

Unit of Competency CPCPFS4024

Design residential fire sprinkler systems

Application

This unit specifies the skills and knowledge required to design domestic and residential fire sprinkler systems using hydraulic calculations.

It includes determination of system requirements, detailed design and recording of system plans.

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

Prerequisite Unit

CPCPFS3037 Install residential life safety sprinkler systems

Elements and Performance Criteria

1. Prepare for design process.	<ul style="list-style-type: none">1.1 Identify and confirm the nature and scope of design task from relevant job plans and specifications, codes, Australian Standards, manufacturer's specifications and jurisdictional requirements.1.2 Identify and apply workplace policies and procedures, work health and safety (WHS) and environmental requirements.1.3 Consult with stakeholders as required.1.4 Select and check the serviceability of appropriate tools, equipment and personal protective equipment (PPE).1.5 Prepare the work area in which the design process is to be conducted.
2. Determine system requirements.	<ul style="list-style-type: none">2.1 Obtain and confirm information specifications for the required work.2.2 Specify regulations and standards relevant to the work.2.3 Identify and extract relevant data from relevant job plans and specifications, codes, Australian Standards, manufacturer's specifications and jurisdictional requirements.2.4 Identify and establish building classification and hazard ratings according to standards and other relevant regulations.
3. Design sprinkler system.	<ul style="list-style-type: none">3.1 Establish water supply needs and draw graphs for the automatic fire sprinkler system.3.2 Size pipework to manufacturer specifications and standards using hydraulic calculations.3.3 Design sprinkler system to meet plan specifications, standards, manufacturer's recommendations and water supply data.3.4 Select sprinkler heads of appropriate size, spray pattern, temperature and finish.3.5 Plot sprinkler spacing according to manufacturer's specifications, standards and relevant statutory and regulatory authority regulations.3.6 Create pipe layout drawings according to standards and workplace

	requirements.
4. Finalise work.	4.1 Document calculations and other supporting evidence to support design. 4.2 Optimise material specifications according to standards from the proposed design. 4.3 Prepare fabrication sheets and material lists. 4.4 Record plans according to regulatory authorities' and workplace requirements.

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 CPCPFS4024A Design residential and domestic 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 CPCPFS4024

Design residential fire sprinkler systems

Performance Evidence

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

- using hydraulic calculations to design a fire sprinkler system for a residential complex containing a minimum of a communal catering and living area and multiple residential quarters (or equivalent) and also a fire sprinkler system for a domestic residence containing a minimum of two rooms.

In doing so the person must:

- correctly interpret plans and specifications to complete work to the specified standard within accepted timeframes
- comply with appropriate legislation, organisational processes and regulatory requirements.

Knowledge Evidence

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

- calculating and measuring techniques and their application:
 - SI system of measurements
 - calculating material requirements
- components and materials of fire suppression sprinkler systems and their operating characteristics:
 - actuating devices
 - alarms
 - control valve assemblies
 - piping
 - sprinkler heads
- process and design techniques, materials and technology:
 - calculators
 - design data
 - design tables
 - drawing and drafting equipment
 - reference materials
 - computers running appropriate computer-aided design (CAD) software
 - drafting materials
 - plans
- job safety analysis (JSA) and safe work method statements (SWMSs)

- accessing and using information:
 - o charts and hand drawings
 - o instructions issued by authorised organisational or external personnel
 - o job drawings
 - o manufacturer specifications and instructions
 - o organisation work specifications and requirements
 - o plans and sketches signage
 - o verbal, written and graphical instructions
 - o work bulletins
 - o work schedules, plans and specifications
- regulatory and legislative requirements
- properties of water including pressure and flow rates
- work health and safety (WHS) related to designing residential and domestic fire sprinkler systems
- environmental requirements and sustainability principles
- quality assurance requirements.

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.

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