy, physiology, nomenclature and taxonomy • safe working load of rigging equipment • awareness of breaking strength, safety factor and cycles to failure • signals and communication systems • first aid and rescue procedures • use of personal protection equipment.

Evidence Guide

EVIDENCE GUIDE	
The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to workplace operations and satisfy holistically all of the requirements of the performance criteria and required skills and knowledge and include achievement of the following: • design and implement a rigging system; • use established and documented methods of rigging; • perform rigging operations and • communicate effectively with work crew.
Context of and specific resources for assessment	Competency requires the application of work practices under work conditions. Selection and use of resources for some work sites may differ due to the regional or enterprise circumstances. There is an industry expectation for refresher training and assessment.

Range Statement

RANGE STATEMENT	
The range statement relates to the unit of competency as a whole.	
Trees include:	• hardwood • softwood • palms and palm-like • trees that are alive, dead, single or multi-stemmed, leaning or straight.
Structural defects may include:	• cracks • splits • cavities • decay • inclusions.
Site hazards may include:	• uneven/unstable terrain

RANGE STATEMENT	
	• high risk trees and tree parts • overhead and underground services • excavations • traffic • structures • hazardous materials • fires • insects and animals • other personnel and machinery.
Traffic may include:	• pedestrian • vehicle.
Communication may include:	• voice communications • whistles • hand signals.
Work zone may include:	• the exclusion zone • safe drop zone • safe fall zone • traffic management zone • asset management zone • the area under the load • the area that the load is directed to.
Rigging method may include:	• simple rope • taut line • speed line • tag-pull line • lowering • raising • cradling • tip or butt lowering • false crotch.

Rigging equipment may include:	• ropes including aspects of rope such as:
	  • materials
	  • construction
	  • diameter
	  • limits
	  • terminations
	• karabiners
	• pulleys
	• slings

RANGE STATEMENT	

	• shackles
	• rapids.
	• Slings may be:
	  • spliced
	  • sewn
	  • swaged
	  • adjustable
	  • continuous
	  • fixed length.
	• Slinging configurations could include choke or basket.

Equipment defects may include:	• signs of:
	  • wear
	  • melting
	  • burning
	  • stretching
	  • cracking
	  • incompatibility
	  • overload failure
	• equipment that is:
	  • cut
	  • bent
	  • broken
	  • faulty.

Rigging system includes:	• the assembly of all the component parts of rigging equipment. This may include mechanical advantage and friction from tree or friction devices or other fixed objects.
Anchor and attachment points may include:	• a fork • a false crotch made from a sling and pulley • a cambium saver.
Load may include:	• tree • tree parts • rigging equipment or tools.
Knots may include:	• bowline • running bowline • bowline on a bight • blood knot • tautline

RANGE STATEMENT	
	• sheet bend • Prussik • figure 8 • friction • alpine • timber hitch • clove hitch • half hitch.
Environmental conditions may include:	• the range of variations in weather such as wind speed and direction.

Unit Sector(s)

Unit sector	

Co-requisite units

Co-requisite units		

Competency field

Competency field	Arboriculture