

Unit of Competency CPCSFS5010

Provide documentation and support for fabrication of fire sprinkler systems

Application

This unit of competency specifies the outcomes required to assess issues relating to on-site installation of pipework for sprinkler systems. The unit also involves producing specifications and supporting documentation for the cost-effective fabrication of manageable pipework sections.

This unit of competency supports the role of fire systems designers with responsibility for creating specifications and drawings for the fabrication of pipework sections for fire sprinkler systems.

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

Prerequisite Unit

Nil.

Elements and Performance Criteria

1. Determine the impact on fabrication plans of installation risks and constraints.	1.1	Identify on-site work health and safety (WHS) risks relating to the installation of sprinkler systems.
	1.2	Identify constraints relating to access to on-site installation locations for sprinkler system pipes and components.
	1.3	Consider impact of installation risks and constraints on fabrication plans for fire sprinkler system pipes and components and determine cost-effective and manageable solutions.
2. Plan and specify pipes, fittings and components.	2.1	Obtain and analyse current accurate drawings and documentation, and take measurements on-site during construction if possible, to confirm the accuracy of building dimensions.
	2.2	Check and confirm the dimensions and design drawing locations of the selected fittings and components.
	2.3	Plan and specify fittings and components for ease and safety of installation and to provide cost-effective solutions.
	2.4	Calculate, specify and number pipe lengths on relevant drawings.
	2.5	Review and apply efficiency and cost effectiveness of relevant pipe materials, pipe fitting methodologies for design.
3. Produce fabrication documentation.	3.1	Confirm and specify appropriate pipe materials and features.
	3.2	Consult supplier as necessary to discuss and negotiate efficient and cost-effective pipe fabrication options.
	3.3	Number and detail individual pipe specifications on fabrication lists.
	3.4	Supply drawings to support fabrication specifications, as required.

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 CPCSF55010A Provide documentation and support for fabrication of fire sprinkler systems.

Links

Companion Volume Implementation Guide:

<https://vetnet.education.gov.au/Pages/TrainingDocs.aspx?q=7e15fa6a-68b8-4097-b099-030a5569b1ad>

Assessment Requirements for CPCSFS5010

Provide documentation and support for fabrication of fire sprinkler systems

Performance Evidence

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

- producing pipe fabrication documentation for fire sprinkler system design projects for four types of buildings including a:
 - o commercial building
 - o factory
 - o residential nursing home
 - o high-rise building.

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
- relevant current legislation, codes and standards:
 - o building Acts
 - o building regulations
 - o infrastructure supply regulations
 - o the Building Code of Australia (BCA)
 - o National Construction Code (NCC)
 - o Australian standards for fire systems
 - o international standards for fire systems
 - o jurisdictional authorities in addition to the BCA and NCC
 - o other fire system standards commonly required by building insurers
- protection requirements for different buildings, including:
 - o low-rise buildings
 - o processing building applications
 - o warehouse buildings under 13.7 m high
 - o warehouse buildings over 13.7 m high
 - o medium-rise buildings
 - o high-rise buildings (over 25 metres)
 - o buildings over 50 metres in height
- fire systems' technology and components, including water-based systems:
 - o wet pipe sprinkler systems

- o deluge and drencher systems
 - o dry pipe sprinkler systems
 - o pre-action sprinkler systems
 - o early suppression fast response (ESFR)
 - o gaseous suppression systems
 - o water spray systems
 - o water mist systems
 - o wet chemical suppression systems
 - o foam suppression systems
 - o hangers
 - o sprinkler heads
 - o nozzles
 - o elbows
 - o tees
 - o pumps
 - o tanks
- purpose and operation of fire systems:
 - o layout
 - o location:
 - ceiling space
 - roof space
 - under-floor
 - under-soffit
 - o special products and hazards
 - o system operation:
 - deluge and drencher systems
 - dry pipe sprinkler systems
 - pre-action sprinkler systems
 - ESFR
 - gaseous suppression systems
 - water spray systems
 - water mist systems
 - foam suppression systems
 - o performance requirements and technical issues impacting on fire sprinkler systems designs
 - o maintenance standards
 - o system activation:
 - deluge and drencher systems
 - dry pipe sprinkler systems
 - pre-action sprinkler systems
 - ESFR
 - gaseous suppression systems
 - water spray systems
 - water mist systems
 - foam suppression systems
- characteristics and limitations of products and materials used in fire systems and issues relating to material compatibility

- installation risks and constraints impacting on pipe fabrication specifications for fire sprinkler systems
- construction industry terminology
- roles and responsibilities of relevant building project personnel:
 - architect
 - lead contractor
 - structural engineer
 - mechanical engineer
 - hydraulic engineer
 - electrical engineer
 - civil engineer
 - fire engineer
 - building (private) certifier or surveyor
- on-site issues that can arise during the construction phase and impose changes to the designs of fire systems and other services:
 - risks:
 - manual handling
 - confined spaces
 - working at height
- installation methods:
 - access requirements:
 - height of pipe
 - length of pipe
 - weight of pipe and materials
 - distance from beams
 - distance from walls
 - work health and safety (WHS) requirements
- water supplies:
 - common water sources
 - conservation requirements
 - in-ground reticulation
 - booster configurations
- fluid mechanics and hydraulics relating to pipe range
- sustainability requirements and ratings:
 - energy conservation
 - water conservation
- pipe fabrication methods and constraints
- pipe specifications:
 - length
 - dimension
 - pipe size
 - material:
 - black steel
 - galvanised
 - hot dip galvanised
 - high density polyethylene (HDPE)
 - chlorinated polyvinyl chloride (CPVC)

- pipe connection specifications:
 - o flange
 - o roll grooved
 - o threaded
 - o compression
 - o fusion welded
 - o chemical (glue)
- valve specifications:
 - o sluice
 - o gate
 - o butterfly
 - o globe
 - o ball
 - o solenoid
 - o diaphragm
 - o pressure reducing
 - o flow restricting
 - o 3-way
- mathematic principles, equations and calculation methods:
 - o financial calculations, for example to assess cost-effectiveness of fire systems
- codes, standards, legislation and regulatory requirements
- access to manufacturer's information.

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

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