



Australian Government

Department of Education, Employment and Workplace Relations

CPCCB5009A Identify services layout and connection methods to medium rise construction projects

Release: 1

CPCCB5009A Identify services layout and connection methods to medium rise construction projects

Modification History

Not Applicable

Unit Descriptor

Unit descriptor This unit of competency specifies the outcomes required to identify drawings, specifications and requirements for services in a range of medium rise and wide span commercial projects. It requires an ability to identify and evaluate differing methods and services in accordance with building regulations and standards.

Application of the Unit

Application of the unit This unit of competency supports builders, project managers and related construction industry professionals responsible for identifying and evaluating service requirements in various medium rise construction projects.

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units Nil

Employability Skills Information

Employability skills 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

ELEMENT	PERFORMANCE CRITERIA
1. Evaluate commonly used methods of water storage supply and layouts.	1.1. Water supply, connection and layout are sketched for a residence connected to a town supply or a tank storage supply in accordance with relevant building regulations and standards. 1.2. Use of pumps to maintain water levels in storage tanks is documented for single and two-stage pumping. 1.3. Limitations of water storage tanks connected for multi-function and single function services are identified and addressed.
2. Evaluate methods of sewerage and drainage disposal and their layouts.	2.1. Sewerage connection and layout are sketched in accordance with relevant building regulations and standards. 2.2. Different stack types are assessed with reference to number of fixtures and building type. 2.3. Fixture units are identified. 2.4. Methods used to connect main drains to local authority sewers are assessed against relevant building standards. 2.5. Disposal of sewerage from fixtures situated below the level of the local authority sewer is assessed in accordance with relevant building regulations and standards. 2.6. Collection, treatment and disposal of prohibited discharges are monitored for non-domestic buildings.
3. Assess commonly used methods for mechanical ventilation and air distribution and their layout.	3.1. Methods of mechanical ventilation and air distribution are identified and sketched. 3.2. Mechanical ventilation and air distribution system design layout is appropriate to the building design and complementary to other services.
4. Evaluate the range of hot water systems.	4.1. Operating principles of various types of hot water systems are evaluated. 4.2. Suitable hot water system is selected according to accepted and agreed requirements and specifications.
5. Evaluate effective natural lighting for a range of situations.	5.1. Methods of roof construction used for daylight transmission are identified and outlined in accordance with relevant building regulations and standards. 5.2. Methods used in artificial lighting are compared for various service situations in accordance with relevant building regulations and standards.

ELEMENT	PERFORMANCE CRITERIA
6. Ensure fire protection standards are met.	6.1. Authorities involved in plan perusal and site inspection for the various building classifications are identified. 6.2. Requirements for sprinkler systems and fire hoses for the various building classifications are identified according to legal and regulatory standards. 6.3. Fire detector and alarm systems and the application of fire doors are addressed according to legal and regulatory standards. 6.4. Extinguishing agents and their applications are identified.
7. Outline the requirements for general electrical and electronic service installation.	7.1. Electrical supply authorities and procedures for connection to site are identified and complied with. 7.2. Electrical design and provision for services are implemented in accordance with regulations and Australian standards. 7.3. Electronic cabling, type of service, categories of cabling, layout of equipment, safe guards, access for maintenance, repair and extensions are identified and outlined in accordance with regulations and Australian standards.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

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

Required skills

Required skills for this unit are:

- application of design concepts and principles relating to service installations
- communication skills to:
 - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
 - read and interpret:
 - service installation drawings and specifications
 - state regulatory authority requirements
 - use and interpret non-verbal communication
 - use language and concepts appropriate to cultural differences
 - written skills to document relevant information

REQUIRED SKILLS AND KNOWLEDGE

- numeracy skills to apply measurements and calculations relating to service installations.

Required knowledge

Required knowledge for this unit is:

- Australian standards and manufacturer specifications
- design concepts and principles relating to service installations
- hazards in relation to devices and systems used according to Australian standards and other codes or standard operating procedures
- installation methods
- nature of materials and effect on performance relating to service installations
- relevant licensing arrangements
- service installation terminology and definitions
- work drawings and specifications.

Evidence Guide

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

This unit of competency could be assessed by the effective performance and application of principles relating to service drawings, specifications and methods of determining requirements for services to a range of medium rise and wide span commercial constructions. This unit of competency can be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of the ability to:

- comply with OHS and organisational quality procedures and processes within the context of this unit of competency
- apply and interpret relevant documentation, codes and legislation relating to performance of service installations
- accurately apply principles relating to performance of service installations
- identify typical faults and problems and take necessary action taken to rectify
- identify service installations and hazard categories according to Australian standards, Building Code of Australia (BCA) and job specifications.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

EVIDENCE GUIDE

- documentation, including design brief drawings, specifications, codes, design concepts, construction schedules and other necessary supporting documents
- research resources, including systems information and data
- access to relevant legislation, regulations and codes of practice.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured

EVIDENCE GUIDE

learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed. Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

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.

Water supply includes:

- single and two-stage pumping for multi-function and single function
- tank storage supply relative to the public water supply and reservoir heights
- town supply.

Sewerage connection and layout include:

- graded or vertical discharge pipes
- inspection shafts and overflow relief gullies (ORGs)
- local authority sewerage drainage system
- septic or biochemical treatment unit.

Methods of mechanical ventilation include:

- air conditioning applications
- air distribution, including mechanical ventilation requirements for enclosed car parks
- air filtration, including air filters, ducting and main filter types
- mechanical ventilation.

Hot water system details include:

- area to be serviced

RANGE STATEMENT

	• energy sources available • height of installation • number of outlets • type of occupancy • type of system.
Lighting for varying situations includes:	• emergency lighting • natural and artificial lighting.
Electronic cabling factors include:	• access for maintenance, repair and extension • categories of cabling: • data • lift controls • power supplies • telecommunications • layout of equipment: • computers • telephones • safe guards • type of service.

Unit Sector(s)

Unit sector	Construction
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Co-requisite units

Co-requisite units	Nil
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Functional area

Functional area