Australian Government

Department of Education, Employment and Workplace Relations

MEM09203A Measure and sketch site information

Release: 1

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Modification History

Release 1 - New unit of competency

Unit Descriptor

This unit of competency covers the skills and knowledge required to take measurements and collect and record all relevant information from a site for the purpose of directing drafting work.

Application of the Unit

This unit is suitable for those working within a computer-aided design (CAD) or drafting work environment. It includes preparation of a freehand sketch that details a range of relevant information to be used in detailed drawings or design work. It also covers taking accurate measurements using compass and straight edge and applying geometric construction methods. If work requires entering a construction worksite, then the unit CPCOHS1001A Work safely in the construction industry should also be completed beforehand.

Licensing/Regulatory Information

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

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.

Elements and Performance Criteria

1	Prepare for site visit	1.1	Verify and comply with applicable occupational health and safety (OHS), legislative and organisational requirements relevant to conducting site visits
		1.2	Confirm project brief and visit objectives, and review any available drawings and information on the project
		1.3	Arrange site visit and prepare required materials
		1.4	Check all measuring equipment and materials for sketching are available
2	Assess and record site features	2.1	Visually assess and record details on physical position, layout, access and location, and establish site references
		2.2	Visually assess and record details on site structure and materials
		2.3	Visually assess and record details on services
		2.4	Observe and record other details that may impact on project
		2.5	Obtain any relevant site information or documentation
3	Take site measurements	3.1	Take accurate measurements of site features as required by project brief
		3.2	Conduct calculations, as required, to ensure all required measurements are obtained and verified
		3.3	Access and use work information, technology and resources to complete work
		3.4	Minimise impact of work on the environment and ensure safety procedures are followed at all times
		3.5	Obtain or note missing measurements accordingly
4	Produce sketch of site	4.1	Produce sketch to proportion
		4.2	Apply correct sketching techniques and line construction to the sketch

		4.3	Apply all dimensions and notations
5	Apply geometric construction methods	5.1	Sketch geometric shapes using correct construction techniques
		5.2	Obtain tangent points using correct techniques
		5.3	Apply line work using a range of different line types and media in accordance with standard industry drawing practice
6	Document site details	6.1	Complete isometric sketches that illustrate site details
		6.2	Ensure all additional information gathered is documented appropriately to inform further work
		6.3	Ensure correct symbols and standard drawing conventions are adhered to
		6.4	Apply enterprise work procedures when conducting work and ensure quality standards are met

Required Skills and Knowledge

Required skills

Required skills include:

- sourcing and interpreting work-related information
- communicating verbally and in writing with team members and site/project managers
- interpreting diagrams and drawings
- taking accurate measurements
- using mathematical ideas and techniques to correctly complete measurements, calculate area, perimeter, volume, mass, scales and ratios
- using pre-checking techniques to anticipate measurement and drawing problems and avoid reworking
- using workplace technology related to measurement and drawing, including tools, equipment, calculators and measuring devices
- accurately calculating angles
- selecting principal axes and angles
- establishing positions of clear panels
- reading, interpreting and following information on work specifications, standard operating procedures, work instructions and other reference material
- maintaining accurate records
- carrying out work according to OHS practices
- completing industry standard freehand drawings and sketches

Required knowledge

Required knowledge includes:

- relevant legislation
- OHS requirements for the engineering industry
- quality assurance procedures
- the theory and practice of calculations (addition, subtraction, multiplication and division)
- conventional signs and markings for plans and drawings
- the principles of plane geometry
- measurement techniques and equipment/tools

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	A person who demonstrates competency in this unit must be able to conduct an onsite visit and complete industry standard drawings, sketches and other documentation that includes measurements and all relevant site information to inform drafting work.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	Assessors must be satisfied that the candidate can competently and consistently perform all elements of the unit as specified by the criteria, including required knowledge, and be capable of applying the competency in new and different situations and contexts. Specifically the candidate must be able to: • work within typical site/teamwork structures and methods • apply worksite communication procedures • comply with organisational policies and procedures, including quality requirements • participate in work meetings • comply with quality requirements • use industry terminology • apply appropriate safety procedures • take accurate site measurements and produce detailed sketch to inform detail drafting work.
Context of and specific resources for assessment	This unit may be assessed on the job, off the job or a combination of both on and off the job. Where assessment occurs off the job, that is the candidate is not in productive work, then an appropriate simulation must be used where the range of conditions reflects realistic workplace situations. The competencies covered by this unit would be demonstrated by an individual working alone or as part of a team. Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate ethnicity, age, gender, demographics and disability. Access must be provided to appropriate learning and/or assessment support when required. Where applicable, physical resources should include

	equipment modified for people with disabilities. This unit could be assessed in conjunction with any other relevant units requiring the exercise of the skills and knowledge covered by this unit.
Method of assessment	Assessors should gather a range of evidence that is valid, sufficient, current and authentic. Evidence can be gathered through a variety of ways, including direct observation, supervisor's reports, project work, samples and questioning. Questioning techniques should not require language, literacy and numeracy skills beyond those required in this unit of competency. The candidate must have access to all tools, equipment, materials and documentation required. The candidate must be permitted to refer to any relevant workplace procedures, product and manufacturing specifications, codes, standards, manuals and reference materials.

Range Statement

Required materials	Required materials may include: • measuring equipment • camera • drawing paper, pencils and eraser • compass • straight edge • chalk • string
Calculations	Calculations may include: • area • perimeter • volume • mass • scales and ratios (ingredients/elements and triangulation) and addition • subtraction • multiplication and division processes
Other details	Other details may include: • vegetation • surrounding objects or structures • access for vehicles • any other conditions which may impact on the project
Standard drawing conventions	Standard drawing conventions may include: • use of correct sectioning technique • identification of cutting plane • accurate line types • appropriate view positions • use of correct symbols • use of correct dimensioning technique • provision of suitable number of views • use of correct scales • neat presentation

Drawing techniques	Drawing techniques may include:
	• orthogonal projection:
	  • first angle projection
	  • third angle projection

	• projection symbol • preferred system of projection in Australia • number of views • relationship of views • pictorial sketching: • isometric • orthogonal (cabinet and cavalier) • pictorial • sheet format: • borders and title blocks • application of projection symbol • drawing sheets and sizes • lettering styles • Australian Standards • dimensioning: • unidirectional dimensioning • aligned dimensioning • projection and dimension lines • arrow heads • dimension placement • sectioning: • types of sections • required section views • placement of views • cutting planes • labelling of cutting planes and section views
Drawing constructions	Drawing constructions may include: • isometric axes • isometric angles • isometric lines • non-isometric lines • isometric circles: • four centre method • ordinate method • sectioning isometric shapes

Unit Sector(s)

Drawing, drafting and design

Custom Content Section

Not applicable.