



Australian Government

Department of Education, Employment and Workplace Relations

CPCCB4044A Operate a tower crane

Release: 1

CPCCBBC4044A Operate a tower crane

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit of competency specifies the outcomes required to operate a tower crane, including planning and preparing for work; conducting operational checks; safely and effectively operating the tower crane for a range of tasks, including lifting and moving loads; monitoring; and shutting down in accordance with designated Australian standards.

Application of the Unit

Application of the unit

This unit may have application in a range of industries, including automotive, defence, forests, maritime, metals and engineering, mining, transport and distribution, in addition to general construction.

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units Nil

Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.

Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for operation.	1.1. Applicable safety (OHS), licensing, legislative and organisational requirements relevant to operating a tower crane are verified and complied with. 1.2. Work order is reviewed, confirmed and clarified with appropriate personnel. 1.3. Type of operations to be conducted with a tower crane are assessed and prepared. 1.4. Equipment is selected appropriate to work requirements and checked for operational effectiveness in accordance with manufacturer recommendations. 1.5. Tower crane operations are planned in accordance with site procedures and legislative requirements. 1.6. Environmental protection measures are adhered to in accordance with environmental plans and regulations. 1.7. Communication with others is established and maintained in accordance with OHS requirements.
2. Inspect and test tower crane.	2.1. Tower crane is visually inspected prior to operation for any evidence of damage, structural weakness or interference according to pre-operational safety check procedures. 2.2. Pre start-up checks are carried out on equipment in accordance with manufacturer recommendations and specifications. 2.3. Tower crane controls and functions, including manoeuvrability, emergency functions, gear and accessories are checked for serviceability and any faults are rectified or reported. 2.4. Tower functions are checked after start-up, and monitored throughout operation. 2.5. Site hazards associated with tower crane operations are detected, risks assessed and safe operating techniques used to eliminate or control risks.
3. Operate tower crane.	3.1. Barriers and signage are used to isolate the work area in accordance with safe work practices and load shifting requirements. 3.2. Tower crane is operated to work instructions in accordance with company operating procedures and manufacturer specifications. 3.3. Communication practices associated with lifting and

ELEMENT	PERFORMANCE CRITERIA
	moving loads are conducted in accordance with work site procedures and are confirmed between parties.
	3.4. Crane is climbed in accordance with manufacturer specifications and safety regulations.
	3.5. Start-up and shutdown procedures are performed in accordance with manufacturer specifications and site requirements.
	3.6. Weight of load is confirmed as being within the lifting capacity and operating radius of the crane.
	3.7. Lifting gear is selected, attached and used in accordance with working load limits and OHS legislation.
	3.8. Crane movements are checked for safe operation and load is prepared for lifting in accordance with crane, dogging and rigging requirements.
	3.9. Load is manoeuvred to position using the control systems to manufacturer specifications, continually monitored throughout its travel and tasks are completed effectively.
	3.10. Load is lifted and moved in accordance with agreed crane schedule and conventional hand and audible signals that meet OHS legislation and work site procedures.
	3.11. Load is constantly monitored to ensure safety to personnel, load and structural stability with monitoring systems and alarms immediately acted upon in accordance with site requirements.
4. Shut down tower crane.	4.1. Tower crane is shut down using the correct sequence of procedures in accordance with manufacturer recommendations and specifications.
	4.2. Routine post-operational checks are carried out in accordance with manufacturer specifications.
	4.3. Tower crane operations and faults are recorded and reported to the appropriate personnel.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

REQUIRED SKILLS AND KNOWLEDGE

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

Required skills

Required skills for this unit are:

- communication skills to:
 - clarify and confirm work order with appropriate personnel
 - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
 - follow instructions
 - participate in on-site meetings
 - read and interpret:
 - instructions
 - work orders
 - other relevant documentation
 - report faults and respond appropriately
 - use a range of communication technologies and equipment
 - use and interpret non-verbal communication
 - use language and concepts appropriate to cultural differences
 - written skills to document hazards and record and report faults relating to conducting tower crane operations
- compliance with legislation, regulations, standards, codes of practice and established safe practices and procedures for conducting tower crane operations
- efficiently and safely conduct tower crane operations
- numeracy skills to calculate rated capacity, working load limits and load charts
- use and maintain relevant tools, machinery and equipment
- use appropriate communication and interpersonal techniques with colleagues and others
- verify problems and equipment faults and demonstrate appropriate response procedures.

Required knowledge

Required knowledge for this unit is:

- appropriate mathematical procedures for estimation and measurement
- environmental protection requirements relating to the disposal of waste material
- established communication channels and protocols in the workplace
- federal, and state or territory OHS legislation, regulations, standards and codes of practice relevant to the full range of processes for conducting tower crane operations
- job safety analysis (JSA) and safe work method statements

REQUIRED SKILLS AND KNOWLEDGE

- material safety data sheets (MSDS) and material handling methods
- organisational and site standards, requirements, policies and procedures for conducting tower crane operations
- procedures for recording, reporting and maintaining workplace records and information
- remote control operations and indicators
- risk assessment and management
- routine problems encountered with equipment use or adjustment and required corrective actions
- techniques for calculating rated capacity, working load limits and load charts
- tower crane capabilities and gear
- tower crane operations and operating techniques
- types of tools and equipment and procedures for their use, operation and maintenance.

