



**Australian Government**

**CPPBDN5017A Produce 2-D drawings for  
building design projects using CAD  
software**

**Release 2**

# CPPBDN5017A Produce 2-D drawings for building design projects using CAD software

## Modification History

Release 2 - minor editorial correction removal of duplicate *Element 7 Import files*  
This version first released with CPP07 Property Services Training Package Version 14.

## Unit Descriptor

This unit of competency specifies the outcomes required to produce two-dimensional (2-D) drawings for residential, commercial and industrial building design projects using computer-aided design (CAD) software.

Work in this area must be completed according to relevant legislative, industry and organisational requirements, including work health and safety (WHS) policies and procedures.

## Application of the Unit

This unit of competency supports the needs of industry personnel responsible for preparing 2-D building design drawings from instructions, sketches, drawings and plans for residential, commercial and industrial building design projects. The drawings produced and notations included should conform to Australian standards and drawing protocols.

## Licensing/Regulatory Information

Different States and Territories may have regulatory mechanisms that apply to this unit. Users are advised to consult with the relevant regulatory authorities.

## Pre-Requisites

Not applicable.

## 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 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

- |   |                                |   |
|---|--------------------------------|---|
| 1 | Create drawing template files. | 1.1 Basic drawing environment is set up according to organisational standards and industry protocols.                                 |
|   |                                | 1.2 Layering strategy is created as needed to meet standard drawing requirements.   |
|   |                                | 1.3 Architectural library is created to meet standard drawing requirements.   |
|   |                                | 1.4 Text and dimension styles are created to meet standard drawing requirements.  |
|   |                                | 1.5 Line types of different thicknesses are created to meet standard drawing requirements.  |
|   |                                | 1.6 Hatch patterns and types are created to meet standard drawing requirements.   |
|   |                                | 1.7 Title blocks are set up for different drawing sizes.  |
|   |                                | 1.8 Reference schedules are set up according to workplace and statutory requirements.   |
| 2 | Create 2-D drawings.           | 2.1 <b><i>Drawing requirements</i></b> are identified and confirmed with relevant project personnel.                                  |
|   |                                | 2.2 2-D CAD software programs and functions are used to produce different types of 2-D drawings using appropriate layers if required. |
|   |                                | 2.3 Notations, compliant with Australian standards and drawing protocols, are added to drawings as required.                          |
|   |                                | 2.4 Dimensions are added to drawings as required, and   |

scales are applied according to Australian standards and *drawing protocols*.

- |   |                          |     |   |
|---|--------------------------|-----|---|
| 3 | Import files.            | 3.1 | Digital text and drawing files from other software applications are imported into 2-D CAD drawings.                             |
|   |                          | 3.2 | External 2-D drawing files are inserted into 2-D CAD drawings.  |
|   |                          | 3.3 | Hard copy documents are scanned and saved as correct file types to import into 2-D CAD drawings.                                |
| 4 | Edit drawing components. | 4.1 | Elements that are not required are deleted or purged from drawings.   |
|   |                          | 4.2 | Editing commands are used to modify drawing elements and text.  |
| 5 | Print CAD drawings.      | 5.1 | Page layout for the drawing file is set to suit printing requirements.  |
|   |                          | 5.2 | Print parameters for the printer are set.   |
|   |                          | 5.3 | Drawings are printed on the correct media.  |
| 6 | Save and back up files.  | 6.1 | Suitable file directories are created for the drawing project.  |
|   |                          | 6.2 | Drawing files are saved for later retrieval and backed up to specified drives or directories according to workplace procedures. |
| 7 | Export files.            | 7.1 | Drawing files are created and sent to external personnel for use in different software applications.                            |
|   |                          | 7.2 | PDF files are created for relevant personnel to view completed drawings without using CAD software packages.                    |

## Required Skills and Knowledge

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

### Required skills

- communication skills to:
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - seek clarification
- creative design, drawing and drafting skills, including:
  - identifying and applying characteristics, decorative styles and text styles
  - using:
    - drafting technologies
    - drafting equipment
- numeracy skills to apply measurements and make calculations relating to scales and ratios in drawings
- planning and organising skills to ensure coordinated development of drawings
- reading skills to read and interpret:
  - plans, drawings, specifications and design briefs
  - documentation from a variety of sources
- technology skills to use information technology and 2-D CAD software
- writing skills to add notations to drawings

