



Australian Government

Department of Education, Employment and Workplace Relations

CPCCRI3014A Perform advanced structural steel erection

Release: 1

CPCCR13014A Perform advanced structural steel erection

Modification History

Not Applicable

Unit Descriptor

Unit descriptor This unit of competency specifies the outcomes required to erect or install advanced permanent steel structures, coordinating the slinging, stability, lifting, moving and placement of loads in conjunction with the crane operator.

It includes equipment selection, load distribution and calculation.

Application of the Unit

Application of the unit This unit supports the attainment of skills and knowledge to erect and install permanent steel structures, which includes working with others and as a member of a team.

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units

CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry
CPCCR13012A	Perform basic rigging

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.	1.1. Work instructions, including plans, specifications, quality requirements and operational details are obtained from relevant information, confirmed and applied to the scope of work to be performed. 1.2. Safety (OHS) requirements are followed in accordance with safety plans and policies. 1.3. Signage and barricade requirements are identified and implemented. 1.4. Plant, tools and equipment selected to carry out tasks are consistent with the requirements of the job, checked for serviceability and any faults are rectified or reported prior to commencement. 1.5. Material quantity requirements are calculated in accordance with plans, specifications and quality requirements. 1.6. Materials appropriate to the work application are identified, obtained, prepared, safely handled and located ready for use. 1.7. Environmental requirements are identified for the project in accordance with environmental plans and statutory and legislative authority obligations and applied.
2. Select equipment.	2.1. Resources, materials and equipment are selected in accordance with load charts and inspected for compliance with job specifications. 2.2. Lifting equipment is inspected according to manufacturer specifications. 2.3. Lifting and load shifting equipment identified as inconsistent with manufacturer specifications is labelled, rejected and disposed of to prevent its use in any circumstance. 2.4. Elevated work platforms and other means of mechanical access systems are determined and selected where specified. 2.5. Fall arrest equipment is installed. 2.6. Personnel cartage systems are identified and selected.
3. Connect equipment.	3.1. Loads are slung to protect the load and prevent damage to the slings. 3.2. Whole or part loads are secured to prevent uncontrolled movement.

ELEMENT	PERFORMANCE CRITERIA
	3.3. Slings, or parts of slings, are attached to the load and positioned to ensure safe movement. 3.4. Slings, or parts of slings, are attached to hook while the hoist wire is vertical. 3.5. Tag lines are attached to the load where specified. 3.6. Test lifts are performed to ensure safe and secure movement of the load where specified.
4. Move and position loads.	4.1. Load destination is determined and landing area prepared to accept the load. 4.2. Lifting or pulling device is assembled and erected where specified. 4.3. Load is safely moved to required destination and secured in position to client specifications or job requirements. 4.4. Standard communication signals are used to coordinate safe movement of the load.
5. Remove rigging equipment.	5.1. Lifting/moving equipment and packing is dismantled, lowered and inspected for wear. 5.2. Logbook and site records are completed to company requirements.
6. Clean up.	6.1. Work area is cleared and materials disposed of, reused or recycled in accordance with legislation, regulations, codes of practice and job specification. 6.2. Plant, tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturer recommendations and standard work practices. 6.3. Work completion procedures are applied and relevant personnel notified that work is finished.

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:

REQUIRED SKILLS AND KNOWLEDGE

- read and interpret:
 - documentation from a variety of sources
 - drawings and specifications
- use language and concepts appropriate to cultural differences
- use and interpret non-verbal communication, such as hand signals
- written skills to complete logbooks, site records and relevant work completion procedures
- identifying and accurately reporting to appropriate personnel any faults in tools, equipment or materials
- organisational skills, including the ability to plan and set out work
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technological skills to:
 - use a range of mobile technology, such as two-way radio and mobile phones
 - voice and hand signals to access and understand site-specific instructions.