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

This unit of competency could be assessed by providing evidence of safely and efficiently conducting tower crane operations according to organisational and regulatory requirements.

This unit of competency can be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of the ability to:

- comply with organisational and site policies and procedures, including quality requirements and state or territory legislation applicable to workplace operations
- comply with OHS and environmental regulations, policies and procedures
- communicate effectively and work safely with others in the work area
- conduct risk assessment and management procedures
- operate a tower crane, including all functions (including a multiple lift) to their maximum extension and travel in the lifting and moving of at least three differing load types and sizes to different locations on the site
- conduct pre and post-operational checks of the tower crane.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

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Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- workplace location or simulated workplace
- materials and equipment relevant to tower crane operations.

Specifications and work instructions. Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a

EVIDENCE GUIDE

combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Safety (OHS) is to be in accordance with state and territory legislation and regulations and project safety plan and may include:

- emergency procedures, including extinguishing fires, organisational first aid requirements and evacuation
- handling activities that may require the assistance of others or the use of manual or mechanical lifting devices where size, weight or other issues, such as disability are a factor
- hazard control
- hazardous materials and substances
- housekeeping
- organisational first aid
- personal protective equipment (PPE) prescribed under legislation, regulations and workplace policies and practices
- safe operating procedures, including the conduct of operational risk assessment and treatments associated with:
 - machines

RANGE STATEMENT

- man-made structures
- obstructions
- recently filled trenches
- restricted access barriers
- safe parking
- security from unauthorised access or movement
- signage and barricades
- surrounding structures
- traffic control
- underground or overhead services
- uneven or unstable surfaces or terrain
- work site visitors and the public
- working at heights
- working in proximity to others
- use of firefighting equipment
- use of tools and equipment
- workplace environmental requirements and safety.

Licensing includes:

- relevant recognition, permit, licence or permission to operate within any state or territory issued by the government regulatory authority of that jurisdiction.

Organisational requirements include:

- access and equity principles and practices
- consultative processes
- emergency and evacuation procedures
- equipment maintenance and storage procedures
- ethical standards
- legal, organisational and site policy or guidelines
- OHS policies
- policies and procedures relating to own role and responsibility
- procedures and programs
- quality and continuous improvement processes and standards
- quality assurance or procedures manuals
- recording and reporting procedures.

Work order includes:

- organisational work specifications and instructions issued by authorised personnel for

RANGE STATEMENT

	the operation of a tower crane and its respective tasks.
Appropriate personnel includes:	• client • colleague • manager • supervisor • supplier.
Tower crane:	• includes: • a boom or jib crane mounted on a tower structure that is demountable or permanent and includes horizontal and luffing jib types • may include: • height and jib extension • ram luffers • rope luffers and hammerheads (trolley in and trolley out) • is generally pre-erected by riggers with use of mobile cranes.
Equipment:	• includes: • lifting gear • tower cranes • workboxes and relevant maintenance equipment • may include: • emergency shutdown and stopping • extinguishing fires • organisational first aid requirements and evacuation • procedures for equipment lock-out to protect operators and co-workers from accidental injury by isolating the equipment • remote control devices (pendant control and radio control).
Legislative requirements include:	• award and organisation agreements and relevant industrial arrangements • confidentiality and privacy requirements • environmental issues • equal opportunity • industrial relations and anti-discrimination

RANGE STATEMENT

	• OHS issues • relevant industry codes of practice • relevant legislation from all levels of government that affect business operation.
<i>Environmental protection measures</i> include organisational and project requirements, including:	• clean-up management • dust and noise • vibration • waste management.
<i>Pre start-up checks</i> ensure:	• equipment has been set up correctly • gear is fitted accurately • plant is operating to optimum performance.
<i>Hazards</i> include:	• buildings • chemicals • fires • goods and materials, including hazardous materials • movement of equipment • structures • traffic • underground or overhead services • uneven or unstable surface or terrain.
<i>Barriers and signage</i> include:	• barrier tape or netting • fencing • temporary boundaries and specified safety signage.
<i>Weight of load</i> includes:	• that prescribed by manufacturer as not exceeding the allowable capacity of the tower crane.
<i>Lifting gear</i> includes:	• chains or slinging equipment • grabs.
<i>Dogging</i> includes:	• provision of directional signals to the crane operator on the position and security of the load.
<i>Rigging</i> includes:	• process of fitting and removing cables and spars to ensure structural stability and load capacity of tower cranes.
<i>Tasks</i> include operations, including:	• attachments • boom up and boom down • luff movements • outriggers

RANGE STATEMENT

Records and reports include:

- slew left and right
- telescope in and out
- trolley in and trolley out
- winch up and down in combination.
- conclusions
- costs
- dangerous occurrences or equipment malfunctions using logbooks
- difficulties or issues faced
- environmental issues
- hazards
- incidents or injuries
- pro formas
- production reports
- recommendations and maintenance records
- recommendations for future work
- results
- tower crane operations and maintenance of equipment.

Unit Sector(s)

Unit sector Construction

Co-requisite units

Co-requisite units Nil

Functional area

Functional area

