



Australian Government

Department of Education, Employment and Workplace Relations

CPCSFS5001A Define scope and hazard level of fire systems design projects

Release: 1

CPCSFS5001A Define scope and hazard level of fire systems design projects

Modification History

Not Applicable

Unit Descriptor

Unit descriptor	This unit of competency specifies the outcomes required to interpret briefs and specifications for fire systems design projects, and define the scope and hazard level of the project with reference to relevant legislation, codes and standards. Licensing, legislative, regulatory or certification requirements may apply to this unit and so the varying state or territory requirements should be confirmed with the relevant body.
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Application of the Unit

Application of the unit	This unit of competency supports the role of fire systems' designers who need to determine the nature and purpose of the client's or fire engineer's fire systems design concept. The work involves establishing the building classification and hazard level and the legislation, codes and standards that must be applied to the detailed design for fire systems. Fire systems designs are limited to those within the deemed-to-satisfy provisions of the Building Code of Australia or detailed fire systems designs for alternative solutions designed by fire engineers. This unit does not apply to fire systems for special hazard locations.
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Licensing/Regulatory Information

Refer to Unit Descriptor

Pre-Requisites

Prerequisite units	Nil
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Employability Skills Information

Employability skills	This unit contains employability skills.
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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Interpret fire systems design concepts, briefs or specifications.	1.1. Design concepts and recommendations for fire systems design projects are gathered and interpreted within project timelines. 1.2. Design briefs and specifications for fire systems design projects are gathered and interpreted within project timelines. 1.3. The nature, purpose and location of proposed fire systems are determined and outlined.
2. Establish building classifications and hazard levels for fire systems design projects.	2.1. Sizes and types of buildings are determined from initial project documentation. 2.2. Functions and occupancies of buildings are determined from initial project documentation. 2.3. Clarification of specific building details is sought from the client or relevant contractors and consultants within project timelines. 2.4. Building classifications and hazard levels are researched and confirmed according to relevant codes and standards.
3. Determine the applicable legislation, codes and standards.	3.1. The regulatory requirements applicable to each location of fire systems design projects are determined and confirmed as correct. 3.2. The codes and standards applicable to the locations and classifications of buildings included in fire systems design projects are determined and confirmed as correct. 3.3. The insurance requirements impacting on applicable codes and standards for fire systems projects are determined and confirmed as correct.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

- operating computer software packages and systems, including:
 - word processing
 - spreadsheet

REQUIRED SKILLS AND KNOWLEDGE

- email
- internet
- proprietary project management software
- parametric modelling of services coordination using proprietary software, such as Navis-Works or MEP-REVIT
- language and literacy skills for:
 - listening to and communicating clearly with clients and contractors
 - participating in meetings, such as negotiations with fire engineering consultant, architect or builder
 - researching current relevant legislation, codes and standards
 - reading and interpreting drawings, including architectural and structural
- developing constructive and cooperative working relationships with project team members, workplace colleagues and clients
- initiating and running meetings with lead contractor and other service contractors
- project management
- organising own work, including creating personal systems and checklists for planning, managing and checking work
- lateral thinking and problem solving
- maintaining concentration, focus and attention to detail for long periods
- managing detailed input to concurrent fire systems design projects at different stages of the process and with diverse sets of regulatory requirements

Required knowledge

- fire science, including:
 - 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
- human psychology, especially fire avoidance behaviour
- fire engineering principles, including:
 - engineered solutions
 - innovative fire systems
 - fire modelling
- computer software functions and operation, including:
 - word processing

