



Australian Government

Department of Education, Employment and Workplace Relations

RIICCM201A Carry out measurements and calculations

Release: 1

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Modification History

Not applicable.

Unit Descriptor

This unit covers carrying out measurements and calculations in the civil construction industry. It includes: planning and preparation; performing measurements and calculations; and estimating approximate quantities.

Application of the Unit

This unit is appropriate for those working in a operational roles, at worksites within:

- Civil construction

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare	1.1. Access, interpret and apply compliance documentation relevant to the work activity 1.2. Confirm and apply work instructions 1.3. Select measuring and calculating equipment to carry out tasks that are consistent with the requirements of the job, and check them for serviceability and any faults and rectify or report faults
2. Perform measurements	2.1. Select and apply method of obtaining the measurement 2.2. Obtain measurements using a rule or tape, accurate to 1mm 2.3. Confirm and record measurements
3. Perform calculations	3.1. Select appropriate calculation method for achieving the required result 3.2. Correctly calculate material quantities for the project using the appropriate factors 3.3. Confirm and record results
4. Estimate approximate quantities	4.1. Take calculations for determining material requirements 4.2. Select appropriate formulas for calculating quantities 4.3. Estimate quantities from the calculations taken 4.4. Calculate, confirm and record material quantities for the project within enterprise tolerances

Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to carry out measurements and calculations:

- locate, interpret and apply relevant information
- comply with site safety plan, OHS regulations and State/Territory legislation applicable to workplace operations
- comply with organisational policies and procedures including quality requirements
- complete measurements, calculations and determination of quantities for at least three different projects of varying complexity
- calculate each of the following using a realistic civil construction task for example:
 - length
 - perimeter
 - circumference
 - area
 - volume
 - number
 - ratio
 - percentage
 - conversion of metres to millimetres and millimetres to metres
 - measure using a rule or tape measure five separate tasks within 1mm accuracy
- use operational tools and equipment safely and effectively
- communicate and work effectively and safely with others

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to carry out measurements and calculations:

- site and equipment safety requirements
- measuring, calculating, geometry and determination of quantities
- tolerances
- calculators
- company procedures
- project quality requirements
- communication devices
- processes for care of measuring equipment

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| <ul style="list-style-type: none">• civil construction terminology• JSA's/Safe work method statement |
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Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for carrying out measurements and calculations • implementation of requirements, procedures and techniques for the safe, effective and efficient carrying out measurements and calculations • working with others to undertake and complete measurements and calculations that meet all of the required outcomes • consistent timely completion of measurements and calculations that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Evidence for assessment is best gathered using the outcomes of products and processes of the workplace context. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate

	cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in the work environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.
Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods: • written and/or oral assessment of the candidate's required knowledge • observed, documented and/or first hand testimonial evidence of the candidate's: • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes • consistently achieving the required outcomes • first hand testimonial evidence of the candidate's: • working with others to undertake and complete measurements and calculations
Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Measurement may include the determination of:	• length, area, weight, height, width, depth, volume, mass, scales, perimeters, quantities, numbers, grade
Calculations may be performed manually and with the aid of a calculator and may include:	• addition, subtraction, multiplication and division • length, perimeter, circumference, area, volume, number, ratio, percentage • conversions, such as of metres to millimetres and millimetres to metres

Unit Sector(s)

Civil Works (Common Units)

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.