

Unit of Competency CPCCOM3006 Carry out levelling operations

Application

This unit of competency specifies the skills and knowledge required to carry out levelling operations to establish correct and accurate set-out of buildings and components, meeting all relevant requirements of the National Construction Code (NCC), Australian Standards, work health and safety (WHS), and Commonwealth and state or territory legislation.

It includes:

- using the rise and fall and height of collimation methods
- setting up, testing and using levelling devices
- undertaking closed and open traverses using a range of levelling equipment
- calculating distances using stadia lines.

Completion of the general construction induction training program specified by the model Code of Practice for Construction Work is required for any person who is to carry out construction work. Achievement of *CPCCWHS1001 Prepare to work safely in the construction industry* meets this requirement.

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

Prerequisite Unit

Nil

Elements and Performance Criteria

1. Plan and prepare.	1.1	Read and interpret work instructions and plan sequence of work.
	1.2	Plan all work to comply with laws and regulations, Australian Standards, work health and safety (WHS) and environmental requirements, manufacturers' specifications, workplace requirements, drawings and specifications.
	1.3	Select tools and equipment, including personal protective equipment (PPE), check for serviceability and report any faults.
	1.4	Fit PPE correctly.
	1.5	Inspect work site, assess hazards and services, and apply risk controls, including required signage and barricades.
	1.6	Select materials required for task, calculate quantities, handle safely and prepare and position ready for use.
	1.7	Confirm team roles and verbal and non-verbal communication signals.
2. Carry out levelling procedures using rise and fall method.	2.1	Set up and test instrument for operational effectiveness and accuracy.
	2.2	Set up or locate datum point.
	2.3	Take and record readings from the datum and at nominated or selected stations following project specifications.
	2.4	Identify backsights, intermediate sights and foresights, and book levels.
	2.5	Transfer instrument to another location, repeat process, and record change station and record readings.
	2.6	Calculate reduced levels for all stations using rise and fall method, and check accuracy of recordings using the three-check method.

3. Carry out levelling procedures using height of collimation method.	3.1	Set up and test instrument for operational effectiveness and accuracy, and check tolerances.
	3.2	Set up or locate datum point.
	3.3	Take and record readings to datum, and establish the height of collimation.
	3.4	Take readings at nominated or selected stations following project specifications, and record in field book.
	3.5	Transfer instrument to another location, establish new height of collimation, and record change station in field book.
	3.6	Calculate reduced levels using height of instrument method.
	3.7	Calculate reduced levels for all stations and record heights and levels in field book.
	3.8	Check accuracy of readings using height of collimation method of calculation and three check method.
4. Calculate distances using stadia lines.	4.1	Calculate distances from instrument to stations using staff, stadia lines, and identified factor of levelling instrument
	4.2	Record readings and distances.

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 CPCCCM3006 Carry out levelling operations.

Links

Companion Volume Implementation Guide:

<https://vetnet.education.gov.au/Pages/TrainingDocs.aspx?q=7e15fa6a-68b8-4097-b099-030a5569b1ad>

Assessment Requirements for CPCCOM3006

Carry out levelling operations

Performance Evidence

To demonstrate competency, a candidate must meet the performance criteria of this unit by carrying out levelling operations over a minimum of two change points to:

- identify site hazards
- establish approximate distances and transfer of reduced levels
- measure and record:
 - ground levels at respective critical set-out points
 - heights or levels for building components
 - heights or levels of ceilings and floors
 - slab or pad levels for placement of steel columns or masonry piers
- determine shooting levels for:
 - concrete slabs
 - excavation or footings
- transfer levels or heights for construction projects
- calculate rise and fall and height from collimation.

Knowledge Evidence

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

- compliance requirements of the Australian Standards relevant to carrying out levelling operations
- workplace quality policies and standards relevant to carrying out levelling operations
- safety requirements for carrying out levelling operations
- basic construction and levelling processes
- construction plans, symbols and construction terminology relevant to carrying out levelling operations
- processes for interpreting engineering drawings and sketches for carrying out levelling operations
- processes for setting out construction tasks for levelling operations
- project quality requirements for carrying out levelling operations
- site isolation and traffic control responsibilities and authorities
- levelling techniques commonly used in construction work
- levelling activities:
 - establishing approximate distances and transfer of reduced levels
 - locating site hazards and services
 - measuring and recording ground levels at respective critical set-out points
 - measuring and recording heights or levels for installing building components
 - measuring and recording heights or levels of ceilings and floors
 - measuring and recording slab or pad levels for placement of steel columns or masonry piers
 - taking levels for concrete slabs
 - taking levels for excavation or footings
 - calculating rise and fall and height from collimation

- types of tools and equipment used for carrying out levelling operations:
 - spirit levels
 - straight edge
 - automatic/optical levelling devices
 - laser levels
 - water level
- processes for checking operation and tolerances:
 - two peg test for automatic level
 - reverse readings for spirit level
- types of level readings:
 - negative readings
 - datum
 - backsight
 - foresight
 - intermediate sight
 - plumb
- maintenance of levelling devices:
 - authorised operator servicing and minor replacements
 - cleaning
 - monitoring, recording and reporting faults.

Assessment Conditions

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

This unit must be assessed in the workplace or a close simulation using realistic workplace conditions and standards, materials, activities, responsibilities, procedures, safety requirements and environmental considerations.

Links

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<https://vetnet.education.gov.au/Pages/TrainingDocs.aspx?q=7e15fa6a-68b8-4097-b099-030a5569b1ad>