



Australian Government

CPPSIS6035 Conduct complex engineering set-out surveys

Release: 1

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Modification History

Release 1.

Replaces superseded equivalent CPPSIS6035A Conduct complex engineering set out surveys.

This version first released with CPP Property Services Training Package Version 3.

Application

This unit of competency specifies the outcomes required to conduct a complex engineering set-out survey based on specifications and client requirements. The unit covers analysing specifications and organisational priorities to identify and negotiate projects and organise resources. The unit also covers implementing project management mechanisms relating to scheduling, measuring, recording, monitoring and reporting, and reviewing project progress and outcomes against organisational goals. It covers planning for risks and contingencies and staff supervision, and involves setting up and using specialised surveying equipment to measure, record and reduce surveying data using an established control network and spatial coordinate and reference systems. The unit requires the ability to validate the accuracy of data, and identify and resolve problems.

The unit supports those who work in a technical management role in a surveying team.

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

Pre-requisite Unit

Nil

Unit Sector

Surveying and spatial information services

Elements and Performance Criteria

Elements describe the essential outcomes.

Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the range of conditions.

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| 1. Prepare for complex engineering set-out survey. | 1.1. Organisational priorities are determined to identify project objectives and specifications. |
| | 1.2. Project specifications are presented to <i>appropriate persons</i> . |

- 1.3. Characteristics of the operating environment and any special equipment or resource requirements are identified according to organisational requirements.
 - 1.4. Surveying equipment is selected and checked to ensure correct operation and functionality according to manufacturer specifications.
2. Plan complex engineering set-out survey.
 - 2.1. Design is interpreted to identify surveying data components required for set-out.
 - 2.2. Plan is developed detailing objectives, constraints, work activities, technologies and techniques to be used for set-out according to project specifications and client requirements.
 - 2.3. Project management mechanisms are implemented to schedule, measure, record and report progress of activities in relation to agreed schedule and plans.
 - 2.4. Agreed communication processes between client and other appropriate persons are implemented and maintained.
 - 2.5. Risk management and contingency strategies are devised and followed to ensure project complies with legal and statutory standards and organisational requirements.
 - 2.6. Work responsibilities are allocated and supervisory processes and problem-solving techniques implemented to ensure work is completed within time available.
3. Manage complex engineering set-out survey.
 - 3.1. Identified project components are accurately set out according to project specifications.
 - 3.2. Set-out measurements and calculations are conducted, validated and recorded using control network according to project specifications.
 - 3.3. Project progress is reviewed and agreed changes are implemented to ensure consistency with project scope, objectives and constraints.
 - 3.4. Problems are identified and resolved, and contingencies managed according to organisational requirements.

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| 4. | Finalise complex engineering set-out survey. | 4.1. | Project is finalised and checked for compliance with project and organisational requirements. |
| | | 4.2. | Appropriate persons are notified of project results according to organisational requirements. |
| | | 4.3. | Documentation is completed and spatial data archived according to project and organisational requirements. |
| 5. | Review project. | 5.1. | Project achievements are reviewed against organisational strategic goals. |
| | | 5.2. | Recommendations are made on possible links between project achievements and future organisational goals. |

Foundation Skills

This section describes the language, literacy, numeracy and employment skills essential to performance in this unit but not explicit in the performance criteria.

Skill	Performance feature
Planning and organising skills to:	plan and prioritise work to meet contracts and resource constraints.
Numeracy skills to:	conduct precise measurements and calculations relating to height, depth, dimension, direction and position in actual operational activity and virtual representation.
Oral communication skills to:	- negotiate to meet client requirements - inform clients and other stakeholders of project progress.
Reading skills to:	analyse graphical and technical information in engineering plans.
Writing skills to:	record technical information in organisational documentation.

- Technology skills to:
- connect equipment to coordinate systems
 - set up and calibrate specialised surveying equipment.
- Problem-solving skills to:
- select appropriate validation methods to verify accuracy of data.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

- Appropriate persons*** must include at least two of the following:
- client
 - colleague
 - end user
 - engineer
 - manager
 - registered or qualified surveyor
 - supplier.

Unit Mapping Information

CPPSIS6035A Conduct complex engineering set out surveys

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=6f3f9672-30e8-4835-b348-205dfcf13d9b>

Assessment Requirements for CPPSIS6035 Conduct complex engineering set-out surveys

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Performance Evidence

A person demonstrating competency in this unit must satisfy the requirements of the elements, performance criteria, foundation skills and range of conditions of this unit. The person must also conduct a complex engineering set-out survey for two different projects.

While conducting the above complex engineering set-out surveys, the person must:

- analyse survey set-out specifications, including:
 - cross-sections and plans
 - technical descriptions of surveying data and set-out requirements
- develop a project plan, including detail of:
 - project objectives and deliverables
 - constraints
 - risk management and contingency strategies
 - work activities
 - technologies and techniques to be used
- interpret engineering design information and specifications to identify components to be measured
- plan and document data collection methodologies that allow for contingencies
- schedule work tasks and organise resources and equipment
- apply industry-accepted standards for performing surveying measurements and computations
- communicate clearly with others to clarify and report work information and negotiate completion of tasks
- comply with industry-accepted standards for validating accuracy of surveying data and identifying errors and discrepancies
- comply with organisational, legal and statutory requirements for:
 - completing records and documentation
 - recording, storing and filing data
 - using, checking and storing surveying equipment
 - working safely and using personal protective equipment (PPE)
- conduct set-out measurements and calculations to meet engineering specifications using two of the following pieces of surveying equipment:

- current meter
- global navigation satellite system (GNSS)
- level
- tape
- theodolite
- total station
- implement project management mechanisms to ensure the survey is completed within required timeframes and complies with specifications
- review project outcomes against strategic organisational goals to identify links to future goals
- supervise staff to complete work tasks on time.

Knowledge Evidence

A person demonstrating competency in this unit must demonstrate knowledge of:

- accuracy and precision requirements for setting out surveying data
- data capture, set-out and reduction techniques
- industry-accepted methods for validating data to identify errors and discrepancies
- legislative, statutory and industry requirements and standards relating to work tasks associated with set-out surveys
- methods for calculating surveying data and verifying its accuracy using primary and secondary controls
- methods for establishing a control network that meets specified tolerances
- methods for setting up, levelling and calibrating surveying equipment
- organisational policies and procedures relating to:
 - health and safety relating to surveying activities
 - reporting and documentation
 - using and allocating resources
 - using the surveying equipment specified in the performance evidence
- project management techniques for scheduling, measuring and monitoring work progress and planning for contingencies
- reference and coordinate systems for surveying data, including Australian Height Datum and Map Grid of Australia.

Assessment Conditions

The following must be present and available to learners during assessment activities:

- equipment:
 - as specified in the performance evidence, including PPE
- materials:
 - paper for printing reports, documents and data
- specifications:

- organisational policies, procedures and documentation relating to work health and safety
- survey specifications, including relevant engineering plans and drawings
- relationships with team members and supervisor:
 - lead role in a team.

Timeframe:

- as specified by project requirements.

Assessor requirements

As a minimum, assessors must satisfy the assessor requirements in the Standards for Registered Training Organisations (RTOs) current at the time of assessment.

Links

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