



Australian Government

Department of Education, Employment and Workplace Relations

CPCCSV6006A Evaluate the use of concrete for residential and commercial buildings up to three storeys

Release: 1

CPCCSV6006A Evaluate the use of concrete for residential and commercial buildings up to three storeys

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit of competency specifies the outcomes required to evaluate and select concrete for commercial and residential buildings of up to three storeys and a maximum floor area of 2000 square metres.

This unit relates primarily to the selection, maintenance and repair of concrete as a fundamental building material in accordance with the Building Code of Australia (BCA).

Application of the Unit

Application of the unit

This unit of competency supports the attainment of the understanding and skills to evaluate the use of concrete for residential and commercial buildings up to three storeys within the context of relevant legislation, the BCA and Australian standards.

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. Analyse properties, characteristics, constituents and mix design of concrete.	<ul style="list-style-type: none">1.1. Plastic concrete properties are stated and documented in consideration of <i>concrete types, properties and characteristics</i>.1.2. Hardened concrete properties are stated and described.1.3. Types of hydraulic cement are listed.1.4. Properties and uses of cements are listed and described.1.5. Hydration process is recorded.1.6. Sources of aggregate are listed and properties of each are recorded.1.7. Effects of impurities are recorded.1.8. Manufacture and testing of concrete is identified, <i>evaluated</i> and recorded in accordance with appropriate Australian standards.
2. Assess the requirements for concrete handling, placement, compaction, finishing and curing methods.	<ul style="list-style-type: none">2.1. Effects of site access on the selection and distribution methods listed are documented.2.2. Methods of distribution of concrete are listed and recorded.2.3. Correct placement methods for level slabs, sloping slabs and vertical walls are recorded.2.4. Reasons and effects of compaction on both plastic and hardened concrete are identified and listed.2.5. Immersion, surface and form vibration are compared and recorded.2.6. Causes of surface defects during concrete placement and compaction are identified and recorded.2.7. Finishing process and surface treatments to slab concrete are compared and documented.2.8. Type of curing methods and detrimental effects of poor or no curing are identified and recorded.
3. Identify concrete faults and repair methods.	<ul style="list-style-type: none">3.1. Live and dormant cracks are identified and reported.3.2. Repair methods for cracked concrete are established and reported.3.3. Causes of concrete cancer are identified and recorded.3.4. Repair methods for concrete cancer are established and reported.3.5. Diagnosis of faults in concrete are identified and recorded.
4. Assess the effect of fire on concrete.	<ul style="list-style-type: none">4.1. Detrimental effects of fire and heat on reinforced concrete are documented.4.2. Properties of concrete as an insulator to steel are

ELEMENT

PERFORMANCE CRITERIA

- documented.
- 4.3. Fire test results are used to determine behavioural performance of concrete in fire.
- 4.4. Methods of fire protection to concrete elements are recorded.
- 4.5. Methods of repair to fire damaged concrete are identified and reported.

ELEMENT	PERFORMANCE CRITERIA
5. Identify environmental issues and new technologies that affect concrete.	5.1. Environmental impact on the use of concrete in buildings relating to sustainability and supply of materials, cost, life cycle of concrete, thermal mass of concrete and recycling is documented. 5.2. New technologies in concrete are recorded. 5.3. Performance characteristics of concrete in fire resistant construction are identified and documented in accordance with acceptable standards of practice.
6. Determine cost-effectiveness and environmental issues when dealing with recycled materials.	6.1. Cost-effectiveness of using recycled materials and related environmental considerations are identified and selected in accordance with acceptable standards of practice.

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:

- ability to recognise procedures, follow instructions, respond to change and contribute to workplace responsibilities, such as current work site environmental and sustainability frameworks or management systems
- communication skills to:
 - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
 - evaluate own actions to make judgements about performance and necessary improvements
 - read and interpret:
 - Australian standards
 - BCA
 - legislation
 - other relevant documentation
 - use language and concepts appropriate to cultural differences
 - use and interpret non-verbal communication
 - written skills to:
 - provide an evaluation

REQUIRED SKILLS AND KNOWLEDGE

- report data, findings, recommendations and strategies
- numeracy skills to calculate workplace requirements
- teamwork skills to work effectively with others.

Required knowledge

Required knowledge for this unit is:

- authorities and powers of a building surveyor
- nature of materials and effect on performance
- processes for the administration and preparation of documentation
- processes for the interpretation of reports, working drawings and specifications
- relevant federal, state or territory legislation and local government policy and procedures
- research methods
- structural and design principles for buildings.

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:

- comply with OHS regulations applicable to workplace operations
- apply organisational management policies and procedures, including quality assurance requirements where appropriate
- evaluate the choice and application of concrete and its subsequent maintenance; and associated reporting of data, findings, recommendations and strategies for at least one commercial and one residential building project or equivalent in compliance with relevant legislation
- provide reports to appropriate body/individual as determined by the project brief.

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

EVIDENCE GUIDE

- 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 confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured

EVIDENCE GUIDE

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.

Concrete types, properties and characteristics include:

- admixtures:
 - air entraining agents
 - set controlling types
 - water reducing types
 - water reducing and set controlling types
- building types:
 - bridge and pier construction
 - concrete column or wall ten metres high
 - concrete skeleton and slabs
 - slab on ground floor
- curing methods:
 - accelerated curing
 - continuously wetting concrete
 - impermeable membrane curing
- effects of weather:
 - hot and cold

RANGE STATEMENT

- Evaluated* includes:
- windy
 - mix design:
 - aggregate grading and first principles
 - reinforced concrete design principles using steel wire and fibres
 - selected applications using statistics.
 - environmental considerations and adherence to legislative requirements for BCA Class 2 to 9 buildings.

Unit Sector(s)

Unit sector Construction

Co-requisite units

Co-requisite units Nil

Functional area

Functional area