REQUIRED SKILLS AND KNOWLEDGE

- spreadsheet
- email
- internet
- proprietary project management software
- parametric modelling software, such as Navis-Works or MEP-REVIT
- relevant current legislation, codes and standards, including:
 - building Acts
 - building regulations
 - infrastructure supply regulations
 - the Building Code of Australia
 - Australian standards for fire systems
 - international standards for fire systems
 - other fire systems standards commonly required by building insurers
- fire systems' technology and components, including:
 - water-based systems, including:
 - wet pipe sprinkler systems
 - deluge and drencher systems
 - dry pipe sprinkler systems
 - pre-action sprinkler systems
 - early suppression fast response (ESFR)
 - hydrants, hose reels and monitors
 - water supply tanks
 - fire pump sets
 - detection and warning systems, including:
 - emergency warning and intercommunications systems (EWIS)
 - fire detection and alarm systems
 - smoke control systems
 - emergency lighting systems
- purpose and operation of fire systems, including:
 - layout
 - system operation
 - performance requirements
 - maintenance standards
 - system activation and operation
- 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

REQUIRED SKILLS AND KNOWLEDGE

- performance where penetrations are necessitated by the fire systems design
- characteristics and limitations of products and materials used in fire systems and issues relating to material compatibility
 - interconnection of fire systems, including:
 - cause and effect matrix
 - interface with other services
 - basic principles of structural engineering
 - characteristics of building materials
 - construction industry terminology

Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that the simulated or project-based assessment fully replicates workplace conditions, materials, activities, responsibilities and procedures.

This unit could be assessed as an activity involving the determination and establishment of the scope of a range of fire systems design projects. This would involve correctly interpreting design concepts, briefs and specifications, establishing building classifications, and identifying the relevant applicable legislation, codes and standards.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of the required skills and knowledge specified within this unit.

In particular the person should demonstrate:

- the ability to read and interpret a range of design documents, including concept briefs, design briefs, drawings, plans and specifications
- an understanding of hazard levels and building classifications
- an understanding of the extent of legislation, codes, standards, as well as regulatory and insurance requirements, that may apply to fire systems design projects of different types and in different locations, including:
 - low-rise buildings
 - medium-rise buildings
 - high-rise buildings (over 25 metres)
 - buildings over 45 metres in height
- the ability to conduct research to determine which particular legislation, codes, standards, regulatory and insurance requirements apply to

EVIDENCE GUIDE	
	specific fire systems designs in different types of buildings and locations, including: • low-rise buildings • medium-rise buildings • high-rise buildings (over 25 metres) • buildings over 45 metres in height.
Context of and specific resources for assessment	Assessment of essential underpinning knowledge may be conducted in an off-site context. It is to comply with relevant regulatory or Australian standards' requirements. Resource implications for assessment include: • design briefs, drawings, plans and specifications • copies of codes, standards, legislation and regulatory requirements • access to information and communications technology - hardware and software.
Method of assessment	Assessment must: • satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package • include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application • reinforce the integration of employability skills with workplace tasks and job roles • confirm that competency is verified and able to be transferred to other circumstances and environments.
Guidance information for assessment	Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support. Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<i>Fire systems design projects</i> may include:	• different types of buildings, including: • residential • commercial • industrial • mixed classification • projects in different locations, including: • local • involving more than one state or territory • international • several types of fire systems, including: • water-based systems: • wet pipe sprinkler systems • deluge and drencher systems • dry pipe sprinkler systems • pre-action sprinkler systems • early suppression fast response (ESFR) • hydrants, hose reels and monitors • water supply tanks • fire pump sets • detection and warning systems: • emergency warning and intercommunications systems (EWIS) • fire detection and alarm systems • smoke control systems • emergency lighting systems.
<i>Building classifications</i> may include:	• classifications in the Building Code of Australia:

RANGE STATEMENT	
	• occupancy classes • multiple classifications • parts with more than one classification • fire hazard properties of materials and smoke growth rate • classifications specified in relevant Australian or international standards • classifications relating to standards or codes applied by building insurers.
Codes and standards may include:	• the Building Code of Australia • Australian standards for fire systems • international standards for fire systems.
Regulatory requirements may include:	• relevant current legislation, including: • building Acts • building regulations • infrastructure supply regulations • relevant state, territory and local legislation.

Unit Sector(s)

Unit sector	Fire systems design
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Co-requisite units

Co-requisite units	Nil
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Competency field

Competency field	
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