



Australian Government

MEM09207 Produce drawings for reticulated services

Release: 1

MEM09207 Produce drawings for reticulated services

Modification History

Release 1. Supersedes and is equivalent to MEM09207A Produce drawings for reticulated services.

Application

This unit of competency defines the skills and knowledge required to produce detailed engineering drawings for reticulated services to Australian Standard (AS) 1100.101 Technical drawing – General principles and is primarily for those performing drafting work within the air conditioning and mechanical services industry related to the installation of reticulated services in commercial and industrial buildings.

Critical dimensions and specifications for the drawing are predetermined and drawings are carried out with or without the use of computer-aided design (CAD) systems.

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

Pre-requisite Unit

MEM09204 Produce basic engineering detail drawings

MEM09229 Read and interpret technical engineering drawings

Competency Field

Drawing, drafting and design

Elements and Performance Criteria

Elements	Performance Criteria
<i>Elements describe the essential outcomes.</i>	<i>Performance criteria describe the performance needed to demonstrate achievement of the element.</i>
1. Determine job requirements	1.1 Follow standard operating procedures (SOPs) 1.2 Comply with work health and safety (WHS) requirements at all times 1.3 Identify job requirements from available information 1.4 Check purpose and scope of drawing and identify and address further information needs 1.5 Identify and prepare required equipment to complete work 1.6 Identify and access organisational files, templates and symbols

Elements	Performance Criteria
<i>Elements describe the essential outcomes.</i>	<i>Performance criteria describe the performance needed to demonstrate achievement of the element.</i>
2. Identify working principles for reticulated systems	2.1 Identify principles and application of reticulation system 2.2 Identify the operational requirements of reticulation system 2.3 Identify safety and environmental implications of reticulated system
3. Produce drawings for reticulated systems	3.1 Lay out drawing in accordance with the sketches and supplied specifications 3.2 Identify different parts of services on drawings 3.3 Size the system in accordance with relevant standards, regulations and SOPs 3.4 Apply working principles of reticulated systems to drawing 3.5 Apply codes, standards and symbols used for reticulated services installation drawings 3.6 Present drawing in accordance with SOPs

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance.

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

This field allows for different 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.

Available information includes one or more of the following:	• construction documents • building and coordination information • work specifications • information for plant services equipment • design brief.
Reticulated systems include one or more of the following:	• hot and cold water systems • steam and condensate systems • heating/chilled and condenser water systems • compressed air systems

	• natural and LPG systems • pipe work insulation • flues, ducts and insulation.
Operational features and working principles of reticulated system components include one or more of the following:	• variable refrigerant volume (VRV) systems • refrigeration systems • slab heating/cooling • hydronic heating • chilled beams • medical gases • fittings/valve types: • strainer • balancing • isolating • non-return • pumps • air side: • fans • dampers • registers • filters • air handling units • VAV units • domestic hot and cold water systems • steam and condensate systems • heating/chilled and condenser water systems • compressed air systems • gas systems • insulation.
Codes, standards and industry regulations include one or more of the following:	• AS/NZS 1668 The use of ventilation and air conditioning in buildings • AS 1682.1 Fire smoke and air dampers Specification • AS 4254 Ductwork for air-handling systems in buildings • building codes • WHS codes of practice • utilities regulations.
Industry standards include one or more of the following:	• National Construction Code (NCC) • Australian Standards (AS) • legislation requirements from Building Practitioner's Board (BPB) • Sheet Metal and Air Conditioning Contractors National Association (SMACNA)

	• third-party manufacturing and installation standards • organisational standards • general practices.
--	--

Unit Mapping Information

Release 1. Supersedes and is equivalent to MEM09207A Produce drawings for reticulated services.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b7050d37-5fd0-4740-8f7d-3b7a49c10bb2>

Assessment Requirements for MEM09207 Produce drawings for reticulated services

Modification History

Release 1. Supersedes and is equivalent to MEM09207A Produce drawings for reticulated services.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy the requirements of the elements and performance criteria and include:

- following work instructions, standard operating procedures (SOPs) and safe work practices
- determining purpose and scope for drawing requirements relevant to the project utilising all available information
- identifying features and application of reticulated systems to meet the drawing requirements
- producing drawings for the installation of reticulated services to industry standards on at least two occasions
- identifying safety and environmental implications of reticulation system.

Note: Where a volume and/or frequency is not specified, demonstration must be provided at least once.

Knowledge Evidence

Evidence required to demonstrate the required knowledge for this unit must be relevant to and satisfy the requirements of the elements and performance criteria and include knowledge of:

- safe work practices and procedures
- different approaches to drawing
- sources of information
- copyright and intellectual property issues and legislation in relation to drawing
- quality assurance procedures
- SOPs for computer-aided drawing (CAD)
- order of drawing process
- organisational checking procedures for drawings
- layout and presentation requirements
- codes, standards and regulations related to reticulation systems
- terminology associated with drawings
- process of checking the completed drawing
- process of storing paper drawings and electronic drawing files
- reticulated systems

- features and operating principles of a reticulation systems and components including steam
- operation and suitability of the following for specific applications:
 - condenser
 - chilled
 - heating
 - compressed air systems and water systems
 - features and ventilation requirements for different gas systems
- flue requirements in a liquefied petroleum gas (LPG) system
- issues and hazards of fuel storage
- expansion and contraction factors
- support systems/anchors used in reticulated systems.

Assessment Conditions

- Assessors must:
 - have vocational competency in producing drawings for reticulated services at least to the level being assessed with relevant industry knowledge and experience
 - satisfy the assessor requirements in the Standards for Registered Training Organisations 2015 or its replacement and comply with the National Vocational Education and Training Regulator Act 2011, its replacement or equivalent legislation covering VET regulation in a non-referring state/territory as the case requires.
- Where possible, assessment must occur in operational workplace situations. Where this is not possible or where personal safety or environmental damage are limiting factors, assessment must occur in a sufficiently rigorous simulated environment that reflects realistic operational workplace conditions that cover all aspects of workplace performance, including environment, task skills, task management skills, contingency management skills and job role environment skills.
- Conditions for assessment must include access to all tools, equipment, materials and documentation required including relevant workplace procedures, product and manufacturing specifications.
- Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b7050d37-5fd0-4740-8f7d-3b7a49c10bb2>