



Australian Government

Assessment Requirements for CPCPCM5012 Design complex stormwater and roof drainage systems

Release: 2

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Modification History

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| Release 2 | This version first released with CPC Construction, Plumbing and Services Training Package Release 5.1.

Changes to Application and Elements and Performance Criteria 4.4. |
| Release 1 | This version first released with CPC Construction, Plumbing and Services Training Package Release 5.0.

Supersedes and is equivalent to CPCPCM5012A Design complex stormwater and roof drainage systems. Updated to meet the Standards for Training Packages 2012. |

Performance Evidence

To demonstrate competency, a candidate must meet the performance criteria for this unit by:

- designing, sizing and documenting the layout details of a complex stormwater and roof drainage system for a site incorporating a high-rise mixed development building within a wide-span multiple building project (such as a school), including:
 - specification
 - access chambers
 - grade of drains
 - holding pits
 - collection sumps
 - detention, retention and harvesting systems
 - disposal methods for stormwater catchments to council or utility provider's drainage network or disposal on-site
 - other system components
- using appropriate design software to produce detailed drawings and layout plans, including long sections and cross-sections of the designed system
- applying sustainability principles and concepts throughout to achieve a star rating under the Green Building Council of Australia rating scheme
- evaluating health risks associated with stormwater and roof drainage systems and action as required within the system design.

Knowledge Evidence

To be competent in this unit, a person must demonstrate knowledge of:

- relevant codes, Australian standards and specifications:
 - Australian rainfall and run-off (ARR) guidelines
 - AS/NZS 3500 Plumbing and drainage set
 - manufacturer specifications
 - National Construction Code (NCC)
 - building codes
 - work health and safety (WHS) and environmental requirements
 - plumbing regulations
- terminology and definitions used in hydraulic design
- computer-aided design (CAD) software
- installation methods used in hydraulic systems
- hazards associated with devices and systems used in the hydraulic sector
- environmental requirements:
 - clean-up protection
 - stormwater protection
 - waste management
 - water quality management
- quality assurance requirements:
 - Environmental Protection Agency (EPA)
 - internal company quality assurance policy and risk management strategies
 - International Standards Organisation (ISO)
 - site safety plan
 - workplace operations and procedures
- safe work procedures relating to planning, sizing and documenting layout of pipework and fixtures
- local government requirements:
 - Integrated Planning Act (IPA)
 - standard drawings and details
 - town planning requirements
- treatment requirements such as:
 - screens
 - silt traps
 - solid removal systems
- plans and documentation relevant to the design:
 - site plans
 - cross-sections
 - details
 - elevations
 - sections
 - civil drawings

- contour levels
- existing services
- reduced levels
- manufacturer requirements and specifications
- catchment area analysis
- stormwater design
- surveys
- system components:
 - access chambers (manholes)
 - channels
 - culverts
 - downpipes
 - fire rating of penetrations
 - grated pits
 - gullies
 - guttering
 - inspection chambers
 - inspection openings
 - kerbs
 - piping
 - pits
- treatment options for stormwater discharge:
 - grass and rock swales
 - lagoons
 - momentum diffusers
 - ponds
 - screens
 - silt traps
 - traps
 - other removal systems as determined
- disposal options for stormwater discharge:
 - connection to stormwater mains
 - creeks
 - harbour
 - kerb and street channels
 - lakes
 - on-site harvesting and reuse
 - rainwater collection systems, including tanks and dams
 - rivers
 - streams

- determining rainfall intensities by:
 - average rainfall intervals
 - roof, surface and subsurface calculations
 - site location
 - time and concentration
- catchment areas:
 - land surface catchment areas, including a variety of surface conditions such as grassed and paved areas
 - roof catchment areas
- stormwater drainage systems:
 - access chambers (manholes)
 - collection sumps
 - detention and retention
 - grade of drains
 - harvesting
 - holding pits
 - pump discharge
- approved piping materials:
 - concrete
 - earthenware or vitrified clay pipe (VCP)
 - fibre cement (FRC)
 - polyvinyl chloride (PVC)
 - other approved materials
- approved fittings:
 - bends
 - grates
 - gullies
 - junctions
 - non-return valves
- stormwater systems requiring pumping:
 - holding tanks
 - overflow provisions
 - pump and controls
 - rising main
- methods of applying sustainability principles and concepts:
 - selecting appropriate material to ensure minimal environmental impact
 - harvesting and reuse
 - efficient use of material
 - efficient energy usage/capital outlay comparison
 - effect on the environment due to overflow or leakage

- consideration of the Green Building Council of Australia rating scheme
- specification and user manuals which include information on:
 - commissioning
 - bedding
 - support
 - concrete support and detailing specialised components
 - jointing
 - access chambers (manholes)
 - manufacturer requirements
 - materials
 - pumps
 - WHS
 - testing
 - workmanship.

Assessment Conditions

Assessors must satisfy the requirements for assessors listed in the Standards for Registered Training Organisations.

This unit must be assessed in the workplace or a close simulation using realistic workplace conditions, materials, activities, responsibilities, procedures, safety requirements and environmental considerations.

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>