Required knowledge

Required knowledge for this unit is:

- basic rigging equipment and techniques
- crane operations and limitations
- designs and functions of lifting equipment
- general construction terminology
- job safety analysis (JSA) and safe work method statements
- material safety data sheets (MSDS)
- materials storage and environmentally friendly waste management
- plans, drawings and specifications
- plant, tools and equipment types, characteristics, uses and limitations
- processes for the calculation of material requirements
- quality requirements
- relevant Acts, regulations and codes of practice
- relevant Australian standards
- signalling methods and communications
- workplace and equipment safety requirements.

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 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:

- locate, interpret and apply of relevant information, standards and specifications
- comply with site safety plan and OHS legislation, regulations and codes of practice applicable to workplace operations
- comply with organisational policies and procedures, including quality requirements
- safely and effectively use tools, plant and equipment
- communicate and work effectively and safely with others
- complete the erection of a portal frame building, including trusses, bracing, purlins and girts, incorporating at least one strongback lift and one bowstring lift, all in accordance with manufacturer and engineer's specifications.

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.

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

Resource implications for assessment include:

- an induction procedure and requirement

EVIDENCE GUIDE

- realistic tasks or simulated tasks covering the mandatory task requirements
- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry related systems information.

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,

EVIDENCE GUIDE

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 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.

Information includes:

- diagrams or sketches
- instructions issued by authorised organisational or external personnel
- manufacturer specifications and instructions, where specified
- MSDS
- memos
- regulatory and legislative requirements pertaining to performing advanced structural steel erection
- relevant Australian standards
- safe work procedures relating to performing

RANGE STATEMENT

Scope of work:

advanced structural steel erection

- signage
- verbal, written and graphical instructions
- work bulletins
- work schedules, plans and specifications.
- planning and preparation includes work site inspection, equipment defect identification, assessment of conditions and hazards and determination of work requirements
- calculations include load charts, fleet angles, diverter sheaves, lead loads, head loads, load angle factors, multiple fall, load share, pre-cast compliance charts and safe working loads
- sling types include chain and flexible steel wire rope
- load slinging methods include straight sling, adjustable sling, reeved sling and inclined sling
- types of cranes include fixed cranes, tower cranes, hydraulic mobile cranes, lattice boom mobile cranes, slewing cranes, non-slewing cranes and gantry cranes
- advanced lifting techniques include strongbacks and bowstrings
- steel components include columns, beams, bracing, rafters, purlins, girts, bridging and fly bracing, trusses, freestanding structures and portal frame buildings.
- 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 a disability are a factor
- hazard control
- hazardous materials and substances, including cement and curing agents
- organisational first aid
- PPE prescribed under legislation, regulations and workplace policies and practices
- safe operating procedures, including the conduct of operational risk assessment and

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

RANGE STATEMENT

treatments associated with:

- earth leakage boxes
- lighting
- power cables, including overhead service trays, cables and conduits
- restricted access barriers
- surrounding structures
- traffic control
- trip hazards
- working at heights
- work site visitors and the public
- working in confined spaces
- working in proximity to others
- use of firefighting equipment
- use of tools and equipment
- workplace environmental requirements and safety.

Tools and equipment:

- include:
 - air winches
 - chain blocks
 - chain winches
 - come alongs
 - drifts
 - eye bolts
 - hammers
 - hand operated creeper winches
 - jacks
 - podgers spanners
 - pulley blocks
 - shackles
 - shifting spanners
 - sledge hammers
 - spirit levels and automatic levels
 - tape measures
 - trolleys
 - turn buckles
 - wedges
 - wrenches

RANGE STATEMENT

- may include:
 - angle grinders
 - elevated work platforms
 - explosive power tools
 - laser levels
 - lifting clutches and snatch blocks
 - lifting lugs
 - oxy-acetylene equipment
 - pneumatic tools and scaffolding
 - rigging screws
 - skids
 - water levelling equipment.
- *Quality requirements* include relevant regulations, including:
 - Australian standards
 - internal company quality policy and standards
 - manufacturer specifications
 - workplace operations and procedures.
- *Environmental requirements* include:
 - clean-up management
 - dust and noise
 - vibration
 - waste management.
- *Statutory and regulatory authorities* include:
 - federal, state and local authorities administering the applicable Acts, regulations and codes of practice.

Unit Sector(s)

Unit sector Construction

Functional area

Functional area