



**Australian Government**

# **CPCCB5018 Apply structural principles to the construction of buildings up to three storeys**

**Release: 2**

# **CPCBC5018 Apply structural principles to the construction of buildings up to three storeys**

## **Modification History**

Release 2 Updated reference to general construction induction training program.

Release 1 This version first released with CPC Construction, Plumbing and Services Training Package Release 5.0.

Supersedes and is equivalent to CPCBC5018A Apply structural principles to the construction of medium rise buildings. Change to title. Updated to meet the Standards for Training Packages 2012.

## **Application**

This unit of competency specifies the outcomes required to apply structural principles to the construction of buildings up to three storeys. It includes applying structural principles that meet building codes and standards.

It applies to National Construction Code (NCC) classifications:

- Residential - Class 1 and 10 buildings, maximum three storeys
- Commercial - Class 2 to 9, Type B and C.

This unit of competency applies to builders, project managers and related construction industry professionals responsible for ensuring the structural integrity of materials as well as building and construction work so that site safety and quality control measures are maintained during residential and commercial projects.

Completion of the general construction induction training program specified by the model Code of Practice for Construction Work is required for any person who is to carry out construction work. Achievement of *CPCWHS1001 Prepare to work safely in the construction industry* meets this requirement.

Licensing, regulatory or registration requirements apply to this unit of competency in some jurisdictions. Relevant state and territory regulatory authorities should be consulted to confirm these requirements.

## **Pre-requisite Unit**

CPCBC5001 Apply building codes and standards to the construction process for Type B construction

CPCBC4053 Apply building codes and standards to the construction process for Class 2 to 9 Type C buildings

## Unit Sector

Building and Construction

## Elements and Performance Criteria

Elements describe the essential outcomes.

Performance criteria describe what needs to be done to demonstrate achievement of the element.

- |                                                          |                                                                                                                                                                 |
|----------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1 Apply structural principles to planning                | 1.1 Identify main structural principles that apply to the construction of residential and commercial buildings up to three storeys.                             |
|                                                          | 1.2 Identify structural elements from project plans and specifications.                                                                                         |
|                                                          | 1.3 Analyse and interpret performance characteristics of building materials and apply them to the planning of the construction work.                            |
| 2 Coordinate and manage site and job set-up.             | 2.1 Implement processes to analyse the stability of soils and capacity of the site to support the construction loads.                                           |
|                                                          | 2.2 Identify structural requirements for retaining walls in conjunction with related industry professionals and apply them to the planning process.             |
|                                                          | 2.3 Analyse structural function and requirements for temporary structural elements and apply to the planning process.                                           |
| 3 Coordinate and manage construction of footing systems. | 3.1 Check set-out of a building for compliance with documented building plans.                                                                                  |
|                                                          | 3.2 Assess structural performance of specified footings in the specifications for compliance with accepted construction principles and relevant building codes. |
|                                                          | 3.3 Excavate, prepare and lay footings to meet compliance with relevant building codes and accepted industry construction principles.                           |

|                                                                          |     |                                                                                                                                                 |
|--------------------------------------------------------------------------|-----|-------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                          | 3.4 | Check damp coursing, termite barriers and provisions for tie-down in accordance with building codes and standards.                              |
| 4 Coordinate and manage structural elements of the construction process. | 4.1 | Identify and analyse technical construction principles and performance characteristics of construction materials in the project plan.           |
|                                                                          | 4.2 | Manage the installation of services in accordance with building plans with allowable tolerances stated in building codes and standards.         |
|                                                                          | 4.3 | Confirm compliance of the construction processes of structural elements in conjunction with specialist personnel and implement those processes. |

## Foundation Skills

As well as the foundation skills explicit in the performance criteria of this unit, candidates require:

- technology skills to:
  - use communication tools and devices to communicate and collaborate effectively with others
  - use equipment and programs to access, extract information and develop relevant documentation.

## Unit Mapping Information

Supersedes and is equivalent to CPCCBBC5018A Apply structural principles to the construction of medium rise buildings.

## Links

Companion volumes to this training package are available at the VETNet website - <https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=7e15fa6a-68b8-4097-b099-030a5569b1ad>

# **Assessment Requirements for CPCBC5018 Apply structural principles to the construction of buildings up to three storeys**

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## **Performance Evidence**

To demonstrate competency, a candidate must meet the elements and performance criteria of this unit by applying structural design principles to one residential or commercial construction project up to three storeys, with below ground construction as specified by the National Construction Code (NCC) classification.

In doing this, the candidate must:

- accurately apply design principles relating to performance
- coordinate the support of the structural components by applying temporary structure elements
- identify typical faults and problems and rectify as required.

## **Knowledge Evidence**

To be competent in this unit, a candidate must demonstrate knowledge of:

- government building and construction legislation and regulations
- building codes, specifications and standards:
  - NCC
  - Australian Standards
  - project specifications
- design principles and behaviour of structural members undergoing stress, strain, compression, bending or combined actions
- below ground construction:
  - methods
  - structural sufficiency
  - water ingress
  - water proofing

- site safety requirements
- properties, characteristics and limitations of structural materials:
  - concrete, including reinforced, pre-stressed concrete and tilt-up panels
  - composite steel and concrete
  - masonry
  - steel (cold-formed steel) and aluminium
- applications of structural principles in buildings:
  - dead and live load calculations and characteristics
  - fire resistance of materials
  - impact of thermal effects
  - impact of time-dependent effects, including creep and shrinkage
  - impact of wind, snow, groundwater, earthquake, liquid pressure, rainwater and earth pressure actions
  - structural resistance of forms of construction
  - structural resistance of materials
- project working drawings and specifications
- work health and safety (WHS) and organisational quality procedures and processes
- temporary structural elements.

## Assessment Conditions

Assessors must meet the requirements for assessors contained in the Standards for Registered Training Organisations.

Assessment can be undertaken in the workplace or in a simulated workplace environment.

A simulated environment is one that realistically replicates workplace conditions, materials and equipment, interactions with others and workplace irregularities, and which meets industry standards for safety and environmental practices.

Candidates must have access to:

- relevant state and territory building and safety legislation, codes and standards
- environmental requirements and sustainability principles
- manufacturer's specification and installation instructions for materials specified in a project
- project plans, work drawings and specifications
- business equipment and technology, applications and software to facilitate effective application of structural principles to the construction and demolition of a building.

## Links

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