### Required knowledge

- architectural styles and terminology
- building materials used in building design projects, and their representation in drawings
- drafting and drawing protocols
- construction technology relating to building design projects
- functions and operation of 2-D CAD software programs
- general WHS principles and responsibilities relating to the production of 2-D CAD drawings
- hard copy and digital file management procedures
- relevant industry standards and codes of practice relating to the production of 2-D CAD drawings
- structural systems used in building design projects
- types and uses of architectural drawings

## Evidence Guide

<p>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.</p>	
<p><b>Overview of assessment</b></p>	<p>This unit of competency could be assessed in the workplace or a close simulation of the workplace environment providing that simulated or project-based assessment techniques replicate workplace conditions, materials, activities, responsibilities and procedures.</p> <p>It may be assessed on its own or as part of an integrated assessment activity involving preparation of CAD drawings, including construction detailing and material identification, for a range of typical National Construction Code (NCC) structures.</p>
<p><b>Critical aspects for assessment and evidence required to demonstrate competency in this unit</b></p>	<p>A person who demonstrates competency in this unit should provide evidence of the ability to:</p> <ul style="list-style-type: none"> <li>• use two different types of 2-D CAD software according to manufacturer specifications and organisational standards to produce at least five different types of 2-D building design drawings selected from the following: <ul style="list-style-type: none"> <li>• bracing plans</li> <li>• electrical power and lighting plans</li> <li>• floor framing plans</li> <li>• floor plans</li> <li>• house drainage plans (sewerage)</li> <li>• lot plans</li> <li>• roof drainage plans</li> <li>• roof framing plans</li> <li>• site plans</li> <li>• slab or footing layout plans</li> <li>• stormwater layout plans.</li> </ul> </li> </ul> <p>A person should also provide evidence of:</p> <ul style="list-style-type: none"> <li>• identifying and applying drawing protocols</li> <li>• identifying and applying styles, characteristics, technologies and decorative styles</li> <li>• sound understanding of the structural function of building elements</li> <li>• importing and exporting information.</li> </ul>
<p><b>Context of and specific resources for assessment</b></p>	<p>Assessment of this unit:</p> <ul style="list-style-type: none"> <li>• must be in the context of the work environment</li> <li>• may be conducted in an off-site context, provided it is realistic</li> </ul>

	<p>and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills</p> <ul style="list-style-type: none"> <li>• must meet relevant compliance requirements.</li> </ul> <p>Resource implications for assessment include access to:</p> <ul style="list-style-type: none"> <li>• suitable assessment venue and equipment, including computers with 2-D CAD software, printers, and building codes and standards</li> <li>• suitable simulated or real opportunities and resources to demonstrate competence.</li> </ul>
<p><b>Method of assessment</b></p>	<p>Assessment for this unit must verify the practical application of the required skills and knowledge, using one or more of the following methods:</p> <ul style="list-style-type: none"> <li>• written and/or oral assessment of the candidates required knowledge for the unit</li> <li>• observed, documented and/or firsthand testimonial evidence of the candidates</li> <li>• implementation of appropriate procedures and techniques for the safe, effective and efficient achievement of the required outcomes</li> <li>• identification of the relevant information and scope of the work required to meet the required outcomes</li> <li>• identification of viable options and the selection of options that best meet the required outcomes</li> <li>• consistently achieving the required outcomes.</li> </ul>
<p><b>Guidance information for assessment</b></p>	<p>This unit could be assessed on its own or in combination with other units relevant to the job function.</p> <p>Where applicable, physical resources should include equipment modified for people with disabilities.</p> <p>Access must be provided to appropriate learning and/or assessment support when required.</p> <p>Assessment processes and techniques must be culturally appropriate, and appropriate to the language and literacy capacity of the candidate and the work being performed.</p>

## 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.

***Drawing requirements***

include:

- details:
  - area analysis
  - construction notes
  - general notes
  - location of neighbouring buildings
  - services plans
  - structural information
- types of drawings, such as:
  - isometric drawings
  - plans:
    - bracing plans
    - electrical power and lighting plans
    - floor framing plans
    - floor plans
    - house drainage plans (sewerage)
    - lot plans
    - roof drainage plans
    - roof framing plans
    - site plans
    - slab or footing layout plans
    - stormwater layout plans
  - perspective drawings
  - elevations or projections
  - sections
  - structural detail.

***Drawing protocols***

include:

- abbreviations
- commonly used symbols
- dimensioning
- drawing titles
- hatched regions
- legends
- lettering standards
- line types
- numbering
- paper size
- scale
- schedules



- standard units of measurement.

## **Unit Sector(s)**

Building design

## **Custom Content Section**

Not applicable.