

**Draft 0.2**

This is a draft update to CPPSIS5065 Design basic engineering structures:  
<https://training.gov.au/Training/Details/PPSIS5065>

Changed PCs to active voice.

Many of the PCs that related to surveying and surveying equipment have ben removed.  
Also PCs have been removed where there was apparent duplication.

Dot points in performance evidence have been cross checked against the PCs and removed where already mentioned.

PC 3.1 removed and Performance Evidence clarified.  
Changed 'person' to 'candidate' in PE.

Range of Conditions (below) has not been added to this unit.

## Unit of Competency

### CPPSI5065 Design basic engineering structures

#### Modification history

Release	Comments
1	New unit of competency. This version first released with CPP Property Services Training Package Version 3

#### Application

This unit specifies the skills and knowledge required to design and create drawings for basic engineering structures. Basic engineering structures refer to small scale designs for structures, such as rural or urban roads and sewer and stormwater drainage lines. The unit covers interpreting plans and design standards and specifications, organising resources, and developing a design. The unit also covers creating engineering drawings using design software functions and features.

This unit is suitable for skilled surveying technicians and skilled spatial information systems (SIS) technicians who use a broad range of cognitive, technical and communication skills to select and apply methods and technologies to analyse information and provide solutions to sometimes complex surveying/spatial information problems. Surveying and spatial information skills are applied in a range of industry contexts including town planning, civil construction, mining, engineering, health, agriculture and defence.

All work must be carried out to comply with workplace procedures, in accordance with relevant State/Territory regulations that govern surveying work as well as work health and safety, regulations and legislation that apply to the workplace.

Cadastral surveying must be undertaken under the supervision of a registered surveyor. Users must check with the relevant regulatory state/territory authority before delivery.

No licensing, legislative, regulatory, or certification requirements apply to this unit of competency at the time of publication.

#### Prerequisite Unit

None

#### Unit Sector

Surveying and Spatial Information Services

#### Elements and Performance Criteria

1. Organise resources for design work.	1.1 Access and analyse plans, maps, planning approvals, and design and drafting specifications to define type of engineering structure. 1.2 Plan design work in consultation with appropriate persons to meet project specifications and safety requirements. 1.3 Prepare the drawing environment by setting up the hardware and software system, drawing defaults and customising menus.
2. Develop design of basic engineering structure.	2.1. Review design specifications and supplied data calculations to determine drawings, views and scale required.

	<p>2.3. Develop natural surface terrain model and cross-section and long section according to project specifications.</p> <p>2.4. Design vertical and horizontal alignment according to project specifications.</p> <p>2.5. Develop plot design, and long section plots according to project specifications.</p> <p>2.6 Calculate volume, gradients, grade intersections and cut and fill according to project requirements.</p>
3. Create engineering drawings.	<p>3.1 Extract supplementary data from existing engineering drawings to meet project specifications.</p> <p>3.2 Create detailed views using various scales to meet project specifications.</p> <p>3.3 Produce plots at required scale to meet project specifications.</p>
4. Finalise drawings of structure.	<p>4.1. Generate report on set-out information and edit existing plans according to enterprise requirements.</p> <p>4.2 Finalise and check drawings and SOQ for compliance with project specifications.</p> <p>4.3. Save drawing files in formats according to enterprise requirements.</p> <p>4.4 Complete and archive documentation and spatial data according to enterprise requirements.</p>

#### Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

#### Unit Mapping Information

Supersedes and is equivalent to CPPSIS5065 Design basic engineering structures

#### Links

The Companion Volume Implementation Guide for the CPP Property Services Training Package is available at <https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=6f3f9672-30e8-4835-b348-205dfcf13d9b>

## Assessment Requirements for CPPSSI5065 Design basic engineering structures

### Modification history

Release	Comments
1	New unit of competency. This version first released with CPP Property Services Training Package Version 3

### Performance Evidence

To demonstrate competency, a candidate must meet the elements and performance criteria of this unit by preparing a design to specifications and drawings for two projects. Each project must use a different structure selected from the following :

- rural road
- urban road
- sewer line
- stormwater drainage line
- a building pad
- an open drain
- a ground level car park for 20 cars.

### Knowledge Evidence

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

- graphical information in plans, drawings and maps
- file formats for engineering drawings:
  - data exchange format (DXF)
  - portable document format (PDF)
  - format used in triangulation process to define position of points and triangles (PTS)
  - Excel spreadsheet format (XLS)
- key design considerations for basic engineering structures
- standard construction and engineering plan design and presentation conventions
- precision requirements for preparing engineering drawings using software
- relevant legislation and local and state government design standards.

### Assessment Conditions

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

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting where these skills and knowledge would be performed.

Candidates must have access to:

- computer and appropriate software
- project specifications, drawings, maps and related engineering plans.

### Links

The Companion Volume Implementation Guide for the CPP Property Services Training Package is available at <https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=6f3f9672-30e8-4835-b348-205dfcf13d9b>