Australian Government

Department of Education, Employment and Workplace Relations

CPCCCA3018A Construct, erect and dismantle formwork for stairs and ramps

Release: 1

CPCCCA3018A Construct, erect and dismantle formwork for stairs and ramps

Modification History

Not Applicable

Unit Descriptor

Unit descriptor	This unit of competency specifies the outcomes required to construct, erect and dismantle formwork for stairs and ramps to form up the concrete that may involve one or more flights in order to provide access between floors and/or landings. It includes timber, metal or prefabricated formwork.

Application of the Unit

Application of the unit	This unit of competency supports achievement of skills to construct basic formwork for a variety of materials for pouring of concrete stairs in a range of construction projects, 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

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, confirmed and applied from relevant ***information*** for ***planning and preparation*** purposes. 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 job requirements, 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 regulatory authority*** obligations, and are applied.
2. Set out formwork.	2.1. Design of ***stairs and/or ramps*** and method of joining ***formwork*** are identified from job drawings and specifications, and are checked to be in accordance with legislation, regulations and codes of practice. 2.2. Exit and ground finish levels are determined from plans, specifications and site inspection. 2.3. Rise, going and pitch of stairs and ramp are determined from plans, specifications, site inspection, rise measurements and requirements of Building Code of Australia (BCA). 2.4. Full size set out of stairs and ramp is ***calculated*** and made to determine rise, going and pitch of stairs to provide location of landings, stringers, treads and posts where specified. 2.5. Location of stair, ramp and newels are determined from plans, specifications and pitch of stairs or full size set out. 2.6. Location of footings are set out to layout of designed stairs and ramp from plans, specifications or full size set out, where specified. 2.7. Materials for formwork, including stringers, are selected and set out to pitch of stairs with rises not

ELEMENT	PERFORMANCE CRITERIA
	exceeding specified space between treads.
3. Assemble and erect formwork.	3.1. Landing bearers and joists are placed, fixed and braced according to plans and specifications, where specified. 3.2. Footings are checked for accuracy to requirements of plans and specifications. 3.3. Stairs and/or ramp formwork soffit is erected and braced in accordance with plans and specifications. 3.4. Formwork stringers are cut square to length and shape in accordance with set out and junction with newel posts, and are installed and braced. 3.5. Metal angle brackets are screwed/bolted to formwork strings to set out locations of tread support. 3.6. Formwork strings for stairs and ramps are located and fixed according to plans and specifications. 3.7. Material for face of treads is set out, cut square to length and fixed to metal angle bracket according to plans and specifications. 3.8. Risers are braced at mid-span to prevent deflection under the load of wet concrete. 3.9. Newels are erected and temporarily braced to plumb position, where specified. 3.10. Formwork tie bolts are located and secured to plans and specifications to maintain stair width where specified.
4. Strip formwork.	4.1. Formwork and bracing are removed sequentially and safely. 4.2. Timber components are de-nailed, cleaned and stored or stacked safely for reuse or removal from site. 4.3. Steel components are cleaned, oiled and stored or stacked to manufacturer's maintenance recommendations. 4.4. Damaged formwork components are safely discarded after stripping.
5. Clean up.	5.1. Work area is cleared and materials disposed of, reused or recycled in accordance with legislation, regulations, codes of practice and job specification. 5.2. Plant, tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturer recommendations and standard work practices.

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:
  - determine requirements
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - follow instructions
  - read and interpret:
    - documentation from a variety of sources
    - plans, specifications and drawings
  - report faults
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
- numeracy skills to apply measurements and make calculations
- 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:

- application and requirements for line, level and plumb in construction projects
- construction terminology
- formwork materials and techniques
- job safety analysis (JSA) and safe work method statements
- material safety data sheets (MSDS)
- materials storage and environmentally friendly waste management
- plans, specifications and drawings
- plant, tools and equipment types, characteristics, uses and limitation
- processes for setting out and measuring
- processes for calculating material requirements
- quality requirements for formwork for stairs and ramps

REQUIRED SKILLS AND KNOWLEDGE

- regulations on stair construction for safe use, including disability access
- stair and ramp construction
- 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 relevant information, standards and specifications • comply with site safety plan, OHS regulations and state and territory legislation 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 a site assessment to determine levels and stair dimensions • apply the height and going of stairs to construct, erect and dismantle the formwork for a flight of stairs (free standing or against a wall), including a landing, with a minimum rise of flight of 1800mm • complete the construction, erection and dismantling of a ramp with a rise of 400mm.

EVIDENCE GUIDE

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 • 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.

EVIDENCE GUIDE

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 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

RANGE STATEMENT

- manufacturer specifications and instructions where specified
- memos
- MSDS
- organisation work specifications and requirements
- plans and specifications
- regulatory and legislative requirements pertaining to constructing, erecting and dismantling formwork for stairs and ramps
- relevant Australian standards
- safe work procedures related to constructing, erecting and dismantling formwork for stairs and ramps
- signage
- verbal or written and graphical instructions
- work bulletins
- work schedules.

RANGE STATEMENT

Planning and preparation include:	• work site inspection • equipment defect identification • assessment of conditions and hazards • determination of work requirements.
Safety (***OHS***) is to be in accordance with state or territory legislation, regulations, codes of practice, organisational safety policies and procedures, and project safety plan and may include:	• emergency procedures, including extinguishing fires, organisational first aid requirements and evacuation • handling of materials • hazard control • hazardous materials and substances • organisational first aid • personal protective clothing and equipment prescribed under legislation, regulations and workplace policies and practices • traffic control • use of firefighting equipment • use of tools and equipment • work site visitors and the public • working at heights • working in proximity to others • workplace environment and safety.
Tools and equipment include:	• air compressors and hoses • automatic levels • chisels • explosive power tools • grinders • hammers • hand saws • laser levels • marking equipment • measuring tapes and rules • nail bags • nail guns • optical levelling equipment • pinch bars • power drills • power leads • power saws • props • saw stools • scaffolding

RANGE STATEMENT

- shovels
- spanners
- spirit levels
- squares (combination/tri)
- steel squares and bevels
- string lines.

RANGE STATEMENT

Quality requirements include relevant regulations, including:	• Australian standards • internal company quality policy and standards • manufacturer specifications, where specified • workplace operations and procedures.
Materials include:	• bolts and nuts • boxing (either timber, metal, masonry, fibre cement sheeting and reconstituted timber products) • coach screws • masonry anchors • metal brackets • nails and spikes • patented metal fasteners • steel tie rods.
Environmental requirements include:	• clean-up protection • noise and dust • vibration • waste management.
Statutory and regulatory authorities include:	• federal, state and local authorities administering applicable Acts, regulations and codes of practice.
Stairs and/or ramps include:	• either free standing or against a wall, including within a stairwell and incorporating structural steel for support of newels, handrails and landings • may be straight, curved or geometrical.
Formwork:	• includes prefabricated or in situ, but is to be rigid to withstand the mass of wet concrete and actions imposed during placement • for construction of formwork it is critical to comply with regulations and specifications for height, level and loadings • includes timber, metal and can use prefabricated components.
Calculated:	• can be using simple mathematics or trigonometry.

Unit Sector(s)

Unit sector Construction

Co-requisite units

Co-requisite units Nil

Functional area

Functional area