



Australian Government

CPPSSI5057 Conduct precision surveys

Release: 1

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Modification History

Release 1 This version first released with CPP Property Services Training Package Release 12.0.

This unit supersedes and is equivalent to CPPSIS5057 Conduct precision surveys.

Application

This unit specifies the skills and knowledge required to use specialised equipment and instruments for the precise levelling and setting out of a precision survey. It includes applying high level surveying computations to surveying problems, including statistical analysis of measurements and errors in order to achieve specified accuracies and tolerances.

This unit is suitable for skilled surveying 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 (WHS) legislation and regulations 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 or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

Nil.

Unit Sector

Surveying and Spatial Information Services

Elements and Performance Criteria

Elements describe the essential outcomes.

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

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| 1 Prepare for precision survey. | 1.1 | Analyse standards, specifications and information in plans and drawings to determine surveying and precision requirements. |
| | 1.2 | Apply safe work practices, use of personal protective equipment (PPE) and strategies to manage risk and contingencies according to organisational requirements. |
| | 1.3 | Determine specialised equipment and relevant attachments required for precise levelling and setting out according to project specifications. |
| 2 Apply techniques for precise setting out. | 2.1 | Carry out precise levelling run and calculate and record results according to organisational requirements. |
| | 2.2 | Determine specialised surveying techniques to be used for precise setting out according to project specifications. |
| | 2.3 | Determine remote measuring systems to be used for industrial measurements according to project specifications. |
| | 2.4 | Conduct set-out and observations according to project specifications, using instruments and attachments where required for high accuracy. |
| | 2.5 | Use precision surveying techniques, measurements and error analysis to achieve specified accuracies and precision tolerances. |
| 3 Detect structural deflection and deformation. | 3.1 | Determine survey methods used to check horizontal movement of engineering structures. |
| | 3.2 | Determine survey methods used to check vertical movement due to settlement of engineering structures. |
| | 3.3 | Determine survey methods and instruments used to monitor verticality of tall structures. |
| | 3.4 | Carry out precision survey to detect and monitor deformation or deflection of engineering structure according to project specifications. |
| | 3.5 | Analyse measurements for errors and resolve problems to attain accuracy and precision in calculations according |

to industry standards.

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| 4 Finalise precision survey. | 4.1 Check precision survey for compliance with project and organisational requirements. |
| | 4.2 Notify appropriate persons of survey results according to organisational requirements. |
| | 4.3 Check and store surveying equipment according to manufacturer specifications and organisational requirements. |
| | 4.4 Record technical information, complete survey documentation and archive data according to organisational and legislative requirements. |

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 CPPSIS5057 Conduct precision surveys.

Links

Companion volumes to this training package are available at the VETNet website - <https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=6f3f9672-30e8-4835-b348-205dfcf13d9b>

Assessment Requirements for CPPSSI5057 Conduct precision 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 precision surveys selected from the list below:

- precise levelling run, using one of the following pieces of specialised equipment and relevant attachments:
 - digital level
 - total station.
- precise setting out using one of the following pieces of equipment and relevant attachments:
 - total station
 - zenith and nadir auto plumb instruments
 - auto collimation and laser eyepieces.
- precise setting out using one of the following remote measuring systems:
 - precise intersection techniques
 - robotic instruments.
- precise monitoring survey using one of the following pieces of equipment and relevant attachments:
 - digital level
 - total station
 - robotic instruments.

Knowledge Evidence

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

- graphical and technical information in construction and engineering plans
- common terms used in precision surveying calculations
- standard survey plan design and presentation conventions
- types of surveying equipment used in precision surveys

- types of surveying equipment attachments and their uses
- methods for checking calibration of specialist instruments and attachments
- application of electromagnetic measuring principles and techniques
- data reduction techniques
- concepts of algebra, geometry and trigonometry
- industry-accepted methods for error analysis and standards for accuracy.

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:

- surveying equipment
- personal protective equipment (PPE)
- survey specifications, including relevant plans and drawings.

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