



Australian Government

Department of Education, Employment and Workplace Relations

CPCCBC4049A Apply structural principles to construction of swimming pools and spas

Release: 1

CPCCBC4049A Apply structural principles to construction of swimming pools and spas

Modification History

Not Applicable

Unit Descriptor

Unit descriptor This unit of competency specifies the outcomes required to apply structural principles to indoor and outdoor permanent swimming pool and spa building using conventional methods. The unit addresses those structures classified by the Building Code of Australia (BCA).

Application of the Unit

Application of the unit This unit of competency supports the needs of builders, site managers, forepersons and other managers in the building and construction industry responsible for overseeing and managing the building of swimming pools and spas.

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. Apply structural principles to the planning of swimming pool and spa building.	<p>1.1. Main <i>structural principles</i> that apply to the building of a swimming pool or spa are identified.</p> <p>1.2. Structural performance of a swimming pool or spa is described in terms of the effect of the section properties of various materials.</p> <p>1.3. Structural performance characteristics of swimming pool and spa shells in a range of materials are explained and applied to the planning of the construction work.</p> <p>1.4. Demolition of existing structures is coordinated in accordance with legislative and planning requirements and safe work practices.</p>
2. Analyse and plan for the structural integrity of indoor and outdoor permanent swimming pools and spas.	<p>2.1. Relevant <i>industry professionals</i> are consulted as required to provide advice regarding the design process and structural integrity of the proposed swimming pool or spa.</p> <p>2.2. Collect and analyse <i>project documentation</i> to assist in the analysis of plans and specifications.</p> <p>2.3. Project documentation is analysed for compliance with the BCA requirements for earthquake environments.</p> <p>2.4. New and emerging building technologies are assessed for application to the construction process and their compliance with BCA requirements and Australian standards.</p> <p>2.5. Pre-commencement site inspection is conducted to confirm analysis.</p>
3. Plan, coordinate and manage the excavation of swimming pool and/or spa site.	<p>3.1. Excavation is set out in accordance with the building's plans.</p> <p>3.2. Structural integrity of the excavation specified in the building's plan is assessed for compliance with relevant codes and accepted industry construction principles.</p> <p>3.3. Damp coursing and provision of termite barriers and other relevant techniques are planned, implemented and checked in accordance with codes, standards and industry practice.</p>
4. Plan, coordinate and manage the building of the structural and non-structural swimming pool and/or spa shell.	<p>4.1. Technical construction principles and performance of <i>materials</i> used in the construction are identified and analysed in the planning of the building and construction project.</p> <p>4.2. Application of bracing requirements, tie-downs, tolerances, allowances and fixing, and installation of</p>

ELEMENT	PERFORMANCE CRITERIA
5. Plan, coordinate and manage the finishing and water integrity of swimming pool and/or spa structure.	<p>components are planned, implemented and checked for compliance with manufacturer specifications and relevant Australian standards and codes.</p> <p>5.1. Installation of the finishing materials as specified in the building's plan is supervised and checked for compliance with standards and accepted industry construction principles.</p>

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:

- apply Australian standards and codes and manufacturer specifications
- apply BCA structural principles to swimming pools and spas
- communication skills to:
 - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
 - consult with industry professionals
 - read and interpret project documentation
 - use and interpret non-verbal communication
 - use language and concepts appropriate to cultural differences
- identify and analyse relevant information
- select structural members based on project or specification requirements
- work safely to OHS regulations and site requirements.

Required knowledge

Required knowledge for this unit is:

- building and construction industry contracts
- relevant state or territory building and construction codes, standards and government regulations applying to swimming pools and spas
- underlying mathematics related to structural analysis
- workplace 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 by application of appropriate structural principles to construction of a swimming pool and spa. This unit of competency can 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:

- assess the structural integrity of a variety of swimming pool and spa structures
- apply the structural principles behind the safe erection and demolition of a swimming pool or spa
- apply technical construction principles to the appropriate selection, integration and building in of construction elements and components
- coordinate, plan, implement and check the building of a swimming pool and/or spa.

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:

- documentation that should normally be available in either a building or construction office
- relevant codes, standards and government regulations
- office equipment, including calculators, photocopiers and telephone systems

EVIDENCE GUIDE

- computers with appropriate software to view 2-D CAD drawings, run costing programs and print copies
- a technical reference library with current publications on measurement, design, building construction and manufacturers' product literature
- a suitable work area appropriate to the construction process.

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

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- 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.

Structural principles include:

- behaviour of structural materials
- loads and loading
- performance of beams
- section properties
- solution of force systems.

Industry professionals include:

- architects
- draftspersons
- engineers
- quantity surveyors
- surveyors.

Project documentation includes:

- building approval plans
- contract plans
- design and specifications, including engineer's design and specifications
- original contour survey plans
- registered plans

RANGE STATEMENT

- Materials* typically used include:
- site plans
 - soils investigation reports.
 - concrete
 - concrete block
 - fibreglass
 - reinforcing steel.

Unit Sector(s)

Unit sector Construction

Co-requisite units

Co-requisite units Nil

Functional area

Functional area