



Australian Government

Department of Education, Employment and Workplace Relations

CPCCCO3030A Carry out high performance concreting

Release: 1

CPCCCO3030A Carry out high performance concreting

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit of competency specifies the outcomes required to plan, prepare and place high performance concrete to structures requiring high strength attributes and durability, such as bridges, airport runways, dams, cooling towers, foundation supports for high rise facilities, roadways and tunnels.

The unit also includes the finish of high performance concrete.

Application of the Unit

Application of the unit

This unit of competency supports the attainment of the understanding and skills to carry out high performance concreting, which may include 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 and operational details are obtained using relevant information, confirmed and applied 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 the requirements of the job, checked for serviceability and any faults are rectified or reported prior to commencement. 1.5. Materials 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 regulatory obligations and applied.
2. Place high performance concrete.	2.1. Concrete tests for each specified performance property are performed in accordance with specifications and associated testing standards. 2.2. High performance concrete is transported and discharged correctly into formwork, using correct mechanical or manual handling techniques and processes. 2.3. High performance concrete is placed by technique nominated in specifications to ensure timely placement and to avoid material segregation. 2.4. High performance concrete is placed, 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 documented and applied as per specifications to include a selection of curing methods. 2.7. Concrete is protected from damage and pollution during construction.

ELEMENT	PERFORMANCE CRITERIA
3. Clean up.	3.1. Work area is cleared and materials disposed of, reused or recycled in accordance with legislation, regulations, codes of practice and job specification. 3.2. 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
 - drawings and specifications
 - report faults
 - use language and concepts appropriate to cultural differences
 - use and interpret non-verbal communication, such as hand signals
- evaluating own actions and making judgments about performance and necessary improvements
- 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
- recognising procedures, following instructions, responding to change and contributing to workplace responsibilities, such as current work site environmental and sustainability frameworks or management systems
- teamwork skills to coordinate own 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:

REQUIRED SKILLS AND KNOWLEDGE

- 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:

- general construction terminology
- high performance concrete materials
- high performance concreting techniques
- job safety analysis (JSA) and safe work method statements
- material safety data sheets (MSDS)
- materials storage and environmentally friendly waste management
- placement, finishing and curing
- plans, drawings and specifications
- processes for the calculation of material requirements
- quality requirements
- strength and performance of concrete
- substructure construction
- testing techniques
- types, characteristics, uses and limitations of plant, tools and equipment
- 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 and OHS legislation, regulations and codes of practice applicable to workplace operations
- comply with organisational policies and procedures including quality requirements
- safely and effectively operate and use tools, plant and equipment
- communicate and work effectively and safely with others
- complete planning, preparation, placement, finishing and curing of 10 square metres of high performance concrete to 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
- realistic tasks or simulated tasks covering the mandatory task requirements

EVIDENCE GUIDE

- 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, with a decision on competency only taken at the point when the assessor has complete

EVIDENCE GUIDE

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 high performance concreting
- relevant Australian standards
- safe work procedures relating to high performance concreting
- signage
- verbal, written and graphical instructions

RANGE STATEMENT

Planning and preparation
include:

- work bulletins
- work schedules, plans and specifications.
- assessment of conditions and hazards
- determination of work requirements and safety plans and policies
- equipment defect identification
- work site inspection.

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 a disability are a factor
 - hazard control
 - hazardous materials and substances
 - organisational first aid
 - PPE prescribed under legislation, regulations and workplace policies and practices
 - safe operating procedures, including the conduct of 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
 - use of firefighting equipment
 - use of tools and equipment
 - workplace environmental requirements and safety.
- Tools and equipment:***
- include:
 - bull floats

RANGE STATEMENT

- composite floats
- immersion vibrators
- magnesium floats
- 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 include:

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

Materials:

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

Environmental requirements include:

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

High performance concrete:

- is defined as a concrete that possesses strength grades greater than 50 megapascal (MPa) or other high performance parameters as designated, nominating as required by the

RANGE STATEMENT

prefix 'S' for compressive strength grades, 'SF' for flexural strength grades and 'ST' for indirect tensile strength grades

- includes applications, such as:
 - 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.

Concrete placing methods include:

- kibble
- pumping equipment
- shovelling
- tremmies
- truck placed
- vibrating
- wheelbarrows.

Compaction or vibration methods include:

- all forms of mechanical vibration, both internal and external.

Screeding:

- includes a hand screed
- may include:
 - a mechanical vibrating screed
 - magic screeds.

Finishing techniques include:

- broom finished
- brushed
- bull float

RANGE STATEMENT

- Concrete protection* includes:
- mechanical trowelling machine
 - steel trowel
 - wood float.
 - plastic membrane.

Unit Sector(s)

Unit sector Construction

Co-requisite units

Co-requisite units Nil

Functional area

Functional area