



Australian Government

CPCPCM5014 Design sewer infrastructure systems

Release: 2

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Modification History

- Release 2 This version first released with CPC Construction, Plumbing and Services Training Package Release 5.1.
Changes to Elements and Performance Criteria 5.4.
- Release 1 This version first released with CPC Construction, Plumbing and Services Training Package Release 5.0.
Supersedes and is equivalent to CPCPCM5014A Design sewer infrastructure systems. Updated to meet the Standards for Training Packages 2012.

Application

This unit specifies the skills and knowledge required to design and document sewer infrastructure systems for residential development of 50 properties. This includes specifying responsibilities, procedures and safety standards for sewerage equipment, construction, soil classification, pipe laying techniques and trench construction. The unit also covers analysing factors relating to pumping and tunnelling and supervising the installation of a sewer infrastructure system.

This unit covers requirements for competent workplace performance in a consultancy or supervisory capacity in relation to plumbing services and hydraulics.

In some jurisdictions, this unit of competency may form part of accreditation, licensing, legislative, regulatory or certification requirements.

Pre-requisite Unit

Nil.

Unit Sector

Plumbing

Elements and Performance Criteria

Elements describe the essential outcomes.

Performance criteria describe what needs to be done to demonstrate achievement of the element.

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| 1 Prepare and implement sewer contracts. | 1.1 Identify and apply main utility sewer design and sizing procedures. |
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- 1.2 Document required qualifications, roles and responsibilities of local authority personnel and contracted parties qualified to install sewers.
- 2 Plan and detail system components.
 - 2.1 Analyse soil classification, characteristics and types from test results.
 - 2.2 Detail trenching safety procedures, specifying backfilling and compaction methods.
 - 2.3 Plan layout of pipework systems, including the type and location of fittings, valves and controls.
 - 2.4 Specify pipe laying, dewatering and testing procedures for installation of pipework of varying sizes.
 - 2.5 Calculate self-cleaning velocities, pipe size and grade, and ventilation requirements for a range of systems.
 - 2.6 Detail sewer connections, access chambers, bedding material and support systems.
 - 2.7 Determine size and detail requirements for pump station, pumps, controls and equipment.
 - 2.8 Specify approved materials, jointing methods and installation requirements for sewer infrastructure systems.
 - 2.9 Identify maintenance procedures of the system.
- 3 Evaluate design parameters.
 - 3.1 Establish scope of work for sewer infrastructure systems.
 - 3.2 Determine design requirements from relevant Australian standards, codes, plans, specifications and client brief.
 - 3.3 Conduct cost–benefit analysis comparing a range of pipe materials and system design.
 - 3.4 Analyse and apply statutory and regulatory requirements and relevant Australian Standards and codes for the design of sewer infrastructure systems.
 - 3.5 Obtain trade and technical manuals and interpret manufacturer requirements.

- 3.6 Conduct additional research, including a desktop study to outline design parameters.
 - 3.7 Determine factors that contribute to quality, safety and time efficiency.
 - 3.8 Determine point of connection to the authority's system.
 - 3.9 Specify safety procedures and regulations for trench safety and for pumping stations and establish performance requirements.
 - 3.10 Assess pipe sizes using equivalent population (EP) density.
- 4 Design and size systems.
 - 4.1 Identify easements and location for sewer infrastructure systems, including pumping rising mains.
 - 4.2 Design sewer infrastructure systems for a range of applications.
 - 4.3 Design and detail sewer long sections.
 - 4.4 Design pump rising main systems.
 - 4.5 Design pumping stations.
 - 4.6 Apply computer software packages to design and size sewer infrastructure system.
 - 4.7 Determine and design ventilation requirements.
 - 4.8 Apply sustainability principles and concepts throughout the design process.
- 5 Prepare documentation.
 - 5.1 Prepare client brief of the desired design.
 - 5.2 Prepare plans and specification for a range of sewer infrastructure systems.
 - 5.3 Prepare testing and commissioning schedule.
 - 5.4 Produce operation and maintenance manual, including information on how to properly and safely maintain the system.

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 CPCPCM5014A Design sewer infrastructure systems.

Links

Companion volumes to this training package are available at the VETNet website -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=7e15fa6a-68b8-4097-b099-030a5569b1ad>