



Australian Government

CPCCCO3050A Carry out high performance concreting

Release 1

CPCCCO3050A Carry out high performance concreting

Modification History

This version first released with CPC08 Construction, Plumbing and Services Training Package Version 9.

- Changes to performance criteria, required skills and knowledge, range statement, and methods of assessment
- Range of other minor editorial changes

Not equivalent to CPCCCO3030A Carry out high performance concreting

Unit Descriptor

This unit of competency specifies the outcomes required to plan, prepare and place high performance concrete onto structures requiring high strength attributes and durability. The unit includes the finish of high performance concrete. It may also include working with others and as a member of a team.

Application of the Unit

This unit of competency applies to a variety of structures, such as bridges, airport runways, dams, cooling towers, foundation supports for high rise facilities, roadways and tunnels.

Licensing/Regulatory Information

Licensing, legislative, regulatory or certification requirements apply to concreting work in different states and territories. Candidates are advised to consult with the relevant regulatory authorities.

Pre-Requisites

CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry
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Employability Skills Information

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

Elements and Performance Criteria

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|---|----------------------------------|--|
| 1 | Plan and prepare. | <p>1.1 Work instructions, <i>work health and safety (WHS) requirements</i> and other <i>information</i> relevant to the work are identified, confirmed and applied for <i>planning and preparation</i> purposes.</p> <p>1.2 Plant, <i>tools and equipment</i> consistent with job requirements are selected and checked for serviceability, and faults are rectified and reported before work begins.</p> <p>1.3 Material quantity requirements are identified and calculated according to plans, specifications and <i>quality requirements</i>.</p> <p>1.4 Materials appropriate to the work application are obtained, prepared, safely handled and located ready for use.</p> <p>1.5 <i>Environmental requirements</i> are identified for the project according to environmental plans and regulatory requirements.</p> |
| 2 | Place high performance concrete. | <p>2.1 Concrete tests for each specified performance property are performed according to specifications and associated testing standards.</p> <p>2.2 Once transported, <i>high performance concrete</i> is discharged correctly into formwork, using correct mechanical or manual handling techniques and processes.</p> <p>2.3 High performance <i>concrete is placed</i> by technique nominated in specifications to ensure timely placement</p> |

and to avoid material segregation.

- 2.4 High performance concrete is compacted/vibrated and **screeded** to the nominated criteria into designated formwork according to specifications and supporting drawings.
- 2.5 High performance concrete is **finished** to specified thickness and height.
- 2.6 High performance concrete curing regime is applied as per specifications to include a selection of curing methods, which are then documented.
- 2.7 Concrete is protected from damage and pollution during construction using a plastic membrane.

3 Clean up.

- 3.1 Work area is cleared and materials disposed of, reused or recycled according to regulations, codes of practice and job specification.
- 3.2 Plant, tools and equipment are cleaned, checked, maintained and stored according to manufacturer recommendations and standard work practices.

Required Skills and Knowledge

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

Required skills

- learning skills to:
 - evaluate own actions and make judgments about performance and necessary improvements
 - respond to change, such as differences in work site, and environmental and quality requirements
- numeracy skills to:
 - check levels of lubricants in tools
 - calculate and confirm correct quantities of materials for work tasks
- oral communication skills to:
 - enable clear and direct communication, using questioning to identify and confirm requirements, and share information
 - report work site hazards to appropriate personnel, including faults in tools, equipment or materials
 - use language and concepts appropriate to cultural differences
- reading skills to:
 - interpret documentation, including drawings and specifications
 - understand written instructions, procedures and signage
 - interpret manufacturer instructions for safely handling tools and equipment
- writing skills to complete pre-operational checklists and equipment fault forms

Required knowledge

- general construction terminology
- processes for calculating material requirements
- properties, strength and performance of concrete:
 - placement, finishing and curing techniques
 - concrete testing techniques
 - high performance concrete materials and techniques
- quality requirements:
 - internal organisational quality policy and standards
 - manufacturer specifications where specified
 - relevant regulations and Australian standards
 - workplace operations and procedures

- substructure construction
- processes for material storage and environmentally friendly waste management
- types, characteristics, uses and limitations of plant, tools and equipment used in carrying out high performance concreting
- types, location and use of relevant safety information:
 - job safety analyses (JSA) and safe work method statements (SWMS)
 - safety data sheets (SDS)
 - safety manuals and instructions for plant, tools and equipment
 - signage
 - environmental and work site safety plans
- workplace and equipment safety requirements

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 undertaking a range of tasks 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 should demonstrate the ability to:

- complete planning, preparation, placement, finishing and curing of 10 square metres of high performance concrete to engineer's specifications
- locate, interpret and apply relevant information, standards and specifications relating to carrying out high performance concreting
- comply with site safety plans and procedures
- comply with organisational policies and procedures relating to carrying out high performance concreting while maintaining quality requirements outlined in job specifications
- safely and effectively operate and use plant, tools and equipment required to carry out high performance concreting
- communicate and work effectively and safely with others.

Context of and specific resources for assessment Assessment of this unit:

- must be in the context of the work environment
- may be conducted in an off-site context, provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills
- must meet relevant compliance requirements.

Resource implications for assessment include:

- an induction procedure
- realistic tasks or simulated tasks covering the mandatory task requirements
- 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
- research resources and industry-related systems information

	• safety data sheets.
Method of assessment	Assessment for this unit must verify the practical application of the required skills and knowledge, using a combination of the following methods: • direct observation of tasks in real or simulated work conditions • questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application • review of relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.
Guidance information for assessment	This unit could be assessed on its own or in combination with other units relevant to the job function. 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. 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.

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.

<i>Work health and safety requirements</i> must comply with state and territory legislation and regulations and project safety plan, and may include:	• assistance of others or the use of manual or mechanical lifting devices with handling activities where size, weight or other issues, such as disability, are a factor • emergency procedures, including extinguishing fires, organisational first aid requirements, and evacuation procedures • hazard control • hazardous materials and substances • personal protective equipment (PPE) prescribed under legislation, regulations and workplace policies and practices • safe operating procedures, including the conduct of
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operational risk assessment and 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
- work site visitors and the public
- working at heights
- working in confined spaces
- working in proximity to others
- working outdoors in warm climates
- use of firefighting equipment
- use of tools and equipment
- workplace environmental requirements and safety.
- instructions issued by authorised organisational and external personnel
- memos
- regulatory and legislative requirements relating to carrying out high performance concreting, including relevant Australian standards
- safe work procedures relating to carrying out high performance concreting
- safety data sheets
- signage
- verbal, written and diagrammatical instructions, including manufacturer specifications and instructions where specified
- work bulletins
- work schedules, plans and specifications.
- assessing conditions and hazards
- determining work requirements and safety plans and procedures
- identifying and rectifying equipment defects
- inspecting work sites.
- must include:
 - bull floats
 - composite floats
 - immersion vibrators
 - magnesium floats

Information may include:

Planning and preparation must include:

Tools and equipment:

- power floats
- rakes
- screed boards
- shovels
- steel trowels
- vibrating screeds
- may include:
 - bolt cutters
 - brooms
 - concrete kibbles
 - curing compounds applicators
 - edging tools
 - measuring tapes
 - nips
 - tarpaulins and covers
 - tremmies
 - wheelbarrows
 - wooden floats.

Quality requirements
must include:

- internal organisational quality policy and standards
- manufacturer specifications where specified
- relevant regulations and Australian standards
- workplace operations and procedures.

Materials:

- must include high performance concrete
- may include:
 - curing compounds
 - a range of specialist additives.

Environmental requirements may include:

- clean-up management
- dust and noise control
- vibration management
- waste management.

High performance concrete includes the following applications:

- airport runways
- bridges
- columns
- cooling towers
- dams
- foundation supports for high rise facilities
- foundations
- gutters
- hardstands
- kerbs

- pathways
 - pits
 - plinths
 - roadways
 - slabs
 - stairs
 - tunnels
 - walls.
 - kibble
- Concrete placing**
methods may include:
- pumping equipment
 - shovelling
 - tremmies
 - truck-placed
 - vibrating
 - wheelbarrows.
- Screeding:**
- must include a hand screed
 - may include:
 - a mechanical vibrating screed
 - magic screeds.
- Finishing** techniques
may include:
- broom finished
 - brushed
 - bull float
 - mechanical trowelling machine
 - steel trowel
 - wood float.

Unit Sector(s)

Concreting

Custom Content Section

Not applicable.