

**Draft 0.2**

This is a draft update to CPPSIS5048 Conduct engineering surveys:  
<https://training.gov.au/Training/Details/PPSIS5048>.

Code changed to CPPSI5048.  
Changed PCs to active voice.

PCs 1.2 inserted from PE  
PC1.4 inserted from PE  
PC 1.5 inserted from PE  
Changed 'person' to 'candidate' in PE.

Range of Conditions added to Knowledge Evidence.

I've added mapping info.  
TAG will need to reassess this as unit is redeveloped.

## Unit of Competency

### CPPSI5048 Conduct engineering surveys

#### Modification history

Release	Comments
1	<del>Replaces superseded equivalent CPPSI5048A Conduct an engineering survey. This version first released with CPP Property Services Training Package Version 3.</del>
	Replaces superseded equivalent CPPSI5048 Conduct engineering surveys

#### Application

This unit specifies the skills and knowledge required to conduct an engineering survey based on specifications and information in construction or engineering designs. The unit covers topographical surveys, grid, road, pipe (stormwater and sewer) and building set-outs. It includes using surveying equipment to measure, record and reduce surveying data; validating the accuracy of data; and identifying discrepancies between specifications and activities.

This unit is suitable for skilled surveying technicians and skilled spatial information system (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. Prepare for engineering survey.	<ul style="list-style-type: none"><li>1.1 Analyse survey specifications, cross-sections and plans and technical descriptions of surveying data and their requirements.</li><li>1.2 Interpret design information to identify components to be measured.</li><li>1.3 Plan key survey activities according to available resources, project and enterprise requirements.</li><li>1.4 Create set-out files from design to meet project requirements.</li><li>1.5 Plan and document data collection methodologies that allow for contingencies.</li></ul>
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	1.6 Plan compliance with legal and statutory standards according to project requirements.
2. Carry out engineering surveying tasks.	<p>2.1 Select and check surveying equipment for correct operation and functionality, and report or resolve problems according to manufacturer specifications.</p> <p>2.2 Measure identified survey components according to project specifications.</p> <p>2.3 Reduce measured surveying data according to project requirements and specifications.</p> <p>2.4 Validate and record measurements according to project specifications and enterprise requirements.</p> <p>2.5 Identify and resolve problems and manage contingencies according to enterprise requirements.</p> <p>2.6 Comply with industry-accepted standards for validating accuracy of surveying data and identifying errors and discrepancies.</p>
3. Finalise and report engineering survey results.	<p>3.1 Finalise and check survey for compliance with project and enterprise requirements.</p> <p>3.2 Prepare conformance and non-conformance reports.</p> <p>3.3 Notify appropriate persons of survey results according to enterprise requirements.</p> <p>3.4 Complete survey documentation and archive data according to project and 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 CPPSIS5048 Conduct engineering surveys

#### 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 CPPSSI5048 Conduct engineering surveys

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### Performance Evidence

To demonstrate competency, a candidate must meet the elements and performance criteria of this unit by conducting two different engineering surveys.

For each engineering survey, the candidate must:

- develop project files in digital and hardcopy format
- collect data appropriate to surveying specifications by using three of the following pieces of surveying equipment:
  - global navigation satellite system (GNSS)
  - echo sounder
  - level
  - autonomous survey systems
  - Total Station
  - terrestrial laser scanner
  - survey drone.
- selecting the required survey component parts for one of the following remotely operated / autonomous survey systems:
  - drones (including fixed wing)
  - multibeam echo sounding systems
  - Autonomous Survey Vessels (ASV)
- applying all of the following set-outs:
  - grid
  - road alignments
  - pipe (stormwater and sewer)
  - building.

### Knowledge Evidence

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

- types and procedures for topographical surveys
- methods of feature coding
- data reduction techniques
- graphical and technical information in construction and engineering drawings
- methods for calibrating of surveying equipment
- accuracy and precision requirements for surveying data
- measurements and computations relating to length, angle, elevation, area and volume
- industry-accepted standards for measurements and computations
- industry-accepted methods for validating data and identifying errors and discrepancies
- methods of identifying and reporting non-conformities in collected surveying data
- key features of reference systems for surveying data

- inertial navigation systems and motion reference units used in drones and hydrographic surveying
- optimal design of control points or features for calibration of equipment, validation and geo-referencing of data captured using remotely operated / autonomous survey systems.
- key components of remotely operated / automated survey systems used to collect surveying data
- techniques for scheduling work tasks and planning for contingencies
- state and Commonwealth standards for surveying
- safe work practices and use of personal protective equipment (PPE).

### 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:

- PPE
- survey specifications which may include relevant construction or engineering plans and drawings.

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