



Australian Government

Assessment Requirements for CPCSF5007

Create detailed designs for hydrant and hose reel systems

Release: 1

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Modification History

- Release 1 This version first released with CPC Construction, Plumbing and Services Training Package Release 5.0.
- Supersedes and is equivalent to CPCSF5007A Create detailed designs for hydrant and hose reel 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:

- producing fully compliant designs for hydrant and hose reel systems for the following sites:
 - low-rise building
 - medium-rise building
 - high-rise building (over 25 metres)
 - building over 45 metres in height
 - building classifications in the National Construction Code (NCC).
- processing design drawings using parametric modelling software and workplace procedures.

Designs for all the above include:

- fire engineer's designs for alternative solutions
- technical issues impacting on hydrant and hose reel system designs
- relevant regulatory approval and fire systems design certification processes.

Knowledge Evidence

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

- workplace design tools and processes
- level of accuracy required in detailed design drawings
- naming conventions for design drawings and drawing register
- fire science:
 - fire behaviour and dynamics
 - impact of fire on structures and materials
 - products of combustion

- fire control strategies
- fire retardants
- fire detection technologies
- fire suppression technologies
- fire containment
- computer software functions and operation:
 - word processing
 - spreadsheet
 - email
 - internet
 - proprietary project management software
 - proprietary hydraulic calculation software
 - parametric modelling software
- relevant current legislation, codes and standards:
 - building acts
 - building regulations
 - infrastructure supply regulations
 - National Construction Code (NCC)
 - Australian standards for fire systems
 - international standards for fire systems
 - other fire system standards commonly required by building insurers
- protection requirements for different buildings
- fire systems technology and components for hydrant and hose reel systems
- purpose and operation of fire systems:
 - layout
 - system operation
 - performance requirements
 - maintenance standards
 - system activation and operation
- characteristics and limitations of products and materials used in fire systems and issues relating to material compatibility
- passive fire safety elements:
 - identification of passive elements
 - impact of fire systems design on passive elements
 - specifications required to safeguard integrity of passive fire element performance where penetrations are necessitated by the fire systems design
- interconnection of fire systems:
 - cause and effect matrix
 - interface with other services
- basic principles of structural engineering

- characteristics of building materials
- construction industry terminology
- roles and responsibilities of relevant building project personnel:
 - architect
 - lead contractor
 - mechanical engineer
 - hydraulic engineer
 - electrical engineer
- on-site issues that can arise during the construction phase and impose changes to the designs of fire systems and other services
- installation methods:
 - access requirements
 - work health and safety (WHS) requirements
- sustainability requirements and ratings:
 - energy conservation
 - water conservation
- pipe fabrication methods and constraints
- mathematical principles, equations and calculation methods:
 - financial calculations, for example to assess cost-effectiveness of fire systems
 - trigonometry, for example to amend dimensions of pipe allowing for fittings
- flow calculations:
 - area of operations
 - discharge rates and quantities
 - discharge times
 - pressure gain and loss
 - K-factors
 - pressure, temperature and volume relationship
 - Hazen-Williams equation
 - Darcy-Weisbach equation
 - computational fluid dynamics
- principles of organic and inorganic chemistry
- basic principles of thermodynamics:
 - effects of heat
 - stratification of gases
 - smoke and heat dynamics
- contractual processes
- project drawings:
 - architectural
 - structural
 - mechanical

- electrical
- hydraulic
- fire engineer's or estimator's specifications
- efficient and workable layout and location considerations:
 - selection of cost-effective components and materials
 - penetrations
 - conflict with other services
 - WHS risks
 - access constraints
 - installation problems
 - aesthetic requirements
 - efficiencies to facilitate work on site and reduce labour costing
- negotiations regarding amendments to design drawings which may arise due to:
 - non-compliance with applicable legislation, codes and standards
 - impact on installation risks and constraints
 - impact on cost-effectiveness
- hydrant and hose reel system components:
 - hose reels
 - hydrant valves
 - booster valves.

Assessment Conditions

Assessors must meet the requirements for assessors contained